

An Approach of Internationalization and Performance of Brazilian Companies

A Multilevel Empirical Investigation

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Abstract

The objective of this paper is to contribute to the understanding of the relationship between the Brazilian multinational firms' internationalization factors, characteristics and performance. The conclusion based on the main results, shows that the firms that adopt an improving business strategy in the markets with a higher level of proximity with its home market, that establish themselves in markets in which the cultural norms differ from those in Brazil and, that in conjunction with these strategic issues, present a positive growth rate and a lower leverage level, will achieve a better level of performance. Another result of this research is the identification of a negative influence of the industry's average growth rate on the firms' performance, which indicates that firms which belong to an industry which is characterized by a low rate of expansion in sales, tend to obtain better performance than those that belong to an industry that presents a greater expansion in sales' rate.

In order to test the proposed hypotheses and considering that the firms are part of industries and that the performance level varies with time, a three level multilevel model was processed and a sample of 128 Brazilian firms are part of 6 industries was analyzed.

Introduction

A lot of early studies that are related to the main theme of this paper are primarily focused in identifying and approaching the relationships between the degree of internationalization and the performance of multinational enterprises, in order to contribute to the expansion of knowledge of practitioners and researchers. According to Lin, Liu and Cheng [1], firms that consider entering foreign markets need to be able to estimate whether an international expansion strategy would be more likely to enhance or reduce the firm's profitability. Considering its increasing relevance in international economy, studies that have as its objective emerging markets, not only as a target to foreign investments but also as an origin of this kind of investments, are growing in importance.

Aimed in studying the relationship between the degree of internationalization and the firm's performance, in conjunction with the need to internationalize in order to increase their advantages [2], this study tries to expand the knowledge about this theme when considering the internationalization of emerging markets multinationals, specifically of Brazilian firms, under a multilevel perspective. We established as the main proposal of this research the answer of the following question:

Which are the internationalization issues, firm's characteristic and industries' influence on the performance of Brazilian multinational enterprises?

An estimation of the parameters by means of a multilevel model were used in order to direct the research to identify the relevance of the psychological distance, growth rate, leverage level and the industry's average performance rate in determining firm's performance.

Theoretical Background and Hypotheses

When analyzing the internationalization benefits and costs, it is possible to recognize the differences between three different dimensions. Following, the cost and benefits of each internationalization dimension (depth, breadth and height) will be evaluated independently. The assessment in each dimension will lead to the formulation of the hypotheses.

The majority of researchers that view the firms' benefit in exporting, consider that positive effects, such as scale economies, scope and market diversification exploitation across borders, can be attained that would outweigh possible downfalls [e.g. 3, 4]. Considering the possibility of achieving better results by adopting an internationalization strategy based on market diversification, Ramaswamy [5] proposes that selling goods or services in diverse international markets can lead to gains from the diversification of revenues and, Kim et al. [6] highlights the relevance of the advantages that could be obtained from the increase of the firm's market power. Aligning with these perspectives, one can expect that, in average, firms with relative high levels of exports perform significantly better than the firms that mainly perform with domestic sales:

Hypothesis 1: the foreign sales to total sales ratio of a firm is positively related to its performance.

Some of the internationalization's attractive issues is the fact that it enables firms to minimize their transaction risks through internalizing markets for proprietary asset exchange [e.g. 7, 8], to leverage location-based advantages [9], to have access to critical resources [10] and to develop new capabilities that enhance its international competitiveness [11].

Bartlett and Ghoshal [12] affirm that every additional market increases the complexity of control and coordination of the firm, and the complexity of managing widespread business units increases with heterogeneity in markets [13], which expands as a firm possesses foreign direct investments (FDI) in many countries.

Based on the perspective that these difficulties originated from geographical dispersion might be small for firms with lower level of dispersion, difficulties are expected to be significantly larger for firms with high levels of dispersion, the second hypothesis is:

Hypothesis 2: the geographic dispersion of a firm, in terms of the number of FDI host countries, is negatively related to its performance.

Still considering the issues that are related to a firm's international market dispersion, the cultural distance, in terms of the differences in behavior, norms and values between countries and the geographical distance in terms of higher entry barriers, contribute to increase the managerial processes' complexity.

According to the Uppsala internationalization theory [14], firms internationalize gradually to countries that are physically close and often with a familiar culture instead of countries that are physically distant and often less familiar countries. Since physical and

psychological distance does not necessarily yield identical results, two hypotheses are proposed:

Hypothesis 3: the physical distance between Brazil and the FDI host country is negatively related to the firm's performance.

Hypothesis 4: the psychical distance between Brazil and the FDI host country is negatively related to the firm's performance.

