Área Temática: Globalização e Internacionalização de Empresas

Foreign Market Perceptions of Brazilian Managers: Are There Differences Between Internationalized and Non-Internationalized Firms?

AUTORES
EDUARDO ANGONESI PREDEBON
UNIVERSIDADE FEDERAL DO PARANÁ
epredebon@ufpr.br

CLÁUDIA MÔNICA RITOSSA
UNIVERSIDADE FEDERAL DO PARANÁ
ritossa@gmail.com

RODRIGO SOUZA DA COSTA
UNIVERSIDADE FEDERAL DO PARANÁ
dacosta_adm@yahoo.com.br

FABIANE CORTEZ VERDU
UNIVERSIDADE FEDERAL DO PARANÁ
fabiane.verdu@uol.com.br

Abstract

In this study, a cross-sectional survey investigates the foreign market perceptions of Brazilian managers. Managers enrolled in MBA programs (*N = 546*) completed a self-administered questionnaire on how factors characterizing foreign market prospects affect their foreign market perceptions. A one-way between-groups multivariate analysis of variance was performed to investigate internationalized and non-internationalized firms' managers' differences in the perceptions of the foreign market. Twelve dependent variables were used: growth opportunity, new technology opportunity, information opportunity, perceived risk, unexpected orders, saturated market, excess production, short range opportunity, middle range opportunity, long range opportunity, idle capacity, and government policies. The independent variable was the internationalization of the firm. There was a statistically significant difference between internationalized and non-internationalized firms on the combined dependent variables: F (12, 546) = 117.11, p = 0.000; *Wilks' λ* = 0.338; *Partial* η^2 = 0.66. Therefore, the results revealed differences between internationalized and non-internationalized firms' managers about their perceptions of foreign market.

Key words: internationalization; foreign market perceptions; multivariate analysis.

Introduction

In the last decades, a significant restructuring of business and industry has occurred through globalization, a worldwide renaissance of capitalism, and a resultant movement toward government deregulation and privatization, as well as an immense wave of technological innovation.

A question of continuing interest to international business researchers and practitioners is how foreign market perceptions affect managers' internationalization decisions and thus the exploitation of market opportunities in other countries. The interest is growing with the growth of world trade that has consistently outstripped the growth of world output, increasing export and import penetration ratios for all countries and all industries.

To survive and prosper in a global competitive marketplace, an organization must strive to respond continuously to opportunities and threats posed by a changing environment. Managers typically play a lead role in this task through their responsibility to interpret the environment and make the crucial choices of which markets to serve, competitors to challenge, and products and services to offer. Consequently, how managers interpret a market, especially foreign markets, directly affects the decisions considered in their respective organizations and the resources committed to particular projects or investments.

There is a general consensus among managers and researchers that improving internationalization decision making requires a better understanding of factors that influence how managers interpret and perceive foreign markets. Understanding how managers interpret and perceive foreign markets is important in light of the growing body of evidence that suggests there are significant differences in the ways individual managers interpret and respond to a given situation.

In this study, we investigate the role of individual differences in manager's internationalized and non-internationalized firms' interpretations of foreign market situation to gain insights into why managers arrive at different perceptions of the same situations. Specifically, we focus on the following research question: Are there differences between internationalized and non-internationalized firms' managers' perceptions of foreign markets? Remarkably, this fundamental issue has not been addressed in any Brazilian empirical study to date.

The rest of this article is divided into five sections. The next section examines the conceptual foundations and hypotheses developed in this study. The second section details methodological issues. In the third section, we discuss our results, and in the fourth section, we examine the contributions and limitations of the findings, and suggestions for future work. Finally, we present some conclusions and final remarks.

Conceptual Foundations and Hypotheses

There have been a number of studies that have focused on the motivations and barriers to internationalization by firms willing to operate in foreign markets. The most mentioned reasons that explain why firms pursue global expansion are growth opportunities, global competition, global customers, global knowledge and value-chain activities (GOVINDARAJAN; GRUPTA, 2001).

