**UNCTAD's Degree of Internationalization and Its Effect on Subjective and Objective Performance: Evidences from Brazilian TNCs**

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**Summary**

Brazilian Transnational Corporations (BTNCs) have been increasingly engaging in foreign direct investment over the past decade. With that in mind, there is a wide range of strategic choices that BTNCs must undertake when internationalizing in terms of entry modes, degree of ownership, control, centralization, among others. That results in different levels of internationalization. For years, several scholars have attempted to establish a reliable measure of the degree of internationalization. Whereas some rely on a single-item usually based on foreign sales, others propose a multidimensional measure that considers FDI, employment and geographic dispersion, among other indicators. Therefore, this paper aims to assess BTNCs transnationality index based on two different measures: the UNCTAD's transnationality index and a composite index that includes other measures such as number of countries and international experience. The UNCTAD's index considers the average of three dimensions: foreign assets divided by total assets, foreign revenues divided by total revenues and foreign employees divided by total employees. We also assess the impact of the degree of internationalization on both objective and subjective performance. In order to test our hypothesis, we propose a model of internationalization assuming a positive impact of the degree of internationalization on foreign performance. An empirical study was conducted with 41 BTNCs from a population of 71, regarding its international activities in 2008 and 2009. Data was entered and analyzed in the softwares SPSS and Amos using Structural Equation Modeling and Tests of Multivariate Assumptions. Our results show that the more internationalized a firm is, the better it performs overseas. Firms with a higher degree of internationalization were found to be more satisfied with foreign sales, sales growth, profits and market share. Additionally, internationalization leads to a higher percentage of foreign profits over total, and an increase in foreign return on sales. On the other hand, return on assets is not significantly impacted by the transnationality index. Furthermore, we showed that the UNCTAD's transnationality index is more reliable in this context than a construct that also includes other internationalization measures. Thus, firms may see the internationalization strategy as a way to enhance foreign performance. Finally, internationalization increases objective performance and also executive's satisfaction with performance. Yet, the effect of internationalization is stronger on objective measures.

**Keywords:** Internationalization, Subsidiary Performance, Degree of internationalization.

**INTRODUCTION**

Internationalization has long been discussed in the strategic management literature (eg. Dunning, 2000; Johanson and Vahlne, 1977), as a way of diversifying business and creating value. Arguably, transnational companies (TNCs) pursue superior performance when engaging in foreign direct investment (FDI) (eg. Sharma, 1998). However, TNCs have different strategies in terms of entry mode (eg. Kogut and Singh, 1988); location (eg. Goerzen and Beamish, 2003), centralization (eg. Davidson, 1984), and ownership (eg. Hennart and Reddy, 1997). This wide range of strategic choices that TNCs must undertake when internationalizing result in different levels of internationalization. With that in mind, several scholars have attempted to establish a reliable measure of the degree of internationalization. Whereas some rely on a single-item (eg. Geringer, Beamish and da Costa, 1989), usually based on foreign sales, others propose a multidimensional measure (eg. Ietto-Gillies, 1998; Sullivan, 1994; UNCTAD, 1995) that considers FDI, employment and geographic dispersion, among other indicators. Although the choice of an ideal measure seems to depend upon the context studied (Ietto-Gillies, 1998), it is important to assess the internationalization level of firms in order to understand the patterns and effects of global strategies. In Brazil, for instance, TNCs have been increasing FDI[i] over the past decade and performance is claimed to increase accordingly (Loncan and Nique, 2010). Thus, this paper addresses the following questions: do more internationalized TNCs perform better than less internationalized? What is a good measure of the degree of internationalization in the Brazilian context? Does the degree of internationalization impact differently objective and subjective performance? Therefore, this study aims to compare two different measures of internationalization: the UNCTAD's transnationality index and a composite index that includes other measures such as number of countries and international experience. Moreover, we propose and test a model that assumes internationalization to positively impact both foreign objective and subjective performance of firms.

**THEORETICAL BACKGROUND**

**Degree of internationalization**

In the last decades, many studies have been developed to find an ideal way to measure firm's internationalization. The first attempts to quantify internationalization use a single-item approach which usually considers firms' foreign sales (eg. Collins, 1990; Dunning, 1985; Geringer, Beamish and da Costa, 1989; Grant, Jammine & Thomas, 1988). Others assess internationalization by the ratio of foreign assets over total (Ramaswamy, 1993). Hence, the majority of the literature on the degree of internationalization is based on a dichotomy of foreign x total (eg. Davidson, 1984).