When focusing on an approach to a firm's specific characteristics that could have influence on performance, three issues arise: (a) the effects of the firm's size, with size viewed as a measure of market power and as a representative of the firm's capacity to attend to costumers demands and to avoid rivals competitive actions; (b) the role played by the firm's capital structure, as a representative of the firm's level of risk averseness, when considering the total debt to the total assets ratio; (c) the effect of the firm's sales growth, as an expression of the firm's expansion and of its capability in making investments that could lead to the improvement of competitive skills. Based on the perspective that these three aspects of organizational characteristics and issues could increase firm's performance, the following hypotheses are proposed:

Hypothesis 5: the size of the firm is positively related to the firm's performance.

Hypothesis 6: the firm's capital structure is positively related to the firm's performance.

Hypothesis 7: the firm's growth rate is positively related to the firm's performance.

Considering that the firms are established in industries, one industry's average performance will have influence on the performance of firms that are components of that industry. This Industrial Organization Theory [15] perspective of the issues that determine firm's performance leads to the next hypothesis:

Hypothesis 8: the industry's average performance is positively related to a firm's individual performance.

After having provided the argumentation lines for the hypotheses from a rather general perspective about the DOI performance relationship, an approach about the adequacy of the above theoretical perspectives to the study of multinational enterprises (MNEs) from emerging market countries, such as Brazil, is presented.

According to Carvalho, Costa and Duysters [16], Brazilian MNEs went beyond their closest markets in South America and pursued targets in North America, Europe, Asia and in particularly China. The cited authors suggested that the internationalization process by Brazilian firms did not follow a pattern, concluding that some firms expanded under a gradual perspective and that other firms did not adopt this strategy. Based on these arguments, the proposed hypotheses could be considered adequate to the internationalization of Brazilian firms' study.

Variables Studied

The performance (PERF) of the firms that were part of the sample under analysis is measured by the operational profit (EBITDA) of a company in relation to its total sales. The firm's degree of internationalization is measured by the proportion of foreign sales compared to its total sales (FSTS) and by the number of foreign countries in which the firm has direct capital investments, representing the geographic dispersion (DISP) of investments.

Another variable that is studied is the physical distance (PHYD) that indicates the average geographical proximity between a firm's home market in Brazil and the host countries of the firm's foreign direct investments. The capital of Brazil, Brasilia, is established as the reference in the home country in order to measure the distance to the countries capitals that comprise the sample. Another measure of internationalization degree that is used in this study is the psychological distance (PSYD), an index that represents the degree to which cultural norms in one country differ from cultural norms in other countries.

As representative of the firms' organizational characteristics that are part of the research sample, the firm's SIZE is measured as the natural logarithm of the number of employees, the degree of leverage (DEBT) is measured as the total debt to total assets ratio. The firms' growth rate (GROW) is measured by the delta of sales in one and the prior year divided by the sales of the previous year and the industry's growth rate (IAGROW) is measured as the average growth rate of firms that are established in a specific industry.

Data Analysis and Results

With the objective of testing the hypotheses that was proposed, this study has focused on some of the 500 Brazilian largest firms, with annual sales above 500 million USD. These firms are responsible for the fast growing Brazilian economy, leading the country to improve its competitive capacity around the world and, consequently, increase the foreign investment of Brazilian firms.

The observation period ranges from the year 2005 until the year 2010 and only firms with information in at least three consecutive years were included in the sample. The final sample includes information from 129 firms in 6 industries and a total of 579 observations.

Considering that an average firm's growth during a determined length of years tends to determine the firm's performance level in each year of a period and that these firms are established in industries and that the industry's characteristics in terms of growth tends to influence the effect of firm's specific growth on performance, a multilevel model was proposed. Next follows the estimated multilevel model, the results' analysis and the considerations about the estimated relationships.

In order to test the time effects on performance and to verify the occurrence of autocorrelation, a model that includes $N-1$ (year) dummy variables for each year at the Level 1 was estimated. Following the method adopted by Short et al. [17], three models were tested with different covariance structures (i. e., unrestricted model, homogeneous level 1 variance and autoregressive model for level 1 variance) and the unrestricted model performs better in terms of fit to the data sample. The model's fit was evaluated by means of test of difference on Deviance. Following, the model estimated is presented.

$$\text{PERF} = \text{Y2005} \times \text{PERF}_1^* + \text{Y2006} \times \text{PERF}_2^* + \text{Y2007} \times \text{PERF}_3^* + \text{Y2008} \times \text{PERF}_4^* + \text{Y2009} \times \text{PERF}_5^* + \text{Y2010} \times \text{PERF}_6^*$$

$$\text{PERF}^* = \pi_0 + \varepsilon$$

$$\pi_0 = \beta_{00} + r_0$$

$$\beta_{00} = \gamma_{000} + \mu_{00}$$

Where:

Y2005 through Y2010 = year dummies; PERF* = estimated firm performance.

