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Moderator Effect of Innovation Ambidexterity on the Relationship between Internationalization and Performance in Brazilian and European Companies*

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Abstract

Objective: To analyze the moderating effect of innovation on the relationship between internationalization and financial performance.

Method: The sample comprises 1,840 observations listed in Brasil, Bolsa, Balcão (B3), and NYSE Euronext from 2014 to 2018. The hypotheses were tested using the generalized method of moments (GMM) for panel data.

Results: Estimates indicate that the degree of internationalization alone does not assure high financial performance in Brazilian companies, while in European companies, it influences the return on assets (ROA) negatively. Moreover, in both contexts, the individual moderating effect of the two innovation variables, exploration (R&D) and exploitation (Capex), could not be identified. However, a positive and significant effect of ambidextrous innovation activities in the relationship between internationalization and financial performance was verified. Evidence of the effect of internationalization on financial performance in both Brazilian and European companies is confirmed when enhanced by the simultaneous engagement of innovation activities.

Contributions: This study contributes to a recent investigative line, which verifies the effect of intervening variables in the internationalization-performance relationship. It contributes to analyzing this relationship in companies from emerging markets, and much needed research focus to better understand business opportunities in adverse institutional conditions and seize them.

Keywords: Internationalization; Financial performance; Innovation ambidexterity.

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1. Introduction

Internationalization is broadly defined as the geographical expansion of a company's operations from which benefits are obtained, i.e., economies of scale and scope and cost reduction. Internationalization occurs under different strategies and stages such as exports, partnerships, or acquisition of new resources/assets and, as they are supported or enhanced by investments in strategic intangible assets (Andrade & Galina, 2013; Muzychenko & Liesch, 2015). These same assets may also be engendered with internationalization and are decisive for achieving superior economic performance (Buckley & Casson, 1998; Tang, Tang, & Su, 2019), as they contribute to a positive relationship between internationalization and performance.

However, internationalization is also subject to various risks which affect business performance negatively and so, the literature reveals multiple results for this relationship: positive significant linear (Jain, Celo, & Kumar, 2019; Sun, Price, & Ding, 2019), negative (Chen & Tan, 2012; Lin, Liu, & Cheng, 2011), not significant (Hejazi & Santor, 2010), nonlinear significant ("U" curve) (Brida, Driha, Ramón-Rodriguez, Ramón-Rodriguez, & Such-Devesa, 2016; Miller, Lavie & Delios, 2016; Sun et al., 2019), inverted "U" curve (Chen & Hsu, 2010; Tang et al., 2019), and curvilinear in the form of a horizontal "S" (Contractor, Kundu, & Hsu, 2003; Lu & Beamish, 2004; Rugman & Oh, 2010). Such divergence from research results has led to analyses of the influence of internationalization on the performance of companies considering the moderating effect of specific aspects (Bausch & Krist, 2007; Li, 2007;), i.e., intangible resources and capabilities (Annavarjula, Beldona, & Sadrieh, 2006; Kotabe, Srinivasan, & Aulakh, 2002; Lu & Beamish, 2001; Thomas & Eden, 2004).

Specifically, innovation and innovation-related capabilities enable the development and maintenance of competitive advantages due to value creation and organizational adaptation, both essential in entering foreign markets (Baregheh, Rowley, & Sambrook, 2009; Gajewski & Tchorek, 2017; Lev, 2001). Furthermore, as a result of these capabilities, innovation is hypothesized to influence the internationalization process, supporting the idea that the greater the commitment to foreign markets, the greater the contribution of innovation to international performance (Albuquerque Filho, Freire, De Luca & Vasconcelos, 2020; Karrer & Fleck, 2015).

In the analysis of innovation activities in companies, two categories are usually considered: (i) exploration and (ii) exploitation (de Isogawa, Nishikawa Ohashi, 2015; March, 1991). Exploration refers to radical, revolutionary innovation which involves risk, experimentation, flexibility, discovery, systematically uncertain returns; it also implies new technological sources and new products and processes that often demand more planning time, besides the likely negative returns (Frezatti, Souza Bido, & Cruz, 2015). Exploitation, on the other hand, encompasses incremental innovation with incremental changes in products and processes; it involves the selection, implementation, execution, refinement, and expansion of skills, technologies, efficiency, and positive, rapid, and plausible returns (Kim, Kim, Sawng, & Lim, 2018).

Balancing exploitation and exploration activities generates a capability known as ambidexterity, the ability to match current skills, resources, and capabilities to new ones – a synergy that amplifies the effects of innovation on performance (Zhang et al., 2019, Cao, Gedajlovic, & Zhang, 2009; Gupta, Smith, & Shalley, 2006). Thus, it is assumed that ambidexterity, while a capability, may strongly influence firm survival and, consequently, the positive relationship between internationalization and financial performance (Lin et al., 2013; Pertusa-Ortega, Tarí, Pereira-Moliner, & López-Gamero, 2021).

Moreover, the relationship between internationalization and business performance is contingent to the economic environment of a company's home country. Companies headquartered in developed economies show a more robust effect regarding the "internationalization-performance" relationship than companies based in emerging economies (Kirca, Roth, Hult, & Cavusgil, 2012; Mathews, 2006). One of the main reasons for this is that companies based in developed economies may face more significant pressures for dividends derived from internationalization. Therefore, they are more likely to have access to abundant resources and institutions, which may effectively boost their international expansion (Kirca et al., 2012; Wan, 2005).

In predictable institutional settings, companies have more access to advanced technologies and experience adequate protection of intellectual property, both of which may help preserve competitive advantages based on differentiation (Jain et al., 2019; Mathews, 2006; Wan, 2005). Moreover, as these companies display higher levels of innovation, they should be able to attain better advantages from transferring and exploiting innovation-related assets and, thus, achieve higher performance in foreign markets when compared to companies based in emerging economies (Kirca et al., 2012; Ubeda-Garcia, Rienda, Zaragoza-Saez, & Andreu-Guerrero, 2021).

While internationalization strategies of emerging markets' companies may vary significantly from those based in developed countries (Gaur & Kumar 2010), there is evidence that international expansion can have a stronger impact on the performance of companies from developed countries (Kirca et al., 2012). This can be attributed to the fact that companies in developed countries have greater advantages of innovative capacity as a result of supply of infrastructure, financial resources, accumulation of capital and human resources, as well as stronger political, legal, and social institutions benefiting their international expansion; companies from emerging countries are generally known for displaying weaker institutions, intractable economic and political scenarios, and often small domestic markets for world class products, and arriving later at international markets (Andrade & Galina, 2013; Kirca et al., 2012).