Nevertheless, over the past years new approaches to the degree of internationalization have been developed. As a result, different patterns of internationalization, not limited to the financial dimension and not only based on a single criterion (e.g. foreign sales), have gained attention. Lu and Beamish (2004), for instance, assess internationalization by two variables: a firm's number of overseas subsidiaries and the number of countries in which a firm had overseas subsidiaries in a given year.

According to Sullivan (1994) internationalization is a multidimensional phenomenon which has the following attributes: performance (Vernon, 1971), structural (Wells, 1972) and attitudinal (Perlmutter, 1969). Thus, in order to increase reliability of IB studies, multi-items' measures started to be used as means to control the measurement errors and to cover the

different aspects of the process (Dorrenbacher, 2000). Fisch and Oesterle (2003), for instance, propose a broader approach in terms of firms' geographical spread of activities cultural diversity.

Among the emergent studies using composite indicators, we outline three: (1) The DOI (Degree of Internationalization) developed by Sullivan (1994); (2) The UNCTAD's three-dimensional index (1995); (3) and Ietto-Gillies' Transnational Activity Spread Index (1998).

The Degree of Internationalization developed by Sullivan (1994) consists on a linear combination of variables that covers three aspects of internationalization: attitudinal, performance and structural dimensions. The DOI index is composed by the following indicators: the ratio of foreign sales to total sales, foreign assets to total assets, foreign subsidiaries to total subsidiaries, international experience of top managers and physic dispersion of the international operations. For instance Cadogan, Kuivalainen, and Sundqvist (2009) base on Sullivan's geographic diversity dimension to compose their exporters' degree of internationalization. Bobillo, Lopez-Iturriaga, and Tejerina-Gaite (2010) also use elements of the DOI in a study of firm performance and international diversification.

The three-dimensional index developed by UNCTAD was launched in the World Investment Report (1995). It combines three ratios: foreign sales to total sales, foreign assets to total assets, and foreign employment to total employment. The transnationality index averages the tree dimensions in order to balance different types of internationalization among various industries. Tuselmanna, Allenb, Barretta, McDonald (2008) for instance, have employed it to assess the importance of industry internationalization in shaping the strength and nature of the country-of-origin influence in employee relations approaches of US subsidiaries. Although still little explored by scholars, several studies have also considered it to draw an internationalization framework or to build its own measure (eg. Outreville, 2008; Ruzzier, Antoncic and Hisrich, 2007). Furthermore, the UNCTAD's transnationality index has been adopted by business schools in several countries to study internationalization of national companies.

Finally, Ietto-Gillies (1998) developed the Transnational Activity Spread Index, which combines elements of UNCTAD's index with the physic dispersion of the foreign activities, as developed by Sullivan (1994). Ietto-Gillies' approach considers two dimensions (i) the intensity level of internationalization in relation to the overall size of the activity or economy; and (ii) the level of geographical extensity of the international activities. This index has been used for instance, as way to assess the relationship between multinationality and innovation (Frenz, Girardone and Ietto-Gillies, 2005). Yet, regarding internationalization measurement, the author (p.17-18) states: "There is no single way of assessing the degree to which companies, industries or countries are internationalized: it all depends on what patterns and aspects of internationalization we choose to emphasize […]".

Therefore, the measurement choice in this study takes into account the context of relatively young Brazilian multinationals and the inherent difficulties in collecting data with international managers. Thus, the UNCTAD's index is the most feasible of the three approaches, due to its simplicity – the index considers only three dimensions: assets, revenues and employees.

The UNCTAD's transnationality index has been employed in studies of Brazilian Transnational Corporations (TNCs) by Fundação Dom Cabral since 2006 (eg. Ramsey, Barakat, Cruz and Cretoiu, 2010; Ramsey and Barakat, 2009). The research project *Transnationality of Brazilian Companies Ranking* annually assesses the degree of internationalization of Brazilian-owned firms in order to monitor BTNCs' foreign activities and to test hypothesis regarding IB theory.

Thus, among several topics in IB research, some questions have particularly caught attention of this study: Does the internationalization increases BTNC's performance? If so, to what extent? Is the UNCTAD's transnationality index effective in measuring the degree of internationalization of Brazilian TNCs?