As results of the multilevel data processing analysis by means of HLM 6.0® software, parameters were estimated for the three hierarchical models. The models' fit was compared by means of the chi-square test for the deviance criterion and the unrestricted model was identified as the one that allows the study of the relations proposed in the research model previously presented, avoiding the effects of autoregressive relations. Table 1 presents the model's deviance and Table 2 models comparison.

Table 1 – Model's Deviance

	Model	Number of Parameters	Deviance
1	Unrestricted	23	-1,586.24604
2	Homogeneous sigma-squared	4	-1,493.00451
3	First-order Autoregressive	5	-1,524.78530

Table 2 – Model Comparison

Model Comparison	Chi-square	df	p-value
Model 1 versus Model 2	93.24152	19	0.000 **
Model 1 versus Model 3	61.46074	18	0.000 **
Model 2 versus Model 3	31.78078	1	0.000 **

** p < 0.010

The next step was the data processing by means of a fully unconditional null model that does not consider the inclusion of predictor variables at any level of analysis, in order to check for the adequacy of a multilevel perspective to approach the performance variance explanation for each of the three levels of analysis. Next, the equations that represent the null model are presented.

$$\text{PERF} = \pi_0 + \varepsilon$$

$$\pi_0 = \beta_{00} + r_0$$

$$\beta_{00} = \gamma_{000} + \mu_{00}$$

The model's reliability estimated for the first and the second level of analysis (0.900 and 0.689, respectively) allows the analysis of the variance components. In order to check for

the validity of a three level analysis of the factors that determine performance, the intra-class correlation (ICC) was calculated and is presented at Table 3. As one can notice, the significance and the magnitude of the estimated parameters allows a three level model estimation.

Table 3 – ICC analysis for unrestricted null model.

WithinFirms ϵ_{ij}		BetweenFirms r_{0ij}			Between Industries μ_j				
Variance Component	ICC	Variance Component	X^2	p-value	ICC	Variance Component	X^2	p-value	ICC
0.00561	62.057	0.00261	603.123	0.000 **	28.872	0.00082	18.057	0.003 **	9.071

** p < 0.010

The firms' effect on performance was estimated by means of the inclusion, at the first level of analysis, of variables that are representative of the firm's internationalization and of the firm's characteristics – see equations.

$$PERF = \pi_0 + \pi_1(FSTS) + \pi_2(DISP) + \pi_3(PHYD) + \pi_4(PSYD) + \pi_5(GROW) + \pi_6(DEBT) + \pi_7(SIZE) + \epsilon$$

$$\pi_0 = \beta_{00} + r_0$$

$$\pi_1 = \beta_{01}; \pi_2 = \beta_{02}; \pi_3 = \beta_{03}; \pi_4 = \beta_{04}; \pi_5 = \beta_{05}; \pi_6 = \beta_{06}; \pi_7 = \beta_{07}$$

$$\beta_{00} = \gamma_{000} + \mu_{00}$$

$$\beta_{01} = \gamma_{001}; \beta_{02} = \gamma_{002}; \beta_{03} = \gamma_{003}; \beta_{04} = \gamma_{004}; \beta_{05} = \gamma_{005}; \beta_{06} = \gamma_{006}; \beta_{07} = \gamma_{007}$$

The model's estimated reliability for the first and the second level of analysis (0.883 and 0.755, respectively) allows the analysis of the model's estimation results. Following the procedure previously adopted in order to check the validity of a three level analysis, the intra-class correlation (ICC) was calculated and is presented in Table 4. As one can notice, the significance and the magnitude of the estimated parameters allows a three level model estimation and for the test of significance of variance components, by means of variance partition into within-firm (first level), between-firms (second level) and between-industry (third level) components – Table 5.

Table 4 – ICC analysis for research model.

WithinFirms ϵ_{ij}		BetweenFirms r_{0ij}			Between Industries μ_j				
Variance Component	ICC	Variance Component	X ²	p-value	ICC	Variance Component	X ²	p-value	ICC
0.00429	56.522	0.00240	475.954	0.000 **	31.620	0.00090	22.774	0.001 **	11.858

** p < 0.010

Table 5 – Model Fit Comparison – Null Model x Research Model

Deviance		NumberofParameters				AIC	
NullModel (DN)	ResearchModel (DR)	NullModel (DN)	ResearchModel (DR)	DN-DR	p-value	NullModel (DN)	ResearchModel (DR)
-1,493.004	-1,561.423	4	11	68.419	0.000 **	-1,485.004	-1,539.423

** p < 0.010

According to Hypothesis 1, a positive relationship is expected between FSTS and firm performance. As it can be noticed in Table 6, no significant effect was estimated for this relationship (0.024557, $p > 0.050$), leading to the rejection of Hypothesis 1. Hypothesis 2, that presupposes a negative relationship between DISP and firm performance, also was rejected in function of the no significant effect estimated (0.000414, $p > 0.050$).