Considering intangibles as sources of competitive advantage, and that innovation in developing countries occurs differently than in developed countries, the following research question was crafted: **what is the influence of innovation on the relationship between internationalization and corporate financial performance in Brazil (a major developing country), and in European countries?** Hence, this research aims to analyze the moderating effect of innovation on the relationship between internationalization and financial performance in Brazilian and European companies. For this purpose, it is considered innovation as innovation ambidexterity.

The study offers both theoretical and practical contributions: it adds to a recent investigative line, which verifies the effect of intervening variables in the internationalization-performance relationship (Andrade & Galina, 2013; Bausch & Krist, 2007; Jain et al., 2019); it contributes to innovation ambidexterity literature; it contributes to the analysis of this relationship in companies from emerging markets, a much and still needed research focus as a way of gaining a better understanding of business opportunities in adverse institutional conditions and how to seize them (Chang, 2007; Contractor, Kumar, & Kundu, 2007; Thomas, 2006); moreover, it answers the call from researchers, e.g., Andrade and Galina (2013), Luo and Tung (2007) and Mathews (2006), once it verifies distinct behavior between companies based in countries displaying different institutional settings. Finally, this research may subsidize managers by summarizing the effects of innovation on performance, which may reflect in the prioritization of international resources and strategies.

In suggesting a moderation of innovation ambidexterity effect on the relationship between internationalization and performance, this research may clarify and further contribute to a better understanding of the latter relationship, producing a more detailed account of it and potentially reducing such differences in results. Few firms are ambidextrous in their approaches to innovation once the process of attaining innovation ambidexterity is fraught with serious challenges (Dunlap et al., 2016). Moreover, a comparative study involving both developed economies and a large emerging economy (in this case) should also reveal if and how this relationship alters depending on the institutional settings, thus providing further understanding of the "whys" and "hows" of companies' innovation strategies in different international markets and how they affect the relationship.

2. Literature Review

2.1 Internationalization and financial performance

Internationalization is a geographical expansion of a company's operations into other countries motivated by business opportunities and further growth through access to new markets, resources, and strategic assets (Ipsmiller & Dikova, 2021). It suggests the existence of a positive relationship between internationalization and performance (Brida et al., 2016; Chen & Hsu, 2010; Chen & Tan, 2012; Gaur & Kumar, 2009; Hejazi & Santor, 2010; Jain et al., 2019; Lin et al., 2011; Miller et al., 2016; Sun et al., 2019; Tang et al., 2019). The magnitude of this relationship, however, is mainly subject to institutional factors of a foreign country but susceptibly greater on the performance of companies headquartered in developed economies than companies based in emerging economies (Albuquerque Filho et al., 2020; Ipsmiller & Dikova, 2021; Kirca et al., 2012).

The effect of internationalization on the performance of companies based in developed and emerging economies can be different. It is explained in different ways. Firstly, companies based in emerging economies generally have lower labor costs, do not engage in knowledge-intensive activities, and do not hold a knowledge base for international expansion (Amsden & Hikino, 1994; Andrade e Galina, 2013). Second, emerging economies often display weaker institutions (Khanna & Rivkin, 2001; Peng, 2003; Peng & Parente, 2012). Third, developed economies generally present more stable economic and political scenarios when compared to emerging economies (Peng, 2003; Mathews, 2006), which influences internationalization since generated returns could be higher in higher-risk economies (Rugman, 1976). Fourth, often the domestic market of emerging economies may be too narrow to offer scale and further competitive advantage (Khanna & Rivkin, 2001).

Following the remarks of Hitt et al. (2006) and Makino and Cols (2004), the magnitude of the relationship between internationalization and performance is subject to institutional and other specific factors related to the host country; furthermore, international expansion has a stronger impact on the performance of companies from developed countries than on companies from emerging countries (Kirca et al., 2012).

In well-developed institutional contexts, companies are better equipped with advanced technology and strong intellectual property protection that helps safeguard their competitive advantages (Wan, 2005). In addition, companies from developed economies show higher levels of company-specific assets, enabling them to transfer and exploit these assets more efficiently and reflect on better performance in international markets compared to companies from emerging economies (Jain et al., 2019; Tang et al., 2019).

Once internationalization provides access to new markets and influence financial performance positively, contingent to the market selected by the company, the following hypotheses are proposed:

H1: Internationalization influences the financial performance of Brazilian companies positively.
H2: Internationalization influences the financial performance of European companies positively.
H3: Internationalization influences the financial performance of Brazilian companies differently in comparison to European companies.

2.2 Explorative and exploitative innovation activities, organizational ambidexterity, and financial performance

As part of successful competitive strategies, innovation has been recognized as a critical element for organizational survival and competitiveness (Dess & Picken, 2000). For example, it is argued that companies that use more advanced technologies are likely to be more efficient in using their resources (Block & Keller, 2015).

Innovation is associated with intangible assets (Lev, 2001). It is also a driver of competitive advantage in diverse technological, social, and marketing settings (Conto, Antunes Jr. & Vaccaro, 2016). In consequence, it helps companies set barriers against competitive threats and attract preferences.

Among several perspectives on innovation, this study addresses the activities of both incremental and radical innovation drawn from March's pioneering study (1991) on innovation activities, i.e., exploration and exploitation. Exploration and exploitation innovations are "essentially different learning activities, among which they compete with the company's attention and scarce resources" (March, 1991, p. 71).

The combination of these two types of activity defines the ambidextrous organizational structure (also called organizational ambidexterity) for innovation management (Yoshikuni, Favaretto, Albertin, & Meirelles, 2018). Ambidexterity assumes that the achievement of strategic objectives requires an optimal distribution of resources in two seemingly conflicting demands: adaptability (exploration) and alignment (exploitation) (Severgnini, Galdamez, & Vieira, 2019).

Organizational ambidexterity may be visualized from a perspective of commitment to the demands of competitiveness. Although it has been shown that ambidexterity-focused organizations tend to perform better in the market (Gilsing & Nooteboom, 2006; Popadiuk & Bido, 2016), contributions aimed at understanding how the simultaneous involvement of explorative and exploitative innovation may explain a company's performance are still needed.