According to Inkpen and Ramaswamy (2006), the first and most obvious global imperative to a firm strategic decision to cross borders involves the need to grow. It is a truism that all firms must grow. Those that do not grow will struggle to find new human assets and capital because a firm that is not growing will be an unattractive investment and will provide few opportunities for personal development for the firm's employees. For firms in small markets globalization will be a much stronger motivation than in large markets such as Brazil. The second reason that drives expansion to foreign markets is the need to compete against global competitors. When global competitors exist, firms seeking a leadership position must compete on a global basis. In a global industry, not competing globally will lead to a significant competitive disadvantage. Thirdly, supporting global customers can be a motivation when global customers hold a significant amount of bargaining power. The fourth reason refers to gaining access to knowledge beyond the firm's border. Knowledge-based competition is often a strategic necessity for survival. Finally, global expansion can be pursued for efficiency reasons. In this case, a firm selects a location outside the home market in order to perform a value-chain activity at the lowest cost-effective optimal solution.

On the other hand, barriers to internationalization can exist at any stage of the internationalization process and can be categorized into five broad areas: financial, managerial, market-based (including both domestic and international markets), industry specific and firm specific (SHAW; DARROCH, 2004). While not comprehensive a summary of the most frequently studied barriers to internationalization per category is listed bellow:

a) *Financial barriers:* resource availability, cost of operating overseas and limited access to capital and credit;

b) *Managerial barriers:* managerial attitudes, lack of international experience and skills, commitment and partnership difficulties;

c) *Market-based barriers*: liability of foreignness, environmental perception, government regulations, economic conditions, lack of market knowledge, cultural differences, access to distribution, strong domestic market position;

d) *Industry specific:* competition and technology; and

e) *Firm specific:* liability of newness, limited resources and size.

It is important to note though that the perception of motivations and barriers can vary in intensity depending on the degree of internationalization of the individual firm (CAVUSGIL, 1984). Nevertheless, very little attention has been paid in comparing the perception of foreign markets by managers' of internationalized and non-internationalized firms.

The more positively the external market is perceived by managers in terms of opportunities for growth, for development of new technologies, for information acquisition or for profit attainment in the short, medium and long run, the greater the perceived munificence. Likewise, the more negatively the external market is perceived in terms of high risk taking activities, of scarce opportunities for growth, for development of new technologies, for information acquisition or for profit attainment in the short, medium and long run, the minor the perceived munificence.

Perceived munificence reflects the degree to which top managers report the availability of resources in the environment as growing (or declining) which is indicative of the extent to which the environment is supportive of sustained stability or growth for the firm and its competitors in the same industry (SUTCLIFFE; HUBER, 1998).

Given the importance of managers' perception on the strategic decision-making process to cross borders, this study aims to investigate how managers of internationalized and non-internationalized Brazilian firms interpret and perceive foreign markets described by the following determinants: (1) Growth Opportunity; (2) New Technology Opportunity; (3) Information Opportunity; (4) Perceived Risk; (5) Short-Range Opportunity; (6) Middle-Range Opportunity; (7) Long-Range Opportunity; (8) Unexpected Orders; (9) Saturated Markets; (10) Excess Production; (11) Idle Capacity and (12) Government Policies.

In order to understand how managers of internationalized and non-internationalized Brazilian firms respond to foreign market signals the following hypotheses are proposed for this investigation based on the elected determinants of foreign market perception:

H_1 - There is no significant differences between internationalized and non-internationalized firms' managers' perceptions towards the opportunity of growth presented by the foreign market.

H_2 - There is no significant differences between internationalized and non-internationalized firms' managers' perceptions towards the opportunity to develop new technologies presented by the foreign market.

H_3 - There is no significant differences between internationalized and non-internationalized firms' managers' perceptions towards the opportunity to acquire information presented by the foreign market.

H_4 - There is no significant differences between internationalized and non-internationalized firms' managers' perceptions towards the perception of risk presented by the foreign market.

H_5 - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as a short-range opportunity.

H_6 - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as a middle-range opportunity.

H_7 - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as a long-range opportunity.

H_8 - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the fulfillment of unexpected orders from foreign market.

H_9 - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as an opportunity to seek new revenue sources and overcome saturated home-markets.

H_{10} - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as an opportunity to trade excess production capacity.

H_{11} - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the foreign market as an opportunity to exploit idle capacity.

H_{12} - There is no significant differences between internationalized and non-internationalized firms' managers' perception towards the government policies incentives to foreign market entry.

