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The challenges of internationalizing graduate education in the Legal Amazon

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Abstract
The internationalization of universities represents a strategic opportunity to establish partnerships and foster research that addresses the needs of regions marked by socioeconomic inequalities. This article analyzes the challenges of internationalizing graduate education in the Legal Amazon. The methodology is based on the analysis of evaluation documents of Graduate Programs (PPG) with an international profile, as classified by the Brazilian Coordination for the Improvement of Higher Education Personnel (Capes). The results indicate that only 0.44% of the PPG in the Legal Amazon have an international profile, highlighting the obstacles faced, particularly the limited autonomy resulting from the demands of funding agencies. Nevertheless, the programs have been responding to regional challenges through strategic research focused on themes such as biodiversity and environmental issues. In this context, internationalization should be guided by a Southern epistemology, recognizing and valuing the region's cultural diversity. It is concluded that the PPG are adopting specific strategies and forging international partnerships, demonstrating an active adaptation to the internationalization process and contributing to the reduction of socioeconomic disparities in the Legal Amazon.

Keywords: Public policies. Higher education. Inequalities. Responsiveness. Epistemology of the South.

Los desafíos de la internacionalización de la educación de posgrado en la Amazonía Legal

Resumen
La internacionalización de las universidades representa una oportunidad estratégica para establecer alianzas e impulsar investigaciones que respondan a las necesidades de regiones marcadas por desigualdades socioeconómicas. Este artículo analiza los desafíos de la internacionalización de los programas de posgrado en la Amazonía Legal. La metodología

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adoptada se basa en el análisis de documentos de evaluación de los Programas de Posgrado (PPG) con perfil internacional, según la clasificación de la Coordinación de Perfeccionamiento de Personal de Nivel Superior (Capes). Los resultados indican que solo el 0,44% de los PPG de la Amazonía Legal presentan un perfil internacionalizado, lo que evidencia las barreras enfrentadas, especialmente en cuanto a la limitación de autonomía impuesta por las exigencias de las agencias de financiamiento. A pesar de ello, los programas han venido respondiendo a los desafíos regionales mediante investigaciones estratégicas centradas en temas como la biodiversidad y las cuestiones ambientales. En este contexto, la internacionalización debe estar guiada por una epistemología del Sur, que valore la diversidad cultural de la región. Se concluye que los PPG están adoptando estrategias específicas y articulando alianzas internacionales, lo que demuestra una adaptación activa al proceso de internacionalización y una contribución a la reducción de las disparidades socioeconómicas en la Amazonía Legal.

Palabras clave: Políticas públicas. Educación superior. Desigualdades. Capacidad de respuesta. Epistemología del Sur.

Os desafios da internacionalização da pós-graduação da Amazônia Legal

Resumo
A internacionalização das universidades representa uma oportunidade estratégica para estabelecer parcerias e impulsionar pesquisas que atendam às necessidades de regiões marcadas por desigualdades socioeconômicas. Este artigo analisa os desafios da internacionalização da pós-graduação na Amazônia Legal. A metodologia adotada baseia-se na análise de documentos de avaliação dos Programas de Pós-graduação (PPG) com perfil internacional, conforme classificação da Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (Capes). Os resultados indicam que apenas 0,44% dos PPG da Amazônia Legal possuem perfil internacionalizado, evidenciando os entraves enfrentados, especialmente quanto à limitação de autonomia imposta pelas exigências das agências de fomento. Ainda assim, os programas vêm respondendo aos desafios regionais por meio de pesquisas estratégicas voltadas a temas como biodiversidade e questões ambientais. A internacionalização, nesse contexto, deve ser orientada por uma epistemologia do Sul, valorizando a diversidade cultural da região. Conclui-se que os PPG estão adotando estratégias específicas e articulando parcerias internacionais, demonstrando uma adaptação ativa ao processo de internacionalização e contribuindo para a redução das disparidades socioeconômicas na Amazônia Legal.

Palavras–chave: Políticas públicas. Ensino superior. Desigualdades. Responsividade. Epistemologia do Sul.