2.3 Innovation, internationalization, and financial performance

The literature proposes that company-level characteristics are essential factors that explain how internationalization relates to performance. Initiated by Hymer (1976), this perspective recognizes a company's specific advantage as a driving vector of internationalization, which was then refined by Dunning (1988) when examining different types of production inputs leading to the company's growth. Later, resource-based view (RBV) scholars characterized unique strategic resources as key determinants of market success.

RBV reinforces the perspectives developed by Hymer (1976) and Dunning (1988), internalization theory, and the Eclectic Paradigm (OLI model), respectively, which provide the theoretical bases to explain a company's international operations. According to these approaches, a firm's operations become internationalized when markets are internalized across national boundaries due to transaction costs, providing them with advantages of ownership and knowledge. This specific advantage then enables companies with a high degree of internationalization to convert research and development (R&D) into a new form of production at lower costs compared to domestic competitors due to economies of scale, in addition to reducing communication costs between R&D, production, and marketing (Bae, Park, & Wang, 2008).

Still, regarding innovation, R&D investments are a widely diffused indicator of innovation efforts in organizations (Nekhili, Boubaker, & Lakhal, 2012). For example, according to Cohen e Levinthal (1990), R&D intensity specifies that the efforts to generate new information and knowledge are motivating factors for technology advancement. On the other hand, according to Bae et al. (2008), areas in which productivity requires more significant value aggregation are more likely to invest substantially in R&D in search for innovation.

Innovation is a vital component of a strategy to attain competitive advantage: not only it enables value generation for consumers in terms of differentiated product/service attributes, but also in terms of lower prices combined with desired quality attributes as a result of innovative business processes, supporting competitive advantage both in domestic and in foreign markets (Brito, Brito, & Morganti, 2009; Oyadomari, Mendonça, Cardoso, & Dultra-de-Lima, 2013, Bedford et al., 2021).

Moreover, innovative companies stand out compared to non-innovative ones in environments marked by industrial and environmental cyclical pressures (Gunday, Ulusoy, Kilic, & Alpkan, 2011). Concerning business resources, institutions, competition, and legal environment in adverse international contexts, innovation contributes to optimizing a company's organizational structure as a function of value creation and organizational adaptation (Baregheh et al., 2009).

In this research, innovation is considered both as exploration and exploitation activities (March, 1991). Cao, Gedajlovic, and Zhang (2009) and Gupta, Smith, and Shalley (2006) emphasize that the synergy between these two types of activity would amplify the effects on performance. More than that, the combination of innovation activities (organizational ambidexterity) may produce different and complementary effects, thus, improving results.

Theoretically, exploration would increase performance if, and only if, exploitation is fully achieved. Therefore, excessive concentration on alignment, refinement, and efficiency (exploitation) generates an imbalance that can lead to organizational stagnation, impacting the company's ability to adapt to environmental changes (external markets) and, consequently, limiting long-term financial results (Levinthal & March, 1993). Alternatively, focusing excessively on adaptation to environmental pressures is too costly, time-consuming, and leads to more significant risks, weakening short-term performance (Karrer & Fleck, 2015).

Thus, capabilities, resources, and innovation contribute to the internationalization process of companies and, consequently, to their performance. Kowalik, Danik, and Sikora (2020) demonstrated that specialized marketing capabilities promote the expansion of the internationalization level of companies, while Ruzzier and Ruzzier (2015) have signaled that company's procedures, routines, and capabilities are positively correlated with its degree of internationalization. Lamotte and Colovic (2015) and Pergelova, Manolova, Ganeva, and Yordanova (2019) showed that internationalization is associated with technological infrastructure and R&D, while Rehman (2017) and Gajewski and Tchorek (2017) highlights productivity and innovation, respectively, as indispensable to internationalization.

Ambidexterity is of high value to a company once it enables advantages of balance and congruence, resulting in more effective performance (He & Wong, 2004; Yoshikuni et al., 2018). Exploitation is significant for achieving financial performance in the short run, thus, increasing the company's investment capacity in explorative innovation. Accordingly, exploration enables the company to generate new revenue streams (exploitation), contributing to long-term advantages (Karrer & Fleck, 2015). The authors pointed out the necessity to analyze explorative and exploitative innovation separately and their combined effects on organizational performance (Ceptureanu et al., 2021). The author demonstrated the positive influence of innovation ambidexterity on organizational performance.

From the above, it may be concluded that ambidexterity is an ideal and exceptional capability, since it provides advantages of balance and congruence, substantiating a more effective performance (Severgnini, Galdamez & Vieira, 2019). Furthermore, innovation exploitation is important for achieving financial performance in the short term, which helps to increase the company's investment capacity in exploration innovation. In the same direction, exploration innovation allows generating new revenue streams (innovation exploitation), from which new profits are obtained and long-term survival expected (Karrer & Fleck, 2015).

Therefore, considering that innovation can generate future benefits for the company and contribute to superior financial performance, it is proposed that:

H4: In Brazilian companies, innovation positively moderates the relationship between internationalization and financial performance.
H5: In European companies, innovation positively moderates the relationship between internationalization and financial performance.
H6: In European companies, the determining function of the influence of innovation in the relationship between internationalization and financial performance presents a higher angular coefficient than Brazilian companies.

Based on the study's hypotheses, the proposed relationship between the constructs of internationalization, innovation, and financial performance are demonstrated and grounded in the following model (figure 1).