Research Methodology and Design

This section provides an overview of the research's specifications and describes the data used in order to conduct the research. The results of these empirical tests are offered in the next section of the paper.

Sample

This study used a self-administered questionnaire to collect data for Brazilian managers enrolled in executive MBA programs from one public and five private universities throughout Brazil were selected as target respondents. A total of 546 managers voluntarily agreed to participate in this study. The respondents were briefed on the importance of the study and told that the information was strictly confidential.

Research Design

This study has a cross-sectional design that included managers enrolled in MBA programs. Prospective data collection for each subject occurred within a six month period and included self-administered questionnaires as the data collection technique. Each item was formatted into a ten-point (strongly agree to strongly disagree) *Likert*-type response scale. The primary aim was to determine the differences between internationalized and non-internationalized firms' managers; and, secondarily, to determine the interrelationships among foreign market perceptions.

Results and Discussion

The results and concomitant discussion are reported in this section. We begin with an overview of the descriptive statistics for internationalized and non-internationalized firms, followed by an examination of the determinants of perceptions of foreign market. The internationalized firms are juxtaposed against the non-internationalized firms for comparison.

Results

The general profile of survey respondents is presented in Table I. Survey results revealed the following:

1. there is no significant gender differences between male and female enrolled in MBA programs; women represent 51.9% of the survey population and men represent 48.1% of the survey population. Among non-internationalize firms, 29.1% are women and 19.0% are men; among internationalized firms, 31.2% are women and 20.7% are men;
2. the percentage of young MBA students is distinctly higher than the percentage of elderly MBA students. In the survey population, MBA students aged under 30 represent almost two-thirds (60.5%) of the population, 41.8% are working in non-internationalized firms and 18.7% are working in internationalized firms. Respondents in the 30 – 39 years old age group represent 29.7% of the survey population, 16.9% are working in non-internationalized firms and 12.8% are working in internationalized firms. Respondents in the 40 – 49 years old age group represent only 7.4% of the survey population, 4.4% are working in non-internationalized firms and 3.0% are working in internationalized firms. Respondents in the 50 and over age group represent only 2.4% of the survey population, all working in non-internationalized firms;

Table I. Profile of Respondents

Variables	Non-Internationalized (%)	Internationalized (%)
Gender		
Male	29,1	19,0
Female	31,2	20,7
Age		
Under 30	41,8	18,7
30 - 39	16,9	12,8
40 - 49	4,4	3,0
50 and over	2,4	0,0
Educational Background		
Management Bachelor's Degree	39,6	23,9
Others Bachelor's Degree	26,1	10,4
Industry Sectors		
Chemicals	1,30	2,65

Steel and Metallurgy	1,60	3,00
Telecommunications	1,65	3,00
Banks	1,80	4,30
Oil, Gas and Biofuels	1,90	3,80
Mining	2,10	3,60
Textiles, Apparels and Footwear	2,15	3,75
Information Technology	2,40	0,65
Wood and Paper	2,80	1,65
Transportation	2,80	2,40
Food, Beverage and Tobacco	3,65	6,30
Construction and Engineering	4,30	1,90
Services	6,35	1,30
Others	15,20	11,70

Source: the present survey, 2007.

3. the percentage of the survey population with a degree whose main field of study was Management or Business Administration is distinctly higher than those whose main field of study was other field of study, the corresponding percentage in the general population is 63.5%. A higher percentage of MBA students working in non-internationalized have a degree in Management or Business Administration than in internationalized firms, 39.6% compared to 23.9%;

4. no significant differences were found when the non-internationalized and internationalized firms samples were compared with respect to industry sectors. Compared to internationalized firms population, the percentage of non-internationalized firms is comparatively higher in *Services* (6.35% compared to 1.30%), *Construction and Engineering* (4.30% compared to 1.90%), and *Information Technology* (2.40% compared to 0.65%). On the other hand, the percentage of internationalized firms is comparatively higher in *Banks* (4.30% compared to 1.80%), *Oil, Gas and Biofuels* (3.8% compared to 1,90%), *Steel and Metallurgy* (3.0% compared to 1.60%), and *Telecommunications* (3.0% compared to 1.65%).

