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Proximity as a Mediator: Examining the Impact of Subnational Institutional Distance on Multinational Subsidiaries' Performance

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1 INTRODUCTION

Institutional Distance (ID) is a fundamental concept in International Business (IB) research, capturing differences in regulatory, cognitive, and normative institutions between countries. These differences significantly impact Multinational Enterprises (MNEs) operations and strategic decisions. ID has been a central argument in IB studies, challenging the strategic premises of MNEs entering new markets, particularly in emerging economies (Monaghan et al., 2020; Röell et al., 2022; Zhang & De Beule, 2024). Typically, IB scholars have focused on national-level ID, examining how MNEs manage differences between countries while often overlooking specific locational factors at the sub-national (within-country) level (Kostova et al., 2020; Miller & Eden, 2006; Zaheer & Mosakowski, 1997).

Despite extensive research on national ID, there needs to be more understanding of the complexities within countries, especially in emerging markets with significant regional disparities. This gap is critical in large emerging economies where regional disparities pose unique challenges and opportunities for MNEs.

This study investigates how spatial proximity mediates the relationship between subnational institutional distance and the performance of multinational subsidiaries in Brazil. Specifically, it aims to understand how proximity mitigates the negative impacts of subnational identification on MNE performance.

Understanding subnational heterogeneity is essential for MNEs to strategize effectively in emerging markets. This study changes from the concept of ID at the national level to consider its regional or local dimensions, proposing the idea of subnational ID to capture local differences and perceptions of Liability of Foreignness (LOF).

This study provides a nuanced perspective on managing subnational institutional complexities by integrating IB theory with economic geography. The findings are relevant for academic research and practical applications, offering insights for MNEs operating in diverse subnational environments.

In this study, we attempt to show that while the selection of target markets can be understood as the MNE's strategic responses for organizing its value-adding processes on a global level, its subnational, within-country choice reflects its concerns related to managing this context in terms of transforming its location project into a process for managing its Liability of Foreignness (LOF) or the ID faced at the country level (Cruz et al., 2022). In other words, the decision on subnational location is a critical dimension in the MNE's strategy for positioning itself in a cultural and institutional environment different from its home country and should, therefore, significantly influence its performance in the region.

This subnational perspective considers several premises. First, the assumption that there is no homogeneity within a country's national borders (Beugelsdijk & Mudambi, 2013; Hutzschenreuter et al., 2020; Yao et al., 2023). Second, subnational-level decision-making is related to the characteristics of the industry, the choice of subnational location, and the entry mode (Hutzschenreuter et al., 2020). Third, subnational regions are seen as peripheral regions but have the potential to engage with global networks and possess low-cost resources and cheaper labor costs (Mudambi & Santangelo, 2016). Additionally, MNEs do not merely seek to locate their subsidiaries in a subnational space but also attempt to benefit from proximity-based advantages such as knowledge, market management, and utilization of available resources (Monaghan et al., 2020; Pavlínek, 2022). Thus, local conditions are linked to firms' location and proximity density, which are significantly linked to the performance of foreign subsidiaries (Hsu et al., 2017).

We expect to make three contributions to the literature. (i) Empirical evidence: We provide empirical evidence of subnational effects on performance, assuming that emerging markets are heterogeneous within national borders and that subnational characteristics influence MNE strategies and performance. (ii) Theoretical integration: We adopt a holistic approach that allows for the inclusion of other subnational configurational contingencies (Boschma, 2005; Speldekamp et al., 2020) that could explain MNEs' investment choices in regions with knowledge-intensive industrial environments (Li & Bathelt, 2018). (iii) Strategic insights: This paper provides a fine-grained examination of the role of regional proximity resources as a valuable source of incentives for MNEs in projecting strategies for managing subnational ID in emerging markets and presents an agenda for future research.

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2. THEORETICAL FOUNDATION AND HYPOTHESES

2.1 Introduction to Institutional Distance and Location Theories

Institutional distance (ID) is a fundamental concept in IB research, introduced by Kostova (1999) and further developed by Kostova and Zaheer (1999). It refers to the differences in regulatory, cognitive, and normative institutions between countries, which significantly impact MNE strategies and performance. A higher ID makes it more challenging to transfer home-country practices to subsidiaries, necessitating adaptive strategies to manage these differences (Zaheer & Nachum, 2011).

Historically, research has focused on national-level ID, examining how country-specific institutional environments influence Foreign Direct Investment (FDI) and MNE strategies (Jain et al., 2016). This focus revealed that greater institutional distances can increase transaction costs, complicate regulatory compliance, and hinder the transfer of managerial practices. Kostova (1999) categorized these institutional differences into regulatory, cognitive, and normative dimensions, each presenting unique challenges that required customized strategies for MNEs.

Kostova and Zaheer (1999) further explained that a higher ID makes it more difficult to transfer home-country practices to subsidiaries, a crucial aspect for maintaining organizational coherence and competitive advantage. Significant ID often leads to misalignments and conflicts, necessitating adaptive strategies. Zaheer and Nachum (2011) stressed that MNEs must strike a balance between global integration and local responsiveness to effectively manage ID, using local knowledge and resources to overcome these challenges. However, this national perspective often overlooks the complexity within countries, especially in emerging markets characterized by significant regional disparities in institutional quality, economic development, and cultural norms. These intra-country variations mean that MNEs must navigate both national and subnational institutional differences.