Due to the growing involvement of Latin American firms in the global scenario, international business has become a topic of interest in the international business literature in Brazil. For instance, Loncan and Nique (2010) showed that the more internationalized the company (in terms of foreign sales over total sales) the better its performance (returns on assets). However, the author only studied five companies and used a single indicator for each concept. Thus, this study aims to further explore this relationship by surveying a larger sample, testing multidimensional constructs and adding perceptual measures of performance.

**Internationalization and Firm Performance**

Many studies have discussed the effects of internationalization on firm's performance. In fact, through global strategic planning, risk management and focus on unique advantages, MNEs have been increasing return on foreign investment (Dymsza, 1984).

The importance of studying performance of subsidiaries lies in the fact that international firms develop firm specific advantages that may lead to superior returns (Bouquet, Morrison and Birkinshaw, 2009). Therefore, MNEs' strategic choices are detrimental to success. Moreover, Sharma (1998) shows that decisions on entry mode affect post-entry performance of multinationals, which is also influenced by factors such as industry attributes, advertising intensity, and relatedness with the parent firm.

Other studies show that performance is a function of location decisions. Goerzen and Beamish (2003), for instance, argue that the larger the portfolio of international operations, in terms of asset dispersion, the higher MNEs performance. Accordingly, when cultural distance increases, international joint ventures (IJVs) have longer durations and are less likely to end (Park and Ungson, 1997).

Despite little emphasis from scholars, the effect of the degree internationalization on performance has also been studied. Lu and Beamish (2004) showed that internationalization moderates the relationship between geographic diversification and firm performance. The relationship found was non linear, in a way that at high and low levels of internationalization, the extent of geographic diversification was negatively associated with firm performance. Conversely, at moderate levels of internationalization, performance increases as geographic diversity increases.

As several studies in the literature state, internationalization strategies often leads to superior performance (eg. Buch, Kleinert, Lipponer, and Toubal, 2005). Considering that most of international strategies require some level of commitment to foreign markets, we hypothesize that:

*H1: The more internationalized the MNE, the better its foreign performance.*

However, it is important to point out that two firms with similar objective performance may evaluate its success differently. Managers may be more or less satisfied with performance depending on how it compares to expectations (Oliver, 1998) or competitors (Shoham, 1998). For that reason we assess both objective and subjective performance.

**Objective measures of performance**

Objective indicators are represented as numbers or percentages directly found in financial statements, balance sheets or market/sales reports. Recent studies have been using a combination of multi-items (eg. Andersson, Forsgren and Pedersen, 2001). Lel and Miller

4

(2008), for instance, employ measures such as stock price, stock returns, and earnings before interest and taxes (EBIT) to assess performance of international cross-listed companies. Taggart and Taggart (1999) also use sales based measures such as market share and exports growth to show the linkage between exchange-rate stability and performance, as a dimension of firm competitiveness.

Other authors such as Miller and Eden (2006) use return on assets (ROA), that is the ratio of net income to total assets, whereas Makino and Isobe (2003) employ return on sales, which is the ratio of net income to total sales. Bouquet, Morrison and Birkinshaw (2009) also use return on equity. The authors show that the more executives invest time and effort in activities, communications, and discussions to understand the global marketplace, the better the firm performance. Thus, each context requires a different set of the various measures of performance in the literature.

Therefore, our first subset of hypothesis is:

*H1a: The more internationalized the MNE, the better its foreign objective performance.*

**Subjective measures of performance**
Despite numerous ways to objectively measure performance, difficulties in obtaining and dealing with companies' numbers still remain in IB research. First, financial statements are usually confidential and restricted to internal control (Woodcock, Beamish, and Makino, 1994). Lack of objective information is thus responsible for reducing response rate in IB performance empirical work (Wall, Michie, Patterson, Wood, Sheehan, Clegg and West, 2004).

Furthermore, objective measures are not easily comparable, once companies from different industries and sizes may have discrepant values, but not necessarily outperform each other. This argument is especially relevant in emerging markets, where international profit, growth and market share may be meaningless in the short run (Pangarkar, Klein, 2004). Because MNEs have distinguished reasons to entering in foreign markets, its performance should be measured taking into account firm's objectives and expectations. For that reason, Anderson, Forsgren and Pedersen (2001) employ perceptual questions to assess both market and organizational performance, as impacted by technology embeddedness. With that in mind, managers are more encouraged to evaluate performance in a Likert scale than reporting confidential information (Sousa, 2004).

Geringer and Louis (1991) for instance provided empirical evidence that subjective measures are adequate to assess firms' performance. The findings show that objective measures are positively correlated with satisfaction with IJV performance and with perceptions of the performed relative to initial objectives.