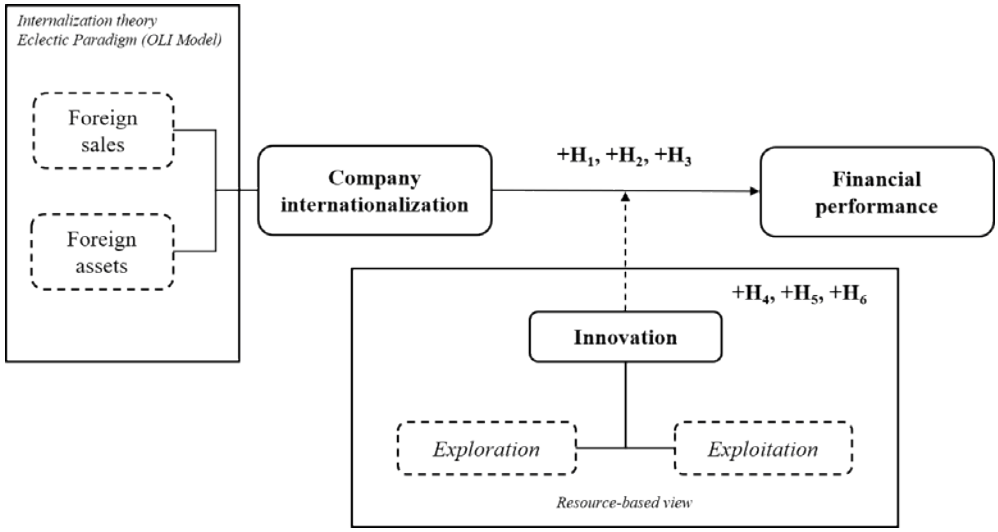

Figure 1. Operational model

Based on figure 1, company operations become international as crucial activities in the foreign market are internalized. It occurs when advantages of ownership and knowledge are envisioned. Therefore, internationalization is considered to affect its financial performance positively. However, success in internationalization will increasingly depend on creating competitive advantages based on technological innovation (Lamotte & Colovic, 2015; Stal, 2010). Under RBV, Internalization Theory and the OLI model, the dynamics of entry modes into a foreign market and the development of capabilities during the internationalization process are driven by the company's specific resources, i.e., innovation, in the creation of a sustainable competitive differential and further superior performance in international markets (Fahy, 2002; Ubeda-Garcia et al., 2021).

3. Methodology

For this study, a population of non-financial companies was considered 68 Brazilian companies (340 observations) listed in B3, and 300 companies from Europe, based in Belgium, France, Netherlands, Ireland, Luxembourg, Portugal, and United Kingdom (1500 observations) listed in NYSE Euronext. Data were collected from the Capital IQ® database making up an unbalanced panel and refer to the 2014-2018 period. Instead of limiting the sample to Brazilian companies, European companies were included so as to analyze whether innovation activities of companies located in countries with divergent economic and institutional environments affect internationalization and financial performance. Several studies indicate that this may be the case (Kirca et al., 2012; Schulze et al., 2016; Albuquerque Filho et al., 2020).

Recent empirical studies have used accounting-based measures as a proxy for performance (Jain, Celo, & Kumar, 2019; Sun et al., 2019). A possible argument has to do with financial indicators commonly analyzed by internal managers, which are essential in the verification of business risks. Thus, corporate performance here was represented by ROA, that is, the ratio of a company's net income and total assets. Therefore, the variable ROA was selected as the dependent variable, similarly to previous studies, i.e., Chen and Hsu (2010), Chen and Tan (2012), Contractor et al. (2003), Gaur and Kumar (2009) and Li (2007).

Independent variables encompass internationalization and innovation that were obtained through the Capital IQ® database. First, internationalization was measured as a composite index, operationalized by the ratio of external sales to total sales (INTER1) and the ratio of external assets to total assets (INTER2). Then, an index identified as the degree of internationalization (DI) was formed from these variables, corresponding to the average of INTER1 and INTER2. Such a procedure yields more robust results due to a lower prediction error and greater validity as a construct in the internationalization-performance relationship (Annavarjula et al., 2006).

Regarding innovation, radical innovation (exploration) and incremental innovation (exploitation) are independent variables and moderators in the internationalization-performance relationship. Based on previous studies, it is argued that exploration and exploitation activities enhance each other's effects (Bernal, Maicas, & Vargas, 2018; Gupta et al., 2006). In this line, a balance between exploration and exploitation is expected to achieve better performance and competitive advantage (March, 1991). As a proxy for exploration, the value of R&D investments was used, whereas for exploitation, the value of capital expenditures (CAPEX) was used, obtained by the quotient between the value of capital expenditures and total assets (Bedford et al., 2021, Cui et al., 2021;Kim, 2015; Younge & Tong, 2018,).

Following March's (1991) categories, R&D investment falls under exploration because it entails activities focused on discovery and creation aiming at rupture, implicating high risks. Meanwhile, CAPEX corresponds to exploitation as it is more product and process-oriented, aiming to refine and expand skills, technology, and efficiency. CAPEX demands a large volume of resources, involving dense and non-recurring investments (Dudley, 2012). In addition, capital goods are relevant for generating further innovation and productivity gains.

As for R&D investments as a measure of innovation, several studies recommend as a proxy for technological intensity due to its association with the innovation potential of organizations; moreover, R&D investments are often used to measure an organization's innovation capacity (Thomas & Eden, 2004; Younge & Tong, 2018). Regarding capex investments, Massell's (1962) studies showed that the prominent historical growth of the United States was the result of the acquisition and adoption of more sophisticated production technologies such as new machines and equipment. Ghosal and Nair-Reichert (2007) and Kim (2015) identified that companies' adoption of new technologies was related to their increase in productivity, competitiveness, and innovation.

Similarly to the literature, this study adopted the following control variables: product diversification (DIVERS), measured with the Herfindahl Index (Kumar, 2009; Tang et al., 2018); company size (SIZE), represented by the natural logarithm of the value of total assets (Chen & Tan, 2012; Sun et al., 2019); the age of the company (AGE), obtained by the number of years since its foundation (Tang et al., 2018); leverage, as the quotient of the total debt value and the total equity value (LEVE) (Chen & Tan, 2012; Reuer & Miller, 1997); growth (GROW), obtained through the annual change in the company's net revenue in period t in relation to t – 1 (Hejazi & Santor, 2010); risk (RISK), corresponding to the quotient between the total debt value and the total asset value (Hejazi & Santor, 2010).

Statistical tests were conducted with the aid of the software Data Analysis and Statistical Software (STATA). The empirical regression models for the panel data analysis used to test the hypotheses are presented in Equations 1 and 2:

$$ROA_{i,} = \alpha_i + \beta 1ROA_{it-1} + \beta 2DI_{it} + \beta_{3\text{-}5}\sum CONTRit, + \eta_i + \omega_t + \upsilon_{it} \quad \text{(Equation 1)}$$

$$ROA_{i,} = \alpha_i + \beta 1ROA_{t-1} + \beta 2DI_{it} * INOV + \beta_{3\text{-}8}\sum CONTRit, + \eta_i + \omega_t + \upsilon_{it} \quad \text{(Equation 2)}$$

In which:

- ROA = Return on assets (company performance measure);
- DI = Expresses de degree of internationalization represented by the arithmetic mean between external sales in relation to total sales and the quotient between external assets in relation to total assets;
- INOV = Corresponds to exploration (R&D), exploitation (CAPEX) and the interaction of radical innovation (R&D) with incremental innovation (CAPEX);
- CONTR*ij* = Represents the control variables of the econometric model associated with company i in the t period, represented by product diversification (DIVERS), size (SIZE), age (AGE), leverage (LEVE), growth (GROW) and risk (RISK);
- β = model coefficients;
- *i* = company;
- *t* = time;
- η = Specific effect of the company (non-observed heterogeneity);
- ω = Time component (*dummies* for year);
- υ = Error

The estimation of parameters of the regressive models was obtained through the System Generalized Method of Moments (GMM-Sys), which provides greater robustness of estimation in the presence of endogeneity and serial autocorrelation from the use of sequentially exogenous instrumental variables (Roodman, 2009).