2.2 Transition to Subnational Conceptualization

Shifting focus from national to subnational conceptualization is essential to understanding the nuanced dynamics of MNE location strategies. The subnational perspective acknowledges the spatial heterogeneity within countries where regions present diverse institutional landscapes (Beugelsdijk & Mudambi, 2013; Hutzschenreuter et al., 2020). This perspective is particularly relevant in large emerging economies like Brazil, where regional variations significantly impact MNE operations (Mudambi et al., 2018).

The regions of a country can exhibit profound differences in regulatory frameworks, economic development, cultural norms, and business practices. This internal diversity

necessitates a granular approach to location strategies, tailoring operations to fit each region's unique institutional context (Beugelsdijk et al., 2010). For example, metropolitan areas may offer more supportive environments for business innovation than rural areas with less formalized regulations. Empirical studies such as those by Beugelsdijk and Mudambi (2013) and Gertler (2010) provide evidence of how subnational heterogeneity impacts MNE performance, illustrating that regional variations necessitate tailored strategies for different regions within the same country.

Subnational ID is defined as the degree to which resources, services, and assets for foreign investment are centralized or distributed within a region. It is closely related to an MNE's ability to leverage co-location advantages (Monaghan et al., 2018). Effective operation within subnational regions can confer significant competitive advantages, such as access to local knowledge networks, specialized labor markets, and regional economic clusters. These advantages should motivate MNEs to explore the potential of subnational operations.

2.3 Emerging Markets and Subnational Heterogeneity

Emerging markets, characterized by underdeveloped institutions and significant regional disparities, provide a rich context for studying subnational identity (Wang & Zhou, 2020). The presence of formal institutional voids complicates the business environment for MNEs, making region-specific strategies not just beneficial but necessary (Bertrand et al., 2019; Yao et al., 2023). Subnational heterogeneity exists at different locational levels within a country, significantly impacting foreign subsidiaries' behavior and performance (Hutzschenreuter et al., 2020; Pattnaik et al., 2021). This heterogeneity is driven by regional disparities in economic development, infrastructure quality, educational attainment, and cultural practices. For example, metropolitan areas may offer sophisticated infrastructure and skilled labor, while rural areas might need help with infrastructural deficits and lower educational levels (Narula & Santangelo, 2012).

In China, coastal regions like Guangdong and Shanghai benefit from preferential policies and superior infrastructure, fostering rapid growth. In contrast, inland areas such as Xinjiang and Gansu face isolation and lower industrialization levels, necessitating more nuanced MNE strategies tailored to the conditions of each region (Zhao et al., 2020). Similarly, in India, states like Maharashtra and Karnataka attract significant investment. In contrast, states like Bihar and Uttar Pradesh face more substantial challenges, which require strategies that navigate informal institutions and regional governance. Studies by Fleury and Fleury (2011) and Narula and Santangelo (2012) highlight the significant impact of regional disparities on MNE strategies, calling for a more nuanced, region-specific approach to balance development and opportunities.

Brazil presents another compelling example of subnational heterogeneity. The southeastern region, including states like São Paulo and Rio de Janeiro, is highly industrialized and economically advanced, offering a conducive environment for high-tech industries and services. On the contrary, the northern regions, such as Amazonas and Pará, face infrastructural challenges and depend more on primary sectors such as agriculture and mining. MNEs in Brazil must develop region-specific strategies that consider these disparities, highlighting the complexity of balancing the benefits of operating in more developed regions with the opportunities presented by less developed areas (Fleury & Fleury, 2011).

2.4 Proximity as a Strategic Response

Proximity, in the context of this research, refers to the spatial, cognitive, social, organizational, and institutional closeness between entities. It encompasses geographical, cognitive, social, organizational, and institutional dimensions, and it mitigates the negative impacts of subnational ID by facilitating access to local knowledge, resources, and networks

(Beugelsdijk & Mudambi, 2013). Proximity supports operational efficiency and enhances the ability to manage institutional pressures, although excessive proximity can lead to lock-in effects (Boschma, 2005). Geographical proximity, for instance, allows firms to benefit from agglomeration economies, such as shared services, infrastructure, and labor pools (Boschma, 2005). Industrial clusters exemplify this, where the concentration of interconnected companies and institutions in a specific field enhances firm performance through specialized suppliers, skilled labor, and knowledge spillovers (Porter, 1998).

Additionally, cognitive and organizational proximity involves shared knowledge bases and compatible organizational practices among firms in proximity, facilitating collaboration and innovation (Asheim & Coenen, 2005). This understanding should inspire you about the potential for growth and development. Social networks and trust among regional individuals and firms play a significant role in knowledge exchange and innovation. High social proximity facilitates the transfer of tacit knowledge, which is often critical to developing competitive advantages (Storper & Venables, 2004).