The two groups of managers enrolled in MBA programs were compared using a one-way between-groups multivariate analysis of variance (MANOVA) to investigate internationalized and non-internationalized firms' managers' differences in the perceptions of the foreign market. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers (COHEN, 1988; STEVENS, 1996; HAIR *et al*., 1998; TABACHNICK; FIDELL, 2001). The analysis of variance (MANOVA) resulted in a significant *F – Test* ($F = 117.11$, $p = 0.000$; *Wilks'* $\lambda = 0.338$; *Partial* $\eta^2 = 0.66$) indicating that internationalized and non-internationalized firms' managers are different on combinations of the perceptions variables included in this study.

When the results for the dependent variables were considered separately, the differences to reach statistical significance were: growth opportunity $F = 168.17$, $p = 0.000$, *Partial* $\eta^2 = 0.24$; perceived risk $F = 612.78$, $p = 0.000$, *Partial* $\eta^2 = 0.53$; short range opportunity $F = 84.17$, $p = 0.000$, *Partial* $\eta^2 = 0.13$; middle range opportunity $F = 93.42$, $p = 0.000$, *Partial* $\eta^2 = 0.15$; and, idle capacity $F = 152.00$, $p = 0.000$, *Partial* $\eta^2 = 0.22$.

Table II. ANOVA: Internationalized *versus* Non-Internationalized Firms

Variables	**Means**		**F – Ratio**	**Sig. Level**
	Non-Internationalized	**Internationalized**		
Growth Opportunity	7.52	8.56	168.17	0.000[a]
New Technology Opportunity	8.98	9.02	0.44	0.504

Information Opportunity	7.46	7.63	3.92	0.048[a]
Perceived Risk	6.55	4.44	612.78	0.000[a]
Short-Range Opportunity	6.03	7.01	84.17	0.000[a]
Middle-Range Opportunity	7.07	8.06	93.42	0.000[a]
Long-Range Opportunity	8.43	8.62	4.63	0.032[a]
Unexpected Orders	8.50	5.47	1221.86	0.000[a]
Saturated Markets	7.52	8.05	35.51	0.000[a]
Excess Production	6.47	6.38	0.540	0.463
Idle Capacity	7.53	8.53	152.00	0.000[a]
Government Policies	8.55	8.56	0.001	0.970

Source: the present survey, 2007. Note: [a] denotes significance at the 0.05 level.

Consistently, our analysis of variance (ANOVA) revealed significant differences between internationalized and non-internationalized firms' managers on most of the variables tested. These results, summarized in Table II, show that differences between internationalized and non-internationalized firms' managers were significant on all of the components of foreign market perception.

Compared to their non-internationalized counterparts, internationalized firms' managers exhibited a stronger perception toward the growth opportunity (F = 168.17, p = 0.000), information opportunity (F = 3.92, p = 0.048), saturated market (F = 35.51, p = 0.000), short range opportunity (F = 84.17, p = 0.000); middle range opportunity (F = 93.42, p = 0.000), long range opportunity (F = 4.63, p = 0.032), and idle capacity (F = 152.00, p = 0.000) components. On the other hand, non-internationalized firms' managers exhibited a stronger perception toward perceived risk (F = 612.78, p = 0.000) and unexpected orders (F = 1221.86, p = 0.000) components.

Consistently, the significant differences between internationalized and non-internationalized firms' managers' perceptions toward foreign market are summarized in Table III.

Table III. Internationalized *versus* Non-Internationalized Firms Perception toward Foreign Market

Perception	Non-Internationalized	Internationalized
Growth Opportunity	*Low*	*High*
New Technology Opportunity	*Equal*	*Equal*
Information Opportunity	*Low*	*High*
Perceived Risk	*High*	*Low*
Short-Range Opportunity	*Low*	*High*
Middle-Range Opportunity	*Low*	*High*
Long-Range Opportunity	*Low*	*High*
Unexpected Orders	*High*	*Low*
Saturated Markets	*Low*	*High*
Excess Production	*Equal*	*Equal*
Idle Capacity	*Low*	*High*
Government Policies	*Equal*	*Equal*

Source: the present survey, 2007.