1 Introduction

The Legal Amazon, a region spanning nine Brazilian states: Acre, Amapá, Amazonas, Maranhão, Mato Grosso, Pará, Rondônia, Roraima, and Tocantins, plays a significant role in the internationalization of Brazilian universities. With its rich biodiversity, cultural heterogeneity, and abundance of natural resources, this region garners interest and curiosity from researchers and academics worldwide (Gonçalves, 2012; Sudam, 2023). Widely recognized for its environmental importance to both Brazil and the rest of the world, the Amazon closely coexists with profound

inequalities. Since the 1980s, the international perspective on this region has shifted, with a growing recognition of environmental issues as a relevant factor, as shown by Becker (2007). Between 2019y 2022, this international attention intensified, partly due to the Brazilian government's antagonism toward the environmental agenda during that period (Sudam, 2023). Within this context, this study aims to analyze the challenges of internationalizing Graduate Programs (PPGs) in the Legal Amazon and how this process can contribute to regional academic and scientific progress.

Universities are increasingly assuming a leading role in regional development, as the State recognizes their potential to mitigate problems and inequalities in regions with low Human Development Indexes (HDI). Furthermore, they are an integral part of the innovation system by transferring knowledge and research findings to society, thereby solving problems and creating opportunities (Audy, 2017). Fostering closer ties between universities and businesses in the Amazon region to propose research and innovation initiatives can yield significant benefits for the population, promoting efficient and innovative solutions and thus contributing to regional development (Sudam, 2023).

To meet regional demands and foster the co-construction of scientific and technological knowledge, internationalization has become a key strategy adopted by universities. It has also gained traction on the national political agenda, aiming to enhance the visibility of PPGs through high-impact scientific publications, partnerships, academic mobility, and the dissemination of knowledge across linguistic boundaries (Sousa, 2020).

The earliest public policies aimed at promoting graduate studies in Brazil emerged in the 1970s, focused on institutional strengthening through the outbound academic mobility of faculty members. This strategy consolidated international cooperation agreements with the objective of qualifying professionals affiliated with universities and PPGs (Feijó, 2016).

The formulation of public policies for higher education is influenced by the political conceptions and interests of each government, each with its own ideology (Silva, 2019). Within universities, PPGs are co-responsible for developing human capital and generating complex ideas that drive science and innovation. By transferring technical-scientific knowledge to society, they play an essential role in international positioning (Brennan; King; Lebeau, 2004). Consequently, there is a clear interest in aligning research, teaching, and outreach activities with global strategies, thereby promoting the internationalization of science through the dissemination of knowledge in other languages and in internationally impactful publications (Goergen, 2012).

In this regard, internationalization drives higher education systems and their institutions by responding to educational demands in a globalized world. In the case of Brazil, an emerging country, investing in the internationalization of graduate education is a fundamental step toward its integration into global educational policies and strengthening cooperation with foreign institutions (Luce; Fagundes; Mediel, 2016). This is due to the association between globalization and competitiveness within the economic dimension, which has guided the concept of efficiency in educational systems, seeking to incorporate diverse audiences into new educational models and formats (Lage, 2015).

Through internationalization, universities have the opportunity to establish alliances and promote exchanges that benefit both regions with deep-seated inequalities, such as the Brazilian Amazon, and the global academic community. This can boost scientific research, innovation, and the search for solutions to challenges specific to the Legal Amazon, such as environmental conservation, the empowerment of traditional communities, and the sustainable use of natural resources. Furthermore, it can drive greater investment in the region by guiding funding agencies on the necessary actions within higher education to foster the internationalization of graduate studies (Sousa, 2024).

Scholars such as Freire (2005) and Sousa Santos (2016) advocate for the need to grant visibility to developing nations, challenging the dominant Eurocentric logic and positioning them as universal references in their own right, each with its unique characteristics. Universities have undergone organizational and structural transformations to respond to the social, political, and economic demands of their contexts. A prime example is South-South cooperation, proposed by Sousa Santos (2016), which refers to a form of collaboration among developing countries or peripheral regions based on solidarity and the exchange of knowledge and resources, thereby strengthening relations among countries of the Global South and overcoming traditional dependence on the Global North.

The participation of PPGs in cooperation networks, in both teaching and research, is a strategy that favors the