The bias of endogeneity could explain the divergent results regarding the relationship between internationalization and performance (Bowen, 2007; Jean et al., 2016; Reeb, Sakakibara and Ishtiaq, 2012). Furthermore, the Sis-GMM can mitigate sources of endogeneity: unobserved heterogeneity, dynamic endogeneity, and reverse causality.

Unobserved heterogeneity relates to variables that are difficult to measure or not directly observed, influencing both dependent and independent variables. A company's competitiveness, managerial capabilities, and technology monitoring applied to the internationalization process are examples of unobserved heterogeneity (Himmellberg, Hubbard & Palia, 1999; Jean et al., 2016). Thus, if sources of endogeneity are neglected, the econometric model may suffer from the omitted variable bias (Bowen & Wiersema, 2009). Estimates of panel regressions, such as Fixed Effects (EF) and GMM, control unobserved heterogeneity, unlike Ordinary Least Squares Method (OLS), applied in cross-sectional data (Coles, Lemmon, & Meschke, 2012).

Dynamic endogeneity arises when the dependent variable is affected by its unbalanced values. Studies indicate that the company's performance is affected by its first lag, requiring the use of dynamic models to investigate the relationship between internationalization and performance variables (Jean et al., 2016). The FE estimator does not allow the inclusion of lags of the dependent variable in the model since it is based on the assumption of strict exogeneity of regressors, unlike the GMM estimator models (Wintoki, Linck, & Netter, 2012).

Reverse causality, in turn, is presented when the dependent variable is affected, but it also influences one or more regressors simultaneously (Roberts & Whited, 2013). Some studies have shown that performance and internationalization are jointly determined, emphasizing the importance of treating the latter as endogenous (Hejazi & Santor, 2010). Alternatives to control concurrency include identifying external instruments for endogenous variables and using the Two-Stage Least Squares (2ELE) estimator. However, finding valid external instruments is a difficult task, and the Sis-GMM estimator can deal with reverse causality by selecting valid internal instruments for endogenous variables and using dynamic models (Wintoki, Linck & Netter, 2012).

Thus, Sonza and Kloeckner (2014, p. 327), based on Arellano and Bover (1995), point out that "the set of instruments available in the GMM-Sys estimator is larger and allows more accurate estimates". In GMM-Sys, the instruments are temporally lagging making them exogenous to fixed effects, being, therefore, a combination of transformations into first differences with transformations in levels, resulting in a system of equations. (Roodman, 2009). Hence, the choice on GMM is appropriate since it deals with endogeneity and for being robust for heteroscedasticity, as well as for satisfying the distributional premises (Wooldridge, 2001).

Thus, the independent variables are instrumentalized: in the level-set equation, by the second, third, and fourth lags of the variables in differences; and, in the equation in differences, by the second lag of the level-set variables (because the other lags are redundant) (Roodman, 2009). The number of lags used for the instrument proliferation is limited, and so, hansen's test tend to accept the hypothesis that the instruments are valid (Roodman, 2009). In addition, the econometric evidence pointed out in the literature converges for lags between two and five lags, to the extent that the application of broader lags may present unwanted effects of over-fitting (Medeiros & Mol, 2017).

4. Results

Table 1 shows descriptive statistics and the correlation matrix of dependent and independent variables. It is noted that the average value of external sales (INTER1), of external assets (INTER 2), and DI of European companies are higher than those of Brazilian companies. At the same time, exploration (R&D) and exploitation (CAPEX) activities are more recurrent and higher in European companies. This result may indicate higher financial performance (ROA) for European companies.

Table 1
Correlation Matrix

Brazilian Companies								
Variable	N	$\bar{x}$	σ	1	2	3	4	5
1. INTER 1	275	0,274	0,259					
2. INTER 2	275	0,234	0,213	0,445**				
3. DI	275	0,167	0,176	0,921**	0,764**			
4. R&D	340	0.809	1,921	0,150*	0,064	0,181**		
5. CAPEX	340	3,005	2,389	0,415**	0,454**	0,451**	0,510**	
6. ROA	340	0,300	4,277	-0,300	-0,096	-0,090	-0,017	-0,060
European Companies								
Variável	N	$\bar{x}$	σ	1	2	3	4	5
1. INTER 1	1349	0,551	0.303					
2. INTER 2	1349	0,429	0.299	0,568**				
3. DI	1349	0,342	0.215	0,810**	0,872**			
4. P&D	1384	1,013	0.052	0,114**	0,144**	0,043		
5. CAPEX	1384	3,347	2.843	0,259**	0,331**	0,270**	-0,110**	
6. ROA	1500	0,418	0.307	0,007	-0,012	0,032	-0,148**	0,281**

* and ** denote statistical significance at the 1% and 5% and levels, respectively.

Source: Study's data.

Moreover, a negative and statistically significant correlation between exploration (R&D) and financial performance (ROA), but a positive and significant correlation with the exploitative innovation activities (CAPEX) of European companies were verified; this, however, was not identified for Brazilian companies. In contrast, external sales (INTER1), external assets (INTER 2), and DI did not show significant correlations with financial performance (ROA). As the correlation matrix signals a possible presence of multicollinearity, a Variance Inflation Factors test (VIF) was performed, displaying acceptable values (1.07 to 1.67) (Neter, Kutner, Nachtsheim, & Wasserman, 1996).