The alignment of formal and informal rules, norms, and practices within a region, or institutional proximity, facilitates the integration of MNEs into the local business environment (Gertler, 2010). The strategic use of proximity can be observed in regional innovation systems (RIS), where the interaction between firms, research institutions, and government bodies within a region promotes an environment conducive to innovation (Cooke, 2001). MNEs in regions with strong RIS can benefit from collaborative efforts in research and development, access to cutting-edge technologies, and supportive policy frameworks, enhancing their innovative capacity and adaptability (Asheim & Coenen, 2005).

Thus, proximity supports operational efficiency and enhances the ability to manage institutional pressures by facilitating better integration into the local context. However, excessive proximity can lead to lock-in effects, where a firm becomes too dependent on a particular set of resources or relationships, reducing flexibility and stifling innovation (Boschma, 2005). This paradox highlights the need for MNEs to balance the benefits of proximity with the risks of becoming too embedded in local networks. Studies by Castellani et al. (2022) emphasize that connectivity and proximity play influential roles in the location decisions of MNEs' knowledge-intensive activities, such as R&D and HQ functions, due to the need for effective coordination and innovation.

Based on the theoretical foundation, we propose the following hypotheses.

H1: The institutional distance negatively correlated with the performance of MNEs' subsidiaries.

The above discussions indicate that more significant subnational identification challenges MNEs' operational efficiency and strategic effectiveness, thereby likely reducing subsidiary performance. To further understand the mechanisms underlying this relationship, it is essential to consider the role of proximity. Proximity can mediate by facilitating access to local resources, knowledge, and networks, potentially offsetting some negative impacts of subnational ID. This understanding should encourage and motivate you, as it highlights the potential of proximity to enhance the performance of MNEs' subsidiaries.

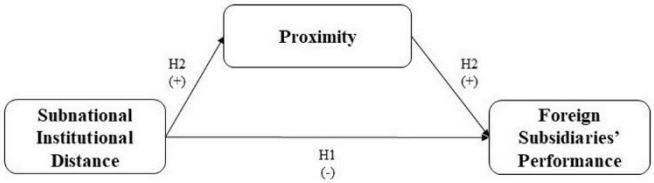
H2: The regional effect of proximities, which refers to the collective impact of various forms of proximity within a region, mediates the relationship between subnational ID and the performance of MNEs' subsidiaries.

In its various dimensions, proximity plays a significant role in fostering innovation and operational efficiency in MNEs. By embedding themselves in local networks and leveraging

proximity advantages, MNEs can better manage subnational identity, thus improving their overall performance. This understanding should make you feel optimistic about the future, as it highlights the potential of proximity to enhance the performance of MNEs' subsidiaries. We will test these hypotheses using data from multinational subsidiaries operating in Brazil, focusing on understanding the mediating role of proximity.

The conceptual framework in Figure 1 illustrates these relationships, highlighting how subnational ID impacts subsidiary performance directly and indirectly through proximity.

Figure 1. Conceptual Model



3 METHODS

This study aims to examine the mediating role of spatial proximity on the relationship between the differences in institutional frameworks at the subnational level (referred to as subnational institutional distance) and the performance of foreign subsidiaries. We test our main hypotheses regarding multinational subsidiaries operating in Brazil.

Brazil is a suitable context for investigating our research question. First, because the Brazilian economy is the largest in Latin America and over recent years, it has been one of the primary beneficiaries of global FDI, ranked ninth globally in 2023 and first in Latin America (No. 5 destination for global), with FDI inflows that increased by a significant 69.89% from 2021 to 2022, reaching US$ 86 billion (UNCTAD, 2023). This substantial increase in FDI inflows indicates a growing interest in Brazil as a destination for foreign investment.

On the other hand, Brazil's subnational heterogeneity is not just vast but also dynamic. Underdeveloped institutions and substantial and continuous changes in multiple dimensions characterize it (Chen et al., 2017). The country's system of formal regulations, defined at the national level, introduces variations in execution and implementation costs between different states due to differences in local norms, administrative efficiency, the legal quality of institutions, and the cost of business installation (Kumar & Borbora, 2019). The autonomy of local administrations in introducing policies and rules further complicates the institutional landscape, creating unequal conditions given the autonomy of subnational regions and the unequal development of support institutions (Nayyar & Prashantham, 2020).

Sample

Our survey, conducted among various multinationals operating in Brazil, gathered data from 316 foreign subsidiaries. These subsidiaries, predominantly from developed countries, are active in the manufacturing industries across various regions.

Of these, 52.3% of the subsidiaries had been established in Brazil since the 1960s, a period marked by [significant economic and political changes in Brazil and globally], and the remaining 48% were set up during the post-2001 FDI boom, a time when [Brazil experienced a surge in foreign direct investment due to [specific economic policies or global trends]]. Regarding entry mode, 45% of the subsidiaries entered Brazil using joint ventures (174 subsidiaries) and 55% as greenfield projects (142), 166 of which (48%) are located in regional clusters. Most of the MNEs situated in the country are from highly developed economies, like Germany, Italy, France, Switzerland, United States, Japan, and others) Moreover, it accounts for 90% of the subsidiaries investigated (278). Several companies are from other emerging

economies, such as Chile, China, South Africa, Colombia, India, and Mexico, representing less than 10%. Of the total sample, 202 subsidiaries operate in manufacturing industries and 114 in services sectors, distributed in 15 different Brazilian states, with an average experience of 21 years acting in the country.