Thus, scholars have been increasingly applying subjective measures as a complement to objective measures and also as an alternative to recurrent issues with objective indicators (eg. Brouthers, Brouthers and Werner, 2008; Al-Khalifa and Peterson, 2004; Nielsen, 2007). Hence, combining both objective and subjective measures seems a reasonable choice, as previously used in the literature (eg. Cicic, Patterson and Shoham, 2002; Colton, Roth and Bearden, 2010).

Thus, our second subset of hypothesis is:

*H1b: The more internationalized the MNE, the better its foreign subjective performance*

**METHODS**

In this section we present the methods and procedures used to build the questionnaire, collect data and validate the scales.

**Data Collection**

A set of 71 Brazilian groups that have entered foreign markets via FDI were contacted to participate in the survey. The potential response pool included publically traded companies listed or not on the Bovespa (São Paulo Stock Exchange) and private limited companies (Ltda.). International managers were asked to fill out a 3-page questionnaire regarding their international activities in 2008 and 2009. Thus, 44 companies replied, being 41 valid (57.7% response rate). The three not valid questionnaires belonged to either only exporters or companies that could not provide the financial data needed. After receiving the questionnaires, the data was verified in public sources to warrant its authenticity. Note that the study considered groups instead of individual business since decision making is centralized in the holding company, which deliberates international strategies to all controlled units. Therefore, the information regards to the groups' consolidated numbers and locations.

**Sample Profile**

From the 41 groups that participated in the study, 90% were private-owned as opposed to state-owned. Respondent firms belonged to various industries: manufacturing (51%), services (44%) and natural resources (5%). Additionally, companies are relatively young in foreign markets: 20% opened the first international subsidiary before 1980, 10% started between 1981 and 1990, 29% started between 1991 and 2000, and 32% made the first FDI after 2001. Information from two years of 41 groups accounted for 82 data points in the final dataset analyzed.

**Measurement**

The proposed model has three constructs: *degree of internationalization* as the predictor of both foreign *objective performance* and *subjective performance.*

To measure *degree of internationalization*, we applied the UNCTAD methodology, which considers three indexes: foreign sales over total sales, foreign assets over total assets and foreign employees over total employees. The indexes achieved good reliability, with 0.77 Cronbach's Alpha. As discussed above, using a multidimensional index balances the different ways of internationalizing since we have groups from different industries. In general, companies from the services sector have a large number of employees abroad but relatively low amount of assets. On the other hand, companies from the manufacturing sector can aggregate high revenues abroad, without necessarily having an enormous number of employees. Furthermore, inspired by other studies of the degree of internationalization (eg. Ietto-Gillies, 1998; Sullivan, 1994) alternative items such as number of countries and international experience were added to the construct, in order to compare models. The first item was measured by the number of countries (Sundaram and Black, 1992) that firms had FDI in 2009. From an organizational learning perspective (eg. Hennart & Reddy, 1997) international experience was measured by the number of years since the first international subsidiary has been established.

To measure foreign *objective performance*, we used three indicators. The first was Ebtida index, which is the proportion of foreign Ebtida as compared to total Ebtida. The second measure was foreign return on sales (ROS), which is calculated by the ratio of foreign profit (Ebtida) over foreign sales. ROS is commonly employed to assess firm's operational

efficiency and has been applied in international business studies (Geringer, Beamish & da Costa, 1989; Daniels & Bracker, 1989). The third measure was foreign return on assets (ROA), which is calculated by the ratio of foreign profit (Ebtida) over assets. This indicator has also been used in the literature (eg. Rugman, Yipw and Jayaratnez 2008; Loncan and Nique, 2010) as a measure of investment efficiency. Using indexes instead of the absolute numbers allows us to assess relative foreign performance and compare companies from different industries and sizes. The construct however showed low reliability, with Cronbach's alpha of 0.54. Nevertheless, we decided to proceed with the tests in order to keep a minimum of three indicators per construct (Kline, 2005).

To measure *subjective performance*, three indicators were used based on the studies of Al-Khalifa and Peterson (2004). According to this approach, firms assess performance based on four elements: sales, sales growth, profit and market share. Thus, firms were asked to rate its satisfaction with each of these measures of performance on a five-point Likert scale. The dimensions were proved to be unidimensional by factorial analysis and reliable (Cronbach's alphas was 0.78).