Table 2

Innovation moderation in the relationship between internationalization and financial performance in Brazilian companies

Variable	Model 1	Model 2	Model 3	Model 4
ROA_{t-1}	0,0013	0,1384**	0,1323***	0,1344***
	(0,78)	(1,96)	(1,83)	(1,88)
DI	**-0,0452**			
	(-1,48)			
DI x *Exploration*		**-0,0001**		
		(-0,71)		
DI x *Exploitation*			**0,0250**	
			(0,02)	
DI x *Ambidexterity*				**0,0048****
				(2,26)
SIZE	0,0005	0,0072	0,0056	0,0077
	(0,89)	(1,29)	(0,97)	(1,44)
GROW	0,0000	-0,0000	0,0000	0,0000
	(0,99)	(1,24)	(1,33)	(1,22)
DIVERS	0,1490	-0,0260	-0,0278	0,0182
	(-0,051)	(-0,16)	(-0,18)	(0,11)
RISK	-0,1153*	-0,0919**	-0,0965**	-0,0954**
	(-1,94)	(-2,25)	(-2,36)	(-2,31)
LEVE	-0,0005	0,0015	-0,0012	0,0014
	(-0,71)	(1,15)	(1,06)	(1,09)
AGE	-0,0001	-0,0004	-0,0003	-0,0004
	(-1,03)	(-1,23)	(-0,94)	(-1,34)
_constant	0,0696	Omitted	Omitted	Omitted
	(0,85)	-	-	-
Time fixed effects	Yes	Yes	Yes	Yes
Company fixed effects	Yes	Yes	Yes	Yes
Number of observations	272	272	272	272
Number of instruments	67	67	67	67
Moderator	-	P&D	CAPEX/AT	(P&D x CAPEX/AT)
Wald Chi2	19,65***	67,25*	64,64*	72,59*
Hansen's J Test	58,33	62,01	59,80	62,95
Arellano-Bond AR(1)	-1,74***	-2,27**	-2,19**	-2,26**
Arellano-Bond AR(2)	0,26	-0,31	-0,34	-0,32

*, ** and *** denote statistical significance at the 1%, 5% and 10% levels respectively.

Source: Study's data.

As shown in Table 2, residual autocorrelation tests (Arellano & Bond, 1991) do not reject the hypothesis of autocorrelation absence of second-order residuals, indicating that the instruments are exogenous. In turn, Hansen's J test (instrument validation) legitimized all estimates considering a significance level of 10%, thus reinforcing the instruments' exogeneity and evidencing validity of the GMM system instruments.

Also, in Brazilian companies, the variable ROAt-1, which corresponds to the first lag of the response variable and mediates the persistence of financial performance, presented statistical significance at 5% in model 2 and 10% in models 3 and 4. The positive coefficient obtained in models 2, 3, and 4 shows that the firm's financial performance in t-1 contributes to forming the firm's financial performance in t. This result strengthens the importance of using dynamic models in business studies and international strategies, showing that static specifications are subject to the omission bias of relevant variables.

Results of model 1 indicate that DI alone does not influence financial performance in Brazilian companies (sig. > 10%), which leads to the rejection of H1. However, the control variables included in the model only risk (RISK) were significant but negatively associated with financial performance. Hence, higher risks tend to decrease financial performance in Brazilian companies.

Models 2 and 3 were estimated to verify the individual moderating effects of exploration and exploitation activities in the DI of Brazilian companies. In model 2, it is observed that the effect of exploration with DI did not show statistical significance on financial performance; similarly, in model 3, it is observed that the interaction of exploitation with DI was not statistically significant. However, it is emphasized that in both models, the variable risk negatively affects the financial performance of Brazilian companies.

Regarding the effect of the interaction between exploration and exploitation with DI specified by model 4, the positive and significant coefficient (coef. 0.0048, sig. < 0.05) indicates that the interaction of constructs (DI-ambidexterity) affects financial performance in Brazilian companies, confirming the fourth hypothesis (H4). In other words, each additional unit of DI-ambidexterity interaction increases financial performance each year, ceteris paribus. Thus, the higher the levels of investment in capital goods and the greater the intensity of R&D investment in Brazilian companies combined, the higher their degree of internationalization, ultimately implicating superior financial performance.

Table 3 shows the regression results for the moderation effect of innovation on the relationship between internationalization and financial performance in European companies. Based on Table 3, the adequacy of models 1 and 4 regarding the assumptions of the GMM-Sys denotes the robustness of the estimates. The autocorrelation tests of the AR residues of Arellano and Bond (1991) for the first-order autocorrelation of residuals rejected the null hypothesis of the absence of serial correlation. However, they did not reject it for the second-order autocorrelation. Furthermore, the p-values of Hansen's J test for overidentification in models 1 and 4 did not reject the null hypothesis of validity of the instruments in both specifications. On the other hand, models 2 and 3, which present the interaction of exploration (R&D) and exploitation (CAPEX), were not validated to the assumptions of the GMM-Sys since they were also not statistically significant.

The coefficients of the first lag of the dependent variable (ROAt-1) were statistically significant and lower than 1 in all models. In other words, the positive estimates sustain that financial performance in European companies in *t-1* better contributes to the composition of their financial performance in *t*.

Table 3

Moderation of innovation in the relationship between internationalization and financial performance of European companies

Variable	Model 1	Model 2	Model 3	Model 4
ROA_{t-1}	0,3325**	0,0972*	0,0959*	0,1344***
	(2,47)	(3,48)	(3,93)	(1,88)
DI	**-0,4233*** **			
	(-1,68)			
DI x *Exploration*		**0,0001**		
		(0,83)		
DI x *Exploitation*			**0,2297**	
			(0,17)	
DI x *Ambidexterity*				**0,0050****
				(2,02)
SIZE	0,0399	0,0397	0,0413	0,0469**
	(1,46)	(1,01)	(0,97)	(2,04)
GROW	0,0000	0,0000**	0,0000	0,0000
	(1,08)	(2,37)	(1,18)	(0,72)
DIVERS	-32,521	-54,119**	-46,720	-9,0349
	(-0,61)	(-2,06)	(-1,13)	(-0,61)
RISK	-0,0081	-0,0048	-0,0140	0,0043
	(-0,40)	(-0,22)	(-0,58)	(0,38)
LEVE	0,0008	-0,0009	-0,0011	-0,0005
	(0,42)	(-0,52)	(-0,80)	(-0,75)
AGE	0,0255	-0,0451	-0,0517	-0,0037
	(0,85)	(1,11)	(0,99)	(-0,16)
constant	-0,1982	*Omitted*	-0,4434	-0,0059
	(-1,29)	-	(-3,11)	(-0,05)
Time fixed effects	Yes	Yes	Yes	Yes
Company fixed effects	Yes	Yes	Yes	Yes
Number of observations	1158	1158	1158	1158
Number of Instruments	67	67	67	67
Moderator	-	P&D	CAPEX/AT	(P&D x CAPEX/AT)
Wald Chi2	39,04*	95,60*	113,19*	72,59*
Hansen's J Test	32,11	43,69	58,91	58,91
Arellano-Bond AR(1)	-2,20***	0,65	-0,69	-2,22**
Arellano-Bond AR(2)	-1,55	-1,22	-1,22	-1,12

*, ** and *** denote statistical significance at the 1%, 5% and 10% levels, respectively.