Dependent variable

An MNE subsidiary, a crucial operational unit located beyond its country of origin, plays a pivotal role in navigating complex institutional environments (Meyer et al., 2020). We tested our model using MNE subsidiary performance as the dependent variable for the present study, underscoring its significance in the international business landscape.

Considering the complexity of the environments in which MNEs operate, we represent the performance of an MNE subsidiary using a multidimensional construct that includes aspects such as profitability, productivity, and market share (Ma et al., 2013). In this study, we adopt a multidimensional construct, including perceptional aspects such as satisfaction with sales, market share, growth expectations, and profit. Ma et al. (2013) and Rosenbusch et al. (2013) we adapted the performance construct, making our study directly relevant to your research in the field of international business and management.

Independent variables

We use cognitive, normative, and regulatory dimensions to measure subnational ID. These dimensions consist of the following items: (i) The cost of spatial distance, including transport, coordination, and administration; (ii) The position in the cluster and its links with local agents; (iii) The costs associated with the lack of knowledge and competencies specific to the region; (iv) The costs associated with cognitive, normative, and regulatory diversities. We adapted this construct from Qian et al. (2013).

Intervenient Variable/Mediation

Our study focuses on the effects of proximity on the relationship between subnational identification, which refers to the degree of attachment or loyalty to a specific region within a country. This concept of subnational identification is crucial in understanding how individuals or entities identify with a particular area, and how this identification influences their behavior and decisions. This unique perspective allows us to delve into the different dimensions of proximity and the factors that facilitate the effective knowledge exchange between the agents involved. As a mediating process, proximity is crucial but often requires further exploration into international business and organizational behavior.

Based on Boschma's (2005) Proximity perspective, we explore the roles of five dimensions of proximity (geographical, institutional, cognitive, social, and organizational) in co-location after the establishment of MNE subsidiaries in Brazil.

We used five dimensions to measure the proximity construct: institutional proximity (INST_PROX – 6 questions), organizational proximity (ORG_PROX – 4 questions), cognitive proximity (COG_PROX – 5 questions), social proximity (SOC_PROX – 5 questions), and geographical proximity (GEO_PROX – 4 questions), all adapted from a theoretical study by Boschma (2005).

It's important to note that the resources of subnational institutional proximity are linked to the body of local regulatory institutions and public or private support institutions. This institutional environment can work as a collective action glue, significantly reducing firm transaction costs. This understanding can reassure professionals about the potential benefits of a solid institutional environment.

The resources of organizational proximity are related to relationships shared in an organizational arrangement (Balland et al., 2013). They are associated with the mode of

exchange between market operations (such as buying and selling of goods and services), hierarchical models (like reporting structures and decision-making processes), and network relations (such as partnerships and alliances). This mode of exchange is crucial in understanding how different types of relationships within an organization can influence its proximity resources (Boschma & Frenken, 2006).

Shared knowledge bases and competencies form the foundation of cognitive proximity resources (Boschma & Frenken, 2006) and relate to the mediation process between firms (Nguyen et al., 2019). They are similar in how actors perceive, interpret, understand, and evaluate the world (Boschma, 2005).

Relations of trust between actors link the resources of social proximity (Boschma & Frenken, 2006). Social and organizational proximity are characterized by loyalty between partners, although based on different mechanisms of ensuring fidelity (confidence and hierarchy, respectively) (Boschma, 2005).

Finally, geographical proximity is related to the spatial distance between actors (Boschma, 2005). Geographical proximity can also influence cooperation between actors and plays a vital role in partnerships motivated by mediation surrounding product development, access to complementary technologies, and knowledge acquisition (Hansen, 2014).

In this study, we test the direct effects of proximity and its role as a mediating variable in the relationship between subnational ID and MNE subsidiary performance. Our findings have significant practical implications, guiding decision-making in the establishment and management of MNE subsidiaries. Our study offers a roadmap for optimizing performance in diverse geographical and institutional contexts, providing valuable insights for professionals in the field.

Control Variables

Four meticulously chosen control variables were employed to detect potential effects that could alter mediation: subsidiary size, age, industry effect, and entry mode. The size of the subsidiary was measured using the natural log of the number of employees, and the age of the subsidiary was measured by the log of the number of years in business in the host country (Jiang et al., 2021). To control the type of economic activities, we distinguish between foreign subsidiaries operating in the manufacturing industries and those acting in the service sectors.

Previous studies have made significant assumptions about spatial heterogeneity influencing the entry mode of MNEs, mainly via partial acquisitions to reduce ID and preserve the inherent competencies of their target (Hutzschenreuter et al., 2020; Mariotti et al., 2014). The transaction costs perspective reflects the entry mode decision, considering a comprehensive set of costs and risks when deciding on entry mode (Xu et al., 2020). We, therefore, control for entry mode with dummy variables: ownership mode (Joint Venture = 0 and Wholly owned subsidiary = 1) and establishment mode (Greenfield = 0 and Acquisition = 1).