## RESULTS

In order to test the proposed model, we used Structural Equation Modeling in the software Amos. This procedure involves simultaneously testing relationships between one or more independent variable and one or more dependent variable. Thus, the method combines exploratory factor analysis with multiple regression analysis (Tabachnick and Fidel, 2001).

The first step was to verify convergent validity. This procedure consisted in testing the significance of the items' factor loadings (confirmatory factorial analysis) in a model that assumes constructs to covary and not to causally affect each other (Kline, 2005). Subsequently, discriminant validity was achieved once correlations among pairs of constructs were less than unity, and correlations among items were larger than correlations among traits (Bagozzi, 1993). Finally, nomological validity was verified by testing the predicting power of exogenous constructs on endogenous constructs. This procedure involves fixing variances at unity in order to assess the path coefficients (Anderson and Gerbing, 1988). Furthermore, we discuss models' fit and compare two different models (Balla and Donald, 1988).

### Descriptive analysis

This section presents descriptive statistics and correlation analysis of the variables in this study. The following table shows means, standard deviations and bivariate correlations between the moderator, independent and dependent variables.

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### Structural Equation Modeling

Two models were tested in order to compare scales used and to find the best fitting structure. The first model used the three indexes of UNCTAD (ratios of revenues, assets and employees) as the internationalization measure. Each of the performance constructs had three items as presented in the methods section. Results of model 1 are shown in the next figure:

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Insert Figure 1 about here
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7

Convergent validity was achieved for most of the items in model 1. The three UNCTAD indexes are significant (0.1% level) and have high factor loadings, all above 0.80. Additionally, all items of subjective performance are significant, though the sales based (sales and sales growth) reflect subjective performance more precisely than market share and profits. Moreover, from the three items of objective performance, only Ebtida index is significant at 1% level. Foreign ROS slightly reflects objective performance and is significant only at 5% level. Foreign ROA is not significant at all.

Furthermore, transnationality index was found to have a stronger impact on objective performance ($p<0.001$) than subjective performance ($p<0.05$). As a result, transnationality index explains 43.4% of the variance of objective performance ($R^2$) and only 7.2% of subjective performance. Once objective performance is measured mainly by a ratio of foreign over total (Ebtida index), it is possible that firms that have a large proportion of its revenues, assets and employees out of borders, also have a great percentage of its profit abroad. The positive signs of the other objective performance items show that internationalization indeed brings financial returns to companies, though it's still modest. Perhaps that is why satisfaction with performance does not increase as much as objective, when firms become more internationalized. Still, the positive sign and the 5% significance of the relationship between transnationality index and subjective performance points out to the eminent importance of internationalization on firm's results.

Model 1 achieved good measures of fit, most of them close to the standards recommended in the literature. The goodness of fit (GFI) was 0.86 and the adjusted goodness of fit (AGFI) was 0.76. Both these measures indicate that the data fits well to the model (Tabachnick and Fidel, 2001). Taking into account the degree of parsimony, the PGFI index was 0.52. This shows that there might be too many parameters to be estimated, considering a small sample. Furthermore, residual based fit indices such as RMR and RMSEA were 0.02 and 0.12 respectively. It is important to note that the RMSEA is not completely adequate in small samples (Hu and Bentler, 1999) and thus should be interpreted with caution.

In an attempt to test alternative measures of internationalization, we added two items to the transnationality index construct: number of countries and international experience. The results of model 2 are shown in the next figure.

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As figure 2 shows, number of countries is significant as an indicator of transnationality index, though it has a much lower loading than the UNCATD's items. On the other hand, international experience does not share the same concept of transnationality when combined with revenues, assets and employees indexes. Despite being not significant, interestingly international experience has a negative sign, indicating that more transnationalized Brazilian companies may also be beginners in international markets. Indeed, Sucheta, Herrmann, and Perez (2010) argue that even companies that have just started global expansion process may achieve what the authors call an "early international performance".

In addition, the five-item construct has extremely low reliability, with Cronbach's alpha of 0.02, which invalidates this scale. This result provides evidence that, in this context, UNCTAD's transnationality index is a better approach to the degree of internationalization than the five-item construct tested. Thus, adding other indicators such as number of countries and international experience does not add internal consistency or explanatory power to the transnationality index.

It is interesting to note that when we add the two other internationalization items in model 2, transnationality index showed no significant impact on satisfaction (subjective performance). We may infer that companies in international markets for long periods and in many countries are not more satisfied with foreign performance than beginners, whereas companies that have a great percentage of revenues, assets and employees abroad tend to be more satisfied.