Source: Study's data.

As for the degree of internationalization (DI) of European companies, as shown in model 1, it is observed that this construct was statistically significant at 10%. The negative coefficient recorded by this variable indicates that in European companies, internationalization contributes negatively to financial performance when independently analyzed. More specifically, ceteris paribus, with the increase of each unit of internationalization, the financial performance of European companies plummets, thus, leading to a rejection of H2.

In addition, also regarding model 1, there is a statistically significant influence of the variables growth and diversification of products on financial performance. The higher the growth and the lower the diversification of products in European companies, the higher their financial performance.

It is also inferred, through Table 3, that the interaction between exploration and exploitation with DI was positive (coef. 0.0050) and statistically significant at 5%, confirming H5. Thus, it is noted that the moderating effect of innovation's ambidexterity at the degree of internationalization increases the prominence of higher financial performance. More precisely, with each unit increase in innovation activities (exploration and exploitation) in European companies, better internationalization, *ceteris paribus*, and consequently better financial performance.

Based on the results shown herein, hypotheses H3 and H6 may also be confirmed. Once the internationalization on financial performance effect was not significant for Brazilian companies. On the other hand, it was negative and statistically significant for European companies. In addition, it was found that the angular coefficient of the models regarding the interaction between DI ambidexterity in European companies (coef. 0.0050) was higher than in Brazilian companies (0.0048).

Table 4 summarizes the results of the hypotheses. H1 to H3 refer to the hypotheses established for the direct relationship between internationalization and financial performance, while H4 to H6 refer to the moderating effect of innovation in the relationship between internationalization and financial performance.

Table 4

Summary of results and analyses vis-à-vis research hypotheses

Hypothesis	Description	Results	Significance
H1	Internationalization influences the financial performance of Brazilian companies positively	Does not influence	Rejected
H2	Internationalization influences the financial performance of European companies positively	Negative influence	Rejected
H3	Internationalization influences the financial performance of Brazilian companies differently in comparison to European companies	-	Not rejected
H4	In Brazilian companies, innovation positively moderates the relationship between internationalization and financial performance	Positive influence	Not rejected
H5	In European companies, innovation positively moderates the relationship between internationalization and financial performance	Positive influence	Not rejected
H6	In European companies, the determining function of the influence of innovation in the relationship between internationalization and financial performance presents a higher angular coefficient than Brazilian companies	Positive influence	Not rejected

Source: Study's data.

H1 and H2 were rejected for not corroborating the relationship established in this study (Table 4). H3 was not rejected as a non-significant relationship was inferred for Brazilian companies and a significant negative relationship for European companies. H4, H5, and H6 were also not rejected, as shown by GMM regressions.

5. Discussion

This study contributes to the literature by examining how firms appropriate value from innovation ambidexterity in their internalization process. For this purpose, it was analyzed the moderating effect of innovation ambidexterity on the relationship between internationalization and financial performance in emerging economies compared to developed economies. Regarding the Brazilian companies, results showed that the level of internationalization alone was not statistically significant, and therefore does not confer influence on financial performance. Therefore, it cannot be affirmed that Brazilian companies with higher degrees of internationalization tend to have higher financial performance than those with a lower degree of internationalization. Similar results in the national literature were found by Marcos, Nascimento, Nez, and Kroenke (2018), while in respect to the scenario of emerging economies, they are consistent with the findings of Chen and Hsu (2010), Pattnaik and Elango (2009) and Tang et al. (2018), which also did not detect a significant linear relationship between the constructs. On the other hand, these results contradict the findings of Chang and Rhee (2011), who analyzed a sample of Korean companies, of Chen and Tan (2012), who analyzed Chinese companies, of Gaur and Kumar (2009), who studied Indian companies, and Loncan and Nique (2010) and Silva and Boaventura (2011), who analyzed samples of Brazilian companies.

Although multinational companies based in emerging economies have gained more prominence in the global market (Stal, 2010), there are economic and institutional obstacles (Khanna & Rivkin, 2001; Kirca et al., 2012; Mathews, 2006) that end up interfering in their internationalization. In the Brazilian scenario, several reasons may justify the nonexistent relationship between the degree of internationalization and financial performance: geographical isolation, which favors only internationalization with Mercosur partners, communication issues (language), and the adverse effects of psychic distance, which impairs the internationalization process (Stal, 2010), precisely the difficulty of overcoming cultural differences, economic, geographical, regulatory, legal, and, mainly, ethical and business practice issues (Campbell, Eden & Miller, 2012).

In Brazilian companies, the results evidenced by the models that consider individual influences of exploration and exploitation activities as moderating variables of the degree of internationalization were not statistically significant. Therefore, no evidence may be inferred about its subsequent impact on financial performance.

Alternatively, among Brazilian companies, the effect of innovation ambidexterity in DI denotes that the balance between innovation activities moderates positively and significantly DI with subsequent impacts on financial performance. In other words, the higher the level of investment in capital goods and the greater the intensity of R&D investment in Brazilian companies combined, the higher the level of internationalization and further financial performance.

In the European scenario, results revealed that, individually, the DI was statistically significant, affecting financial performance negatively; for European companies, the higher the level of internationalization, the worse the financial performance. Negative relationships in samples from developed economies were also found by Siddharthan and Lall (1982). In turn, these findings differ from those observed by Brida et al. (2016) and Rugman and Oh (2010), which identified a nonlinear relationship between constructs in the Spanish and American contexts, respectively.

It is reasonable to assume that, although European companies largely have competitive advantages over their rivals – generally acquired through advanced technology or market preference – results may be due to growth stagnation, mainly since they are located in small markets, insufficient to absorb any production increase (Bartlett, Ghoshal, & Birkinshaw, 2004). In addition, culture also interferes with the internationalization of European companies due to resource constraints and the legislation and taste of consumers from other countries (Ipsmiller & Dikova, 2021). In this case, when entering new markets, marginal costs inherent to internationalization eventually outweigh the marginal benefits wielding a negative impact on performance (Li, 2007), and so, competitive differentials capable of leveraging their degree of internationalization until they yield positive results are necessary.