Finally, the proposed hypotheses were tested to understand how managers of internationalized and non-internationalized Brazilian firms respond to foreign market; the results are summarized in Table IV.

Table IV. Hypotheses

Hypotheses	
H_1 *Growth Opportunity*	Non Supported
H_2 *New Technology Opportunity*	Supported
H_3 *Information Opportunity*	Non Supported

H_4 Perceived Risk	Non Supported
H_5 Short-Range Opportunity	Non Supported
H_6 Middle-Range Opportunity	Non Supported
H_7 Long-Range Opportunity	Non Supported
H_8 Unexpected Orders	Non Supported
H_9 Saturated Markets	Non Supported
H_{10} Excess Production	Supported
H_{11} Idle Capacity	Non Supported
H_{12} Government Policies	Supported

Source: the present survey, 2007.

Discussion

Internationalization has often been described as a gradual development, in terms of involvement and entry forms, in which firms are expected to target gradually more distant markets (NAKDARNI; PEREZ, 2007). The results have been consistent with international findings, since the relationship between internationalized and non-internationalized firms' managers' perceptions were negative, and they suggest that manager's perceptions are determinant with regard to when, how, and why they internationalize; specially, in terms of internationalization, to which foreign entry forms they choose and to which markets they decide to enter.

Our findings have a variety of implications. First, note that the differences between internationalized and non-internationalized firms' managers indicate that measures of foreign market perception explain internationalization choices equally well, and that the explanatory power of the foreign market perception measure is somewhat elevate, as indicated by its statistical significance. The latter finding is noteworthy, since foreign market perceptions should drive their strategic decisions.

Second, internationalized and non-internationalized firms' managers have slightly different perceptions and preferences in one or more elected determinants of foreign market perception in internationalization. As a result, internationalized firms' managers are motivated to diversify their operations internationally to acquire know-how, to renew their competitive skills, to access managerial talent, or to expand their production or service networks; in contrast to non-internationalized firms' managers that are more concerned with greater operational efficiency, which in turn contributes positively to a firm's financial performance, and, consequently, minimized the perceived risk.

Third, our findings indicate that foreign market perceptions are nevertheless significant predictors of internationalization, and that they all reflect knowledge, information and awareness differences that matter. Therefore, knowledge, information and awareness are taking into account in managers' internationalization decisions, either explicitly or implicitly.

Fourth, the results demonstrate that a firm's experience in the internationalization process, institutions and mechanisms influences the perceived cost of the process. In addition, the lack of knowledge in the areas of foreign business, foreign institutions and firm internationalization has an effect, particularly, on non-internationalized firms' managers perceived cost in the internationalization process.

Finally, our findings reveal that there seems to be a correlation between the firms' international experience and their managers' foreign market perceptions. Therefore, the marketing of goods and services outside the home market is a way for the Brazilian firms to achieve growth, profits and market diversification; however, the internationalization process is mediated by the experiential knowledge and foreign market perceptions of their managers.

Limitations and Directions for Future Research

This study has some limitations that present opportunities for further research.

In our exploratory study, internal validity considerations often took precedence over external validity and the results, though strong, are necessarily limited in their generalizability. Future studies will increase the understanding of the construct by adopting the following research design suggestions:

f) *multiple corporations as the sampling frame* – though the access to managers in executive MBA programs and the high response rate were very desirable in terms of reliability, future studies might focus on a sample of organizations to assess the robustness of the perceptions of the foreign markets relationships found in our study;

g) *expanded sample of firms (managers)* – a wide variety of firms' structures and conditions characterize the competitive environments of the firms in our study, but the firms (managers) all compete in the same broadly defined region (Southern Brazil), future studies might examine whether the results we found are present in other regions as well;

h) *longitudinal research design* – the cross-sectional nature of the data in our study restricts conclusions to those of association, not causation, the development of a time-series database and testing the foreign market perceptions in a longitudinal framework would provide more insight into probable causation.

In addition to the preceding suggestions for modifying the research design, future research might also address the following three comprehensive issues pertaining to foreign market perceptions:

a) *perspectives on competitive position* – little is know about how managers decide what advantages distinguish their business in the foreign markets and how those advantages were gained;

b) *identifying distinctive capabilities* – most firms have only a few superior capabilities that enable them to outperform the competition in foreign markets, little is know about how to identify these distinctive capabilities;

c) *identifying additional factors in foreign market perceptions* – it seems desirable to assess the role of additional factors in influencing the foreign markets perceptions of an organization.