Table 1 is a comprehensive guide to our research construct. It reports the analytical dimensions, corresponding variables, and questions and provides a clear overview of our methodology and findings.

Table 1 – Research Construct

Construct		Indicators	Mode	References
Dependent	Subsidiary's Performance	1. Indicate how satisfied you are with annual growth in sales over the last 3 years	7-point Likert	(Ma et al., 2013; Rosenbusch et al., 2013).
		2. Indicate how satisfied you are with the increase in market share		
		3. Indicate the extent of your expectations with relation to expected growth in sales over the next 3 years		
		4. Indicate how satisfied you are with the subsidiary's profit over recent years		

		5. Considering the above questions, how satisfied are you in general with the financial performance of your subsidiary?		
Independent	Subnational Distance	1. In the region where we do business, the local government has policies that discriminate against our subsidiary in comparison with domestic competitors	7-point Likert	(Qian et al., 2013).
		2. In the region where we do business, local customers are biased against our firm, in comparison with our domestic competitors		
		3. In our region, domestic competitors have better business networks than our subsidiary		
		4. In our region, domestic competitors have stronger ties to stakeholders (all those involved in a process) than our subsidiary		
		5. In the region, including transport, coordination, and administrative costs, our subsidiary has higher fees than competing local firms		
		6. In the region, our subsidiary's position and its ties with local actors are less developed in comparison with competing local firms		
		7. In the region, our subsidiary has higher costs due to a lack of country-specific knowledge and competencies		
		8. In the region, our subsidiary has higher costs related to legal issues than local competitors		
		9. In the region, our subsidiary has higher costs related to business practices about local competitors		
		10. In the region, our subsidiary has higher costs related to issues of national culture about local competitors		
Mediation	Effect of Regional Distance	**Institutional proximity** 1. I have access to regional or local technology research institutions 2. I can access professional institutions related to the subsidiary's activity. 3. I can access public or private institutions related to the subsidiary's activity. 4. I have access to credit (credit specifically for firms located in the region)	7-point Likert	(Boschma, 2005)
		Organizational proximity 1. I have access to horizontal cooperation relations between regional firms (existence of partnerships or networks with your subsidiary in the region). 2. I have access to qualified labor in the region 3. I have access to local logistic infrastructure (distribution of products and access to suppliers). 4. I have access to vertical cooperation relationships in the region (existence of partnerships or networks with suppliers, distributors, or institutions in the region)		
		Cognitive proximity 1. Access to availability of a highly qualified workforce when the subsidiary needs to hire new people 2. I have access to, and there is, the availability of new knowledge generated by universities or research institutes. 3. I have access to specialized knowledge generated by local or regional suppliers 4. I have access to universities or research institutes for collaboration on projects in my subsidiary's 5. I have access to specialized knowledge from providers of services to my subsidiary		
		Social proximity 1. I can trust relationships with the companies in the region. 2. I have to monitor my competitors to prevent illicit appropriation of my strategies through social proximity 3. My subsidiary benefits from social proximity with other firms in the region		

		4. Contact with other firms in the region facilitates the exchange of information between firms and provides a source of new ideas 5. Contact with the other firms in the region strengthens my subsidiary's relationships with its suppliers		
		Geographical proximity 1. Distance from the home country to the subsidiary in Brazil 2. Distance from the subsidiary to Brazil's leading financial center (So Paulo) 3. Distance from the subsidiary to the closest port 4. Distance from the subsidiary to the airport (commercial)	km	
Controls	Size	natural log of the number of employees	Natural log	(Jiang et al., 2021).
	Age	Logarithm of the number of years of activity in the country in question		
	Industry	Business segment	Manufacturing industries or services.	(Wang & Li, 2019)
	Entry Mode	ownership mode (Greenfield = 0 and acquisition = 1) and establishment mode (Joint Venture = 0 and wholly-owned subsidiary = 1)	Dummy	(Xu et al., 2020).

Statistical Technique

Using structural path analysis based on regression, mediation by proximity analysis is employed to establish evidence and test our hypotheses on subnational effects (X) and Multinational subsidiaries' performance in Brazil (Y). The objective of the mediation analysis is to establish to what point the effects of the causal variable X (subnational effect) influence result Y (performance) via intervening mediators in the form of variables (M effect of proximity) located causally between X and Y.

Our research methodology is bolstered by using a widely accepted statistical tool. We conducted inferential tests for direct effects (X affects Y) and indirect effects (through M) using the popular PROCESS V3.5 statistical tool developed by Hayes (2018) Within the IBM SPSS Statistics package. It's important to note that we did not violate the assumptions of linearity, normality, homogeneity of variance, and independence, as outlined by (Hayes, 2018).