Moreover, similarly to Brazilian companies, exploration and exploitation activities in European companies, taken individually as moderating variables of the relationship between internationalization and financial performance, were not statistically significant, so it is assumed that they do not impact financial performance. In turn, the relationship between DI and ambidexterity and performance in European companies has proved positive and statistically significant. That is, the greater the balance between investment in capital goods and R&D investment in European companies, the higher the level of internationalization and, consequently, the better the financial performance.

Based on the results of the regression models and following the RBV, organizational competence and idiosyncrasy are variables of distinction between companies (Barney, 1991). Thus, innovation functions as an intervening variable contributing to raising the degree of internationalization in Brazil and Europe companies'. This result reinforces the assumptions of the Internalization Theory and the OLI model regarding the need for strategic resources to expand into new markets and achieve better performance. Hence, as punctuated by Heavey and Simsek (2017) and Levinthal and March (1993), an excessive focus on exploitation innovation activities may lead the company to a suboptimal equilibrium state, while the concentration on innovation exploration activities may lead to high costs of experimentation, of ideas to be developed, and fewer skills (Karrer & Fleck, 2015). This, in turn, ends up not favoring internationalization, corroborating the results here presented.

Some studies explain the relevance of technological and innovation resources and capabilities for internationalization. For example, Lamotte and Colovic (2015), demonstrated that information technology infrastructure is associated with early internationalization. Pergelova et al. (2019) pointed out that digital technologies positively affect the internationalization, and that this relationship is moderated by R&D. Rehman (2017), accordingly, found that the productivity of a company relates to export sales, while innovation contributes to the process of internationalization as, more innovative companies evidenced greater export orientation (Gajewski & Tchorek, 2017).

The simultaneous engagement of these two types of activities requires different organizational structures, strategies and contexts, as exploitation innovation considers the short term while exploration innovation envisions the long term (Karrer & Fleck, 2015). Results confirm a need to analyze not only explorative and exploitative innovation separately, but also their combined effects on organizational performance (Ceptureanu et al., 2021). They evidence a positive influence of innovation ambidexterity in the relation between internationalization and financial performance. It confirms prior studies regarding the synergy between these two types of activity would amplify the effects on performance (Ceptureanu et al., 2021, Zhang et al., 2019, Cao, Gedajlovic, & Zhang, 2009; Gupta, Smith, & Shalley, 2006).

Central to this investigation is that capital investment enables a company to innovate through R&D investment, and this, in turn, allows it to create crucial competitive advantages to enter and compete in international markets. Similarly, by internationalizing, the company can acquire new technologies and increase its R&D level as a way to overcome market pressures, especially in international markets. From there, it starts to increase performance. Therefore, achieving a balance between both innovation activities becomes relevant for profitability (March, 1991). Thus, the results of this study corroborate Junni, Sarala, Taras, and Tarba (2013) and Karrer and Fleck (2015) regarding the importance of balancing innovation activities in promoting higher gains, especially in foreign markets.

Moreover, the economic and institutional aspects of the country of origin (location, context, and culture) can influence the internationalization process of companies (Ipsmiller & Dikova, 2021). In emerging economies, i.e., Brazil, companies may use innovation as a strategy to strengthen their level of internationalization and, from there, apply internationalization as a catalyst to acquire resources such as new technologies and strategic assets, which are paramount to compete with global rivals, in addition to helping overcome the economic and institutional constraints of other countries (Luo & Tung, 2007). In European companies, innovation can help them overcome the legitimacy challenges, market constraint, and resource dependence in order to achieve successful internationalization, and this surely impact their financial performance (Ipsmiller & Dikova, 2021).

Overall, it should be noted that the company should invest in technology and R&D to add value to its products and achieve greater productivity for its internationalization efforts (Loncan & Nique, 2010).

6. Final Remarks

Results found here show that a company's unique capabilities are vital under conditions of great dynamism and market uncertainty, enabling them to obtain competitive advantages in foreign markets. This research enabled to verify the effects of innovation ambidexterity in different countries with different economic environments since internationalization alone may not impact a company's financial performance, which may happen due to the conditions of its country of origin. The country of origin image can be a relevant strategic tool, expressing an intangible component: it may influence different decisions related to the country, such as travel, investments, and acquisition of products, besides being visualized as a characteristic that affects the willingness of the consumer to pay more.

Based on the results presented, there is a need for specific resources, such as innovation, but specifically, innovation ambidexterity, which is capable of yielding improvements in products, processes, and management guidelines as means for the company's expansion into the international market, thus, contributing to the improvement of its performance with a view to continuity. Exploitation acts as an important resource for achieving financial performance in the short term, which helps increase the company's investment capacity in exploration. In the same direction, exploration makes it possible to generate new revenue streams (exploitation), generating new profits and ensure long-term survival. Therefore, this research advances studies regarding the internationalization-performance relationship by identifying the ambidexterity of innovation activities as an additional factor that interferes in this relationship. It innovates by investigating the relationship between constructs in companies from different economic and institutional contexts.

Another implication of this study concerns management practice. Since a company's insertion into international markets generates several costs and benefits do not arise spontaneously, managers of both Brazilian and European companies can mitigate or even overcome weaknesses by investing in capabilities, knowledge, and know-how that necessary to support R&D investments until their innovative capacity is able to mitigate the costs of internalization in international markets.

From an analytical perspective, the results of the regression models allow concluding that the company, regardless of the economic and institutional scenario in which it is inserted, needs strategic intangible resources to boost its expansion into foreign markets, considering that transaction costs are lower than those of internalization in an international context, and that the latter, in turn, is mitigated by the company's innovative capacity, as advocated in this study. Thus, RBV strengthens the Theory of Internalization and the OLI Theory, showing that innovation positively moderates the relationship between internationalization and financial performance.

Despite the methodological rigor undertaken and the relevant findings, the following limitations should be acknowledged in this study: only one emerging economy for comparison with a group of developed countries; the use of one measure for financial performance and two variables for internationalization, in addition to the time frame, which comprised five years. Thus, for future research, it is suggested: i) expansion of the sample, providing comparison grounds with other emerging and developed economies; (ii) use of additional representative measures of business performance and internationalization. Finally, future studies should investigate other factors that will moderate the relationship between internationalization and financial performance.

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