Despite achieving relatively similar measures of fit, model 2 is inferior to model 1. The goodness of fit (GFI) was 0.85, the adjusted goodness of fit (AGFI) was 0.77 and the PGFI was 0.57. However, this model showed poor fitting measures on residual based indices such as RMR (0.44) and RMSEA (0.10).

## DISCUSSION

This study attempted to test two different measures of internationalization and to further assess the effect of the degree of internationalization on both objective and subjective performance. Our purpose was to contrast both types of performance measures, assessing which is more affected by the firms' internationalization and to what extent. We also tested the effectiveness of additional measures of internationalization in an attempt to compare the three-item UNCTAD index to alternative approaches.

From a survey with 41 Brazilian multinational groups and information of two years of international activities, we were able to propose and test a model using Structural Equation Modeling.

Our results show that the more internationalized a firm is, the better it performs overseas. Firms with a higher degree of internationalization were found to be more satisfied with foreign sales, sales growth, profits and market share. Additionally, internationalization leads to a higher percentage of foreign profits over total, and an increase in foreign return on sales. On the other hand, return on assets is not significantly impacted by the transnationality index.

The three indicators of UNCTAD (foreign revenues/total revenues, foreign assets/total assets and foreign employees/total employees) are more effective in predicting the degree of internationalization in this context than adding other measures such as the number of countries and international experience. International experience is not a significant indicator of the degree of internationalization. Surprisingly, it has a negative sign, indicating that more transnationalized Brazilian companies may also be beginners in international markets. This finding is consistent with the sample profile, in which the top internationalized company, JBS-Friboi (food industry), established the first international subsidiary only five years ago. Thus, international experience does not seem to be detrimental for a company to be considered much internationalized.

Furthermore, the proportion of foreign employees over total employees was found to have a slightly stronger impact on the transnationality index, than the other measures. Although the degree of internationalization impacts objective performance to a higher extant than subjective performance, the positive sign and 5% of significance shows that firms may be more satisfied with foreign performance as their foreign assets, revenues and employees increases. Thus, firms in initial stages of internationalization might have little of its performance accounted by foreign activities and might have low satisfaction rates. As the commitment with foreign markets increase, especially in terms of assets, revenues and employees, the percentage of foreign profits tend to increase, as compared to total profits.

This study has important implications to both theory and executives. First, it shows that the UNCTAD transnationality index is more reliable in the context of Brazilian firms than using additional measures. Second, it provides empirical evidence that the more revenues, assets and employees a BTNC has across borders, as a proportion of total

9

operations, the better its foreign performance. Thus, firms may see the internationalization strategy as a way to enhance foreign performance. Finally, internationalization increases objective performance and also executive's satisfaction with performance. Yet, the effect of internationalization is stronger on objective measures.

Nevertheless, it is important to note several limitations of this study. The main one regards the small sample size. Although 41 firms can be considered fairly representative of the Brazilian TNCs, the sample is still small for achieving good fit indexes and explanatory power in the structural equation modeling. Furthermore, we were only able to collect information about two years of international activities. Once this is an ongoing project, we plan to increase our sample and obtain information of at least three years in order to test the relationships on a longitudinal sample. Also, since the study was built based on a survey with Brazilian TNCs, researchers should be cautious when generalizing to other countries. We thus suggest that this study be expanded to other countries as a way to attest the representativeness of the results.

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**Table 1**- Descriptive statistics

| | Mean | s.d | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Revenues index | 0,20 | 0,20 | | | | | | | | | | | |
| 2. Assets index | 0,15 | 0,17 | 0,62** | | | | | | | | | | |
| 3. Employees index | 0,16 | 0,18 | 0,65** | 0,74** | | | | | | | | | |
| 4. Ebtida index | 0,14 | 0,15 | 0,66** | 0,38** | 0,38** | | | | | | | | |
| 5. Foreign return on sales (ROS) | 0,03 | 0,19 | 0,18 | 0,11 | 0,18 | 0,27* | | | | | | | |
| 6. Foreign return on assets (ROA) | 0,06 | 0,39 | -0,03 | 0,01 | 0,02 | 0,13 | 0,37** | | | | | | |
| 7. Satisfaction with Sales | 3,27 | 1,04 | 0,15 | 0,15 | 0,06 | 0,10 | 0,21 | -0,01 | | | | | |
| 8. Satisfaction with sales growth | 3,00 | 1,21 | 0,13 | 0,15 | -0,03 | 0,19 | 0,25* | 0,17 | 0,56** | | | | |
| 9. Satisfaction with profits | 2,92 | 0,92 | 0,04 | 0,17 | 0,09 | 0,16 | 0,16 | 0,02 | 0,46** | 0,42** | | | |
| 10. Satisfaction with market share | 3,21 | 0,95 | 0,26* | 0,31* | 0,30* | 0,24* | 0,33* | 0,07 | 0,49** | 0,49** | 0,38** | | |
| 11. International experience | 18,57 | 14,05 | 0,09 | -0,06 | -0,09 | 0,03 | 0,14 | -0,07 | 0,08 | 0,14 | 0,02 | 0,02 | |
| 12. Number of countries | 8,76 | 7,81 | 0,14 | 0,29* | 0,24* | 0,02 | -0,09 | -0,09 | 0,00 | 0,21 | 0,02 | 0,06 | 0,01 |