4 Estimation of the Model and Results

Preliminary Test of Mediating Effects

Mediator variables, crucial conduits along which causal effects operate (Hayes, 2018), play a significant role in our research. As a first step, a model of multiple parallel mediators (geographical, institutional, cognitive, social, and organizational) was analyzed in a single integrated model, allowing the effect of one variable to be transmitted to another using several mechanisms simultaneously. There is theoretical evidence that the association between *X* (subnational effect) and *Y* (performance) is negatively affected, regardless of *H* effects (when the mechanism via *M* is factored in) on *Y*. This preliminary model exhibited problems in the Bias-Corrected and Accelerated (BCa) confidence interval estimated using the bootstrapping technique. In the representation of the sampling distribution for the indirect effect, the confidence intervals included zero, indicating that these specific indirect effects are not statistically different from each other (Hayes, 2018). This problem could be related to the conjecture that proximity environments (geographical, institutional, cognitive, social, and organizational) evolve, going through several phases, each of which exhibits distinct characteristics, that each firm is at a different stage (Abbasiharofteh, 2020), and that even so knowledge accessed (Fitjar & Rodrguez-Pose, 2017), making it an arduous task to obtain results in a specific universe of the sample, as described by Bilbao-Ubillos et al. (2021).

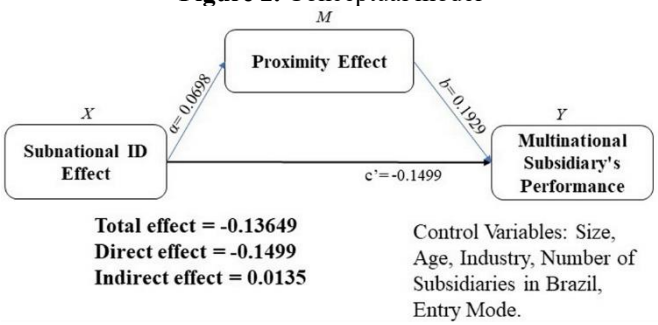
These results could have significant implications, as they could be related to the fact that MNEs strategically choose the locations of their subsidiaries within subnational space to benefit from proximity-based advantages such as knowledge, market management, and use of available resources (Monaghan et al., 2020). Additionally, Brazil's vastness and differing degrees of subnational heterogeneity could imply a trade-off between the costs and benefits of heterogeneity. The subnational/regional effect is a way to accommodate the costs of heterogeneity (Alesina & Spolaore, 2003). The investigated subsidiaries have differences in terms of entry period, size, and other factors that could be related to different stages of access to the benefits of co-installation advantages (Monaghan et al., 2018). Because subnational spatial heterogeneity results from different configurations of cognitive, social, organizational, institutional, and geographical proximity (Boschma, 2005), the proximity effect was unified to enable a simplified mediation analysis. Our results show evidence of an indirect effect of X on Y through M1, which could have significant implications for understanding the performance of MNE subsidiaries in Brazil.

Test of the mediation effect

Test of the mediation effect

The primary aim of our meticulous study was to examine the mediating role of proximity (M) on the relationship between subnational institutional distance(X) and performance (Y) of foreign subsidiaries in Brazil. Figure 2 presents our model of mediation by proximity. We rigorously estimate the mediation model in SPSS using PROCESS (Hayes, 2018), ensuring the validity and reliability of our findings.

Figure 2. Conceptual model



As shown in Figure 2, the general goodness of fit (Table 1) indicated a reasonable model fit (X→M) to meet the first mediation condition. The subnational impact (X) on the variable proximity was positive and statistically significant at 5%, thus satisfying the first condition of mediation (Baron & Kenny, 1986). Therefore, H1 is supported as a measure of the subnational institutional distance from performance.

To test the second condition of mediation (Table 2), we estimated c'(X→Y, controlled for M), the direct effect of the model (subnational institutional distance impacting on performance, controlled for proximity). The result revealed a negative effect, statistically significant to 1%. This result satisfies the second condition of mediation ((Baron & Kenny, 1986). The negative effect found here indicates that as the subnational institutional distance increases, the performance of the foreign subsidiaries decreases, even when proximity is controlled.

Our results provide robust support for H1, indicating a significant negative correlation between subnational institutional distance and subsidiary performance. Furthermore, our mediation analysis strongly supports H2, showing that proximity mitigates this negative impact. These findings reassure us of the validity of our conclusions.

Table 2. Regression results for the mediating effect of proximity.

Sample size: 316
Model: Y: Performance. X: Subnational effect. M: Proximity effect

		Consequent					
		M1(Proximity Effect)				Y Performance	
Antecedent		***Coeff.***	***SE***	***P***		***Coeff.***	***SE***	***P***
X(Subnational effect)	a_1	0,0698	0,032	0,0310	c'	-0,1499	0,0432	0,001*
M_1(Proximity effect)		-	-	-	M_{b1}	0,1929	0,0758	0,011*
Constant	i_M	0,0370	0,0344	0,2823	i_Y	0,6282	0,0458	0,000*
Control Sector		-0,0427	0,0128	0,0010		0,0200	0,0174	0,251
Control Age		0,0118	0,0587	0,8414		0,0020	0,0782	0,979
Control Size		0,0156	0,0095	0,1006		0,0036	0,0126	0,774
Control N. Subsid. Braz.		-0,0005	0,0139	0,9687		0,0098	0,0185	0,598
Control Establishment mode		0,0120	0,0137	0,3827		-0,0381	0,0183	0,038*
Control Ownership mode		0,0002	0,0122	0,9862		-0,0233	0,0162	0,152
		R^2=0,0618				R^2=0,0674		
		F(7,308)=2,8990, *p*= 0,0060				*F*(8,307)=2,7722,*p*=0,0057		