The negative and no significant effect estimated for the PHYD and firm performance relationship (-0.008946, $p < 0.050$) supports the rejection of Hypothesis 3 and, on the other hand, the positive and significant effect estimated for the PSYD and firm performance (0.042787, $p < 0,010$) does not allow the no rejection of Hypothesis 4, that presupposes a negative relationship between PSYD and firm performance.

Next we turn the focus of analysis to the organizational aspects issues that could contribute to increase the firm's performance and the former proposed hypotheses are approached. According to Hypothesis 5, a positive effect is expected between the size of the firm and its performance. The parameter estimated (0.002307, $p > 0.050$) that represents the relationship under analysis, points out to the rejection of the Hypothesis. According to Hypothesis 6, the firm's capital structure is positively related to firm performance. The negative and significant parameter estimated (-0.096081, $p < 0.010$) directs to the rejection of the referred hypothesis. When the approach is directed to the effects of organizational growth on firm's performance, the Hypothesis 7 is not rejected based on the parameters estimated (0.056230, $p < 0.010$).

Considering that the performance of one firm could be influenced by the average performance of the industry to which it pertains, the Hypothesis 8 was proposed. The figures presented in Table 3 points out to the no rejection of the hypothesis as indicated by the positive and significant parameter estimated (0.116655, $p < 0.050$).

Table 6 – Estimated parameters

Parameters	Coefficient	p-value
π_0 (intercept)	0.116655	0.022 *
π_1 FSTS	0.024557	0.287
π_2 DISP	0.000414	0.528
π_3 PHYD	-0.008946	0.075
π_4 PSYD	0.042787	0.000 **
π_5 GROW	0.056230	0.000 **
π_6 DEBT	-0.096081	0.000 **
π_7 SIZE	0.002307	0.511

* $p < 0.050$; ** $p < 0.010$

The importance of each level of analysis was estimated based on the square root of the variances and the relative importance was measured as the percentage of importance that is related to each level of analysis, following the recommendation of Brush and Bromiley [18]. According to Table 7, the relative importance of level 1 (within-firms) is greater than the relative importance of level 2 (between-firms) and more than twice the relative importance of level 3 (between-industries), results that points out and reinforce the figures previously presented related to the effects of firms' internationalization issues and characteristics.

Table 7 – Relative importance

LevelofAnalysis	VarianceComponents	%	Importance	RelativeImportance
1	0.00429	56.522	0.065	45.331
2	0.00240	31.620	0.049	33.906
3	0.00090	11.858	0.030	20.763
Total	0.00759		0.144	

Based on the results of the data processing analysis that is presented below, despite its choices in terms of degree of internationalization, geographic dispersion of investments, physical distance and size, firms that adopt a strategy of improving business in markets which cultural norms differs from the Brazilian ones, and that in conjunction with these strategic issues presents a positive growth rate and a lower level of leverage will achieve better level of performance.

Conclusions

The current research approaches the theme of internationalization of firms in emerging country and its effect on firms' performance, also considering the effects of industry on performance. The results of the empirical analysis points out the relevant effect of the psychological distance between Brazil and the host country, of firm's financial leverage policy and firm's growth rate over time on performance. Considering that firms are established in industries, the industry average performance was identified as a predictor of the firm's individual performance.

The equilibrium between the effects of factors that are specific to the internationalization of Brazilian companies and the factors that are related to corporate strategy were found. This equilibrium was not identified when the relative importance of

within-firms, between-firms and between-industries levels were analyzed, mainly in reason of an expressive difference between within-firms and between-industries effects.

Finally, the main results of the current research are the identification of a multilevel model that allows the approach of the internationalization factors that influence the performance of Brazilian companies and the identification of strategic factors as the main determinants of the relationship that was studied.

Limitations and Further research

The current research has as limitations those that are inherent to the method utilized in the data processing and the fact that the sample studied was not established in a random process. Another limitation is the number of variables that comprises the research model, mainly those that represent the internationalization issues construct and the characteristics of the firms that were studied.

The authors would like to suggest the development of researches that would consider the influence of macroeconomic factors on the internationalization choices of emerging economies based firms and the effects of FDI host country on internationalization and firms' performance.

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