Source: Research data

OBS: ***Beta is significant at 0.1% level; **Beta is significant at 1% level; *Beta is significant at 5% level; †Beta is significant at 10% level.

**Figure 1** – Model 1 – UNCTAD's transnationality index and objective and subjective performance
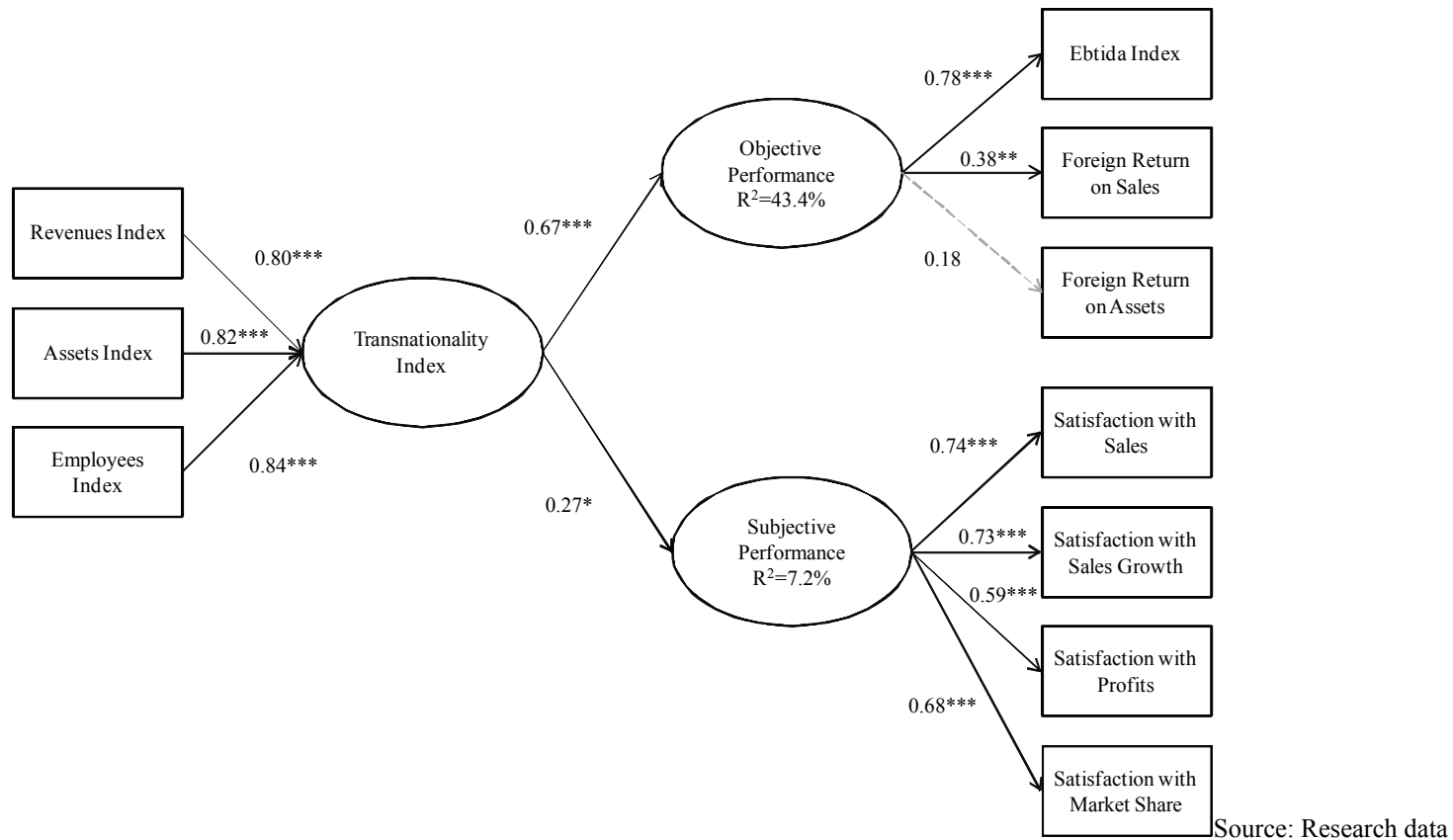