Total effect = -0.1364
Direct effect= -0.1499
Indirect effect= 0.0135
Total mediated effect = 9.01% (mediation explains 9.01% of the relationship XY)
Model without mediator R^2 = 4.77%%
Model with mediator R^2= 6.74%

Table 3. Establishment entry mode (Greenfield or Acquisition)
Sample size: 142 Greenfield, 174 Greenfield, In cluster 166 and no cluster 150

Greenfield n=142	**Original Sample (O)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Proximity Effect -> Subsidiary's Performance	0,300	0,087	3,425	**0,001**
Subnational Effect -> Proximity Effect	-0,322	0,107	3,028	**0,002**
Subnational Effect -> Subsidiary's Performance	-0,047	0,102	0,456	0,648
Joint Venture n= 174	**Original Sample (O)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Proximity Effect -> Subsidiary's Performance	0,296	0,077	3,844	**0,000**
Subnational Effect -> Proximity Effect	-0,055	0,136	0,405	0,686
Subnational Effect -> Subsidiary's Performance	-0,178	0,149	1,192	0,233
In cluster n= 166	**Original Sample (O)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Proximity Effect -> Subsidiary's Performance	0,344	0,077	4,453	**0,000**
Subnational Effect -> Proximity Effect	-0,242	0,075	3,224	**0,001**
Subnational Effect -> Subsidiary's Performance	-0,201	0,073	2,749	**0,006**
No cluster n=150	**Original Sample (O)**	**Standard Deviation (STDEV)**	**T Statistics (|O/STDEV|)**	**P Values**
Proximity Effect -> Subsidiary's Performance	0,271	0,093	2,901	0,004
Subnational Effect -> Proximity Effect	-0,165	0,208	0,794	0,427
Subnational Effect -> Subsidiary's Performance	0,168	0,159	1,059	0,290
	Cronbach's Alpha	**rho_A**	**Composite Reliability**	**Average V. Extrac. (AVE)**
Proximity Effect	0,706	0,881	0,814	0,600
Subnational Effect	0,849	0,890	0,881	0,556
Subsidiary's Performance	0,826	0,855	0,884	0,659

Finally, after testing mediation by proximity (Table 2), the effect of proximity (M) was found to have a positive and statistically significant effect on subsidiaries' performance. This significant finding confirms our hypotheses, as the model suggests that proximities mediate the subnational institutional distance on the performance of multinational subsidiaries. We also observed a reduction in the subnational coefficient of the effect on performance (from -0.1499 to -0.1364) after the entry of the mediator proximity (M). This analysis supplements but does not substitute ID (Mudambi et al., 2018). In other words, the subnational institutional distance suggests a minor initial drop-off in performance than the ID reduction; when the subnational factor is mediated, it indicates an upward effect on performance (Contractor et al., 2003). The effect of proximity (M) mediates the relationship between subnational effects (X) and performance (Y), and H2 is therefore supported.

Subnational regions play a crucial role as facilitators in privileged relationships with potential local partners. The effect of proximity attenuates transaction costs using reciprocity and trust (Banalieva & Dhanaraj, 2019; Hennart, 2009)Therefore, the statistically significant effect of proximity positively mediates the relationship between subregional ID and performance. As shown in Figure 2, the variable proximity mediated approximately 9.01% of the relationship between the institutional distance and the performance of the subsidiaries.

Turning to the control variables, it's important to note that none of the variables, such as size, age (experience), industry, or number of subsidiaries, were found to be statistically significant. This means that these variables did not significantly impact the performance of the subsidiaries. However, it's worth mentioning that all these variables had issues with the Bias-Corrected and Accelerated (BCa) confidence intervals estimated by bootstrapping, as the confidence intervals included zero (Hayes, 2018). This underscores the need for further research in these areas.

However, while the establishment entry mode (Greenfield or acquisition) was statistically significant, ownership entry mode (Joint Venture=0 and wholly owned subsidiary =1) exhibited a positive and statistically significant correlation, suggesting that when proximity mediates subnational institutional distance, multinational firms attempt to establish wholly owned subsidiaries with a high degree of commitment to the region, as can be seen in Table 3.

5 Discussion and Final Remarks

Our findings support the hypothesis that subnational institutional distance negatively impacts MNE subsidiary performance. These findings align with previous research indicating that institutional differences pose significant challenges to MNEs (Zaheer & Nachum, 2011). However, the mediating role of proximity is vital, as it enhances the ability to access local knowledge, resources, and networks, thereby mitigating the negative impacts of subnational ID.

To capture the complexity and heterogeneity of locations, we considered that the debate on the local dimension in its subnational/regional form constitutes the link to integrate IB theory with economic geography by developing a localized perspective on knowledge creation (Bathelt & Li, 2020). The concept of subnational complexity implies that subnational complexity is both a challenge and an opportunity for MNEs to seek advantages through individual factors in the host country (Arregle et al., 2016). From the IB perspective, subnational complexity can negatively affect the performance of multinational subsidiaries (Li & Sun, 2017). However, this effect demands that MNEs take a specific approach to integrating and interacting with local forces and institutions as a strategy for managing ID (Mudambi et al., 2018). In other words, the choice is a strategic response related to MNEs' capability to identify, access, and benefit from the advantages of co-installation (Monaghan et al., 2018).

In this study, we attempted to capture these advantages using the concept of proximity (Boschma, 2005). The benefits of proximity influence the propensity to change entry modes, as

Hutzschenreuter et al. (2020). observed. Proximity mediates the entry mode, leading MNEs to prefer setting up wholly owned subsidiaries to access the positive externalities of proximity, such as highly tacit, scarce, and valuable knowledge (Leszczyńska & Pruchnicki, 2016; Nguyen & Diez, 2017). (See Table 3).

Our results are consistent with those of previous studies that have concluded that the subnational institutional distance is not a substitute for ID but complements it (Mudambi et al., 2018), creating unique opportunities and challenges that, in turn, hurt the performance (Chan et al., 2010). These results may reflect what Qian et al. (2008) reported as subnational regions with below-ideal performance and which may be related to the (i) underestimation of costs because of lack of regional knowledge, (ii) firms deliberately under-diversifying regionally to seek markets and in the hope that this will reap profits over the long term; and (iii) as observed in a study by Cruz et al. (2022)The effect of subnational institutions may go beyond their quality, demanding a new perspective on comprehension that the model cannot capture.

The effect of mediation amplifies this perception. Our empirical results suggest that MNEs could limit the impact of ID by choosing subnational regions that offer exclusive attributes (Belderbos et al., 2020; Monaghan et al., 2020). However, this effect depends on the capacity to build relationships within a subnational location/target region and its ability to accrue advantages based on the relationships provided by proximity, such as knowledge and resource utilization, allowing the subsidiary to obtain significant benefits from the choice of ownership entry mode and therefore better performance. This preference occurs because proximity is a source of relational competitive advantage in several different dimensions (Boschma, 2005), aiding in knowledge transfer as a management strategy linked to knowledge exchange that can reduce uncertainty and yield better firm performance (Park et al., 2017; Zahoor & Al-Tabbaa, 2021).

Our results show that the proximity strategy, which operates as a mediation mechanism, supplies MNEs with the capabilities to mitigate the negative effect of subnational/regional distance on performance. In this case, the mediation effect refers to advantages based on subnational location as Monaghan et al. (2020) identified, such as knowledge, market insight, and resource utilization. To can be considered a strategy for the development of additional specific advantages in the form of management capabilities to deal with environmental instability, access to cheaper capital, firmer commitments to networks of firms, and local and regional political connections, as pointed out by other studies, like Adarkwah and Malons (2020) and Cruz et al. (2022).

The results of our model's estimation indicate that proximity mediates the relationship between subnational ID and performance. This suggests that while the subnational institutional distance may initially present challenges, the benefits of subnational location advantages outweigh the additional costs related to the propensity to firm proximity density, enabling subsidiaries to achieve superior performance.

The results of this study show that, in the context of proximity, MNEs attempt to achieve greater control of the ownership of their subsidiaries. The choice of a wholly owned subsidiary entry mode constitutes an inclination on the part of the MNE to put down roots in the region. By opting for this type of ownership, the firm can gain greater legitimacy since its investments do not constitute a substitute for existing enterprises but new investments that generate additional value and the potential for regional development. Finally, a wholly-owned subsidiary can maximize access to local advantages and externalities.

In terms of practical implications, the MNEs' location strategies consider the subnational perspective as a mechanism for managing national limitations, a strategy for attenuating transaction costs and improving competitive advantages. The advantages of subnational/regional locations suggest constructing dynamic capabilities through location advantages. The potential benefits of proximity to firms could constitute a political strategy

employed to stimulate the development of specific regions. Other firms in the domestic market will also consider these attractions, primarily for attracting FDI and equipping the audience with actionable knowledge.

The results present three contributions to the literature: (i) Empirical Evidence – This study provides empirical evidence on the importance of subnational factors in MNE strategies, particularly in Brazil's heterogeneous regions; (ii) Theoretical Integration – By integrating IB theory with economic geography, this study advances understanding of subnational institutional impacts on MNE performance; (iii) Strategic Insights – Highlighting the strategic importance of proximity, this research offers practical insights for MNEs to manage subnational institutional distance effectively.

We should mention certain limitations. This study analyzes the empirical context of foreign subsidiaries in Brazil in a generic form within a subnational frame. The administrative headquarters of the subsidiaries are usually hosted in large centers in the country and may partially reflect the subnational strategy. The study did not separate the firms by business sectors for the analysis. Therefore, it is necessary to be cautious when generalizing the study data to certain specific industries. Future studies could focus on specific industrial settings and specific subnational regions. Furthermore, the effect of proximity considered the formal effects of cooperation, ignoring the personal and informal proximity relations typical of emerging economies such as Brazil. Future studies should consider subnational/regional market aspects, such as regional and subnational institutional quality and non-market strategies, to explore political alignment between regions and the central government. Additionally, studying the effects of informal and personal proximity in emerging markets could provide deeper insights into MNE strategies.

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