In summary, we view this study as a useful base for further investigation of the effects of foreign market perceptions on Brazilian internationalized and non-internationalized firms. We hope our research stimulates additional work in the area.

Conclusions

Internationalization is the most important and pervasive force reshaping the competitive environment of business. There are few industries, if any, untouched by global competitive forces. Firms and countries long accustomed to dominance in their respective international markets must now reckon with aggressive and innovative competitors from all corners of the world.

As the cross-border flow of people, knowledge, ideas, products, services and management practices accelerates; the national markets are opened to new competitors and new business opportunities are created for all kinds of firms; the notion of home-based advantage is becoming weaker.

Unlike their domestic counterparts, firms competing across borders must deal with differences in political, legal, financial, cultural, governance, and macroeconomic contexts. Therefore, the ability to take advantage of international opportunities and national capacities has been a key determinant of overall corporate success.

The present study is an attempt to partially fill this void by examining the impact of different foreign market perceptions on manager's internationalization orientation. Moreover, the intent of this study is to contribute to the development of Brazilian internationalization theory, to improve our understanding of the Brazilian internationalization processes.

Specifically, we attempted to reveal differences among internationalized and non-internationalized firms' managers at varying levels of perceptions of internationalization. In addition, the study suggests several factors as important determinants of foreign market perceptions.

The results suggest that internationalized and non-internationalized firms' managers can be distinguished in terms of measurable characteristics: perceptions of opportunities and perceptions of capacities. Significant differences exist among internationalized and non-internationalized firms' managers in terms of their perceptions of the foreign market, comparing the responses of the two groups surveyed in this study several interesting patterns emerge.

The differences were pronounced on these components: growth opportunity; information opportunity; perceived risk; short-range opportunity; middle-range opportunity; long-range opportunity; unexpected orders; saturated markets; and, idle capacity. On the other hand, no significant differences were found on these components: new technology opportunity; excess production; and, government policies.

The evidence suggests that understanding the process of internationalization requires an additional focus on foreign market perceptions and on the decision processes within the firm rather than a limited focus on the development of market-specific knowledge.

In summary, our objective was to investigate the foreign market perceptions of Brazilian internationalized and non-internationalized firms. Though additional work remains in both the methodological and substantive arenas, the results reported are encouraging. The findings combined with the suggestions for further work provide useful direction for future research.

References

CAVUSGIL, S.T. Differences among exporting firms based on their degree of internationalization. **Journal of Business Research**, v. 12, n. 2, p. 195 – 208, 1984.

COHEN, J. **Statistical Power Analysis for the Behavioral Sciences**. Hillsdale: Erlbaum, 1988.

GOVINDARAJAN, V.; GUPTA, A.K. **The Quest for Global Dominance: Transforming Global Presence into Global Competitive Advantage.** San Francisco: Jossey-Bass, 2001.

HAIR, J.F.; ANDERSON, R.E.; TATHAM, R.L.; BLACK, W.C. **Multivariate Data Analysis**. New York: Macmillan, 1998.

INKPEN, A., RAMASWAMY, K. **Global Strategy: creating and sustaining advantage across borders.** New York: Oxford University Press, 2006.

NADKARNI, S.; PEREZ, P.D. Prior conditions and early international commitment: the mediating role of domestic mindset. **Journal of International Business Studies**, v.38, n.1, p. 160 – 177, 2007.

SHAW, V., DARROCH, J. Barriers to internationalization: a study of entrepreneurial new ventures in New Zealand. **Journal of International Entrepreneurship**, v. 2, p. 327-343, 2004.

STEVENS, J. **Applied Multivariate Statistics for the Social** Science. Mahway: Erlbaum, 1996.

SUTCLIFFE, K. M.; HUBER, G. P. Firm and industry determinants of executive perceptions of the environment. **Strategic Management Journal**, v. 19, n. 8, p. 793-807, 1998.

TABACHNICK, B.G.; FIDELL, L.S. **Using Multivariate Statistics**. New York: HarperCollins, 2001.