OBS: ***Beta is significant at 0.1% level; **Beta is significant at 1% level; *Beta is significant at 5% level; †Beta is significant at 10% level.

**Figure 2** – Model 2 – Alternative transnationality index and objective and subjective performance
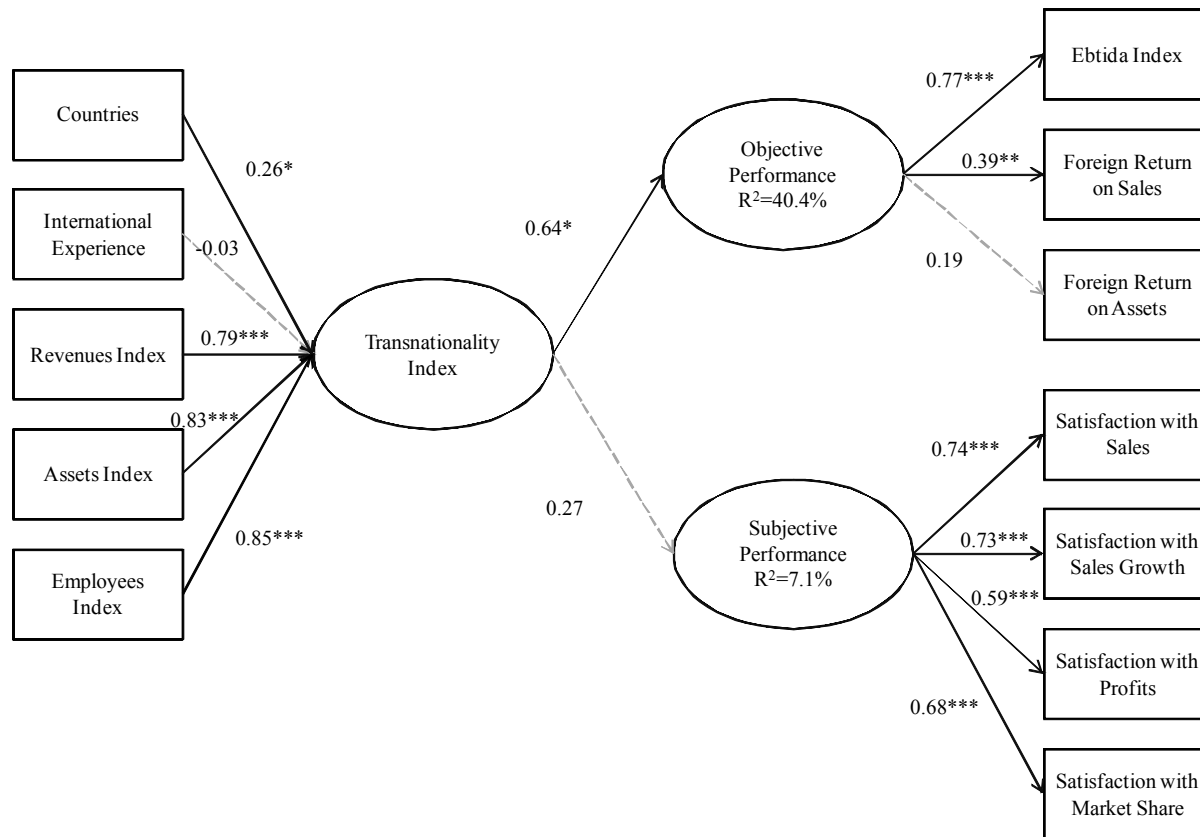
Source: Research data

OBS: ***Beta is significant at 0.1% level; **Beta is significant at 1% level; *Beta is significant at 5% level; †Beta is significant at 10% level.

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[i] Balance of Payments. Central Bank of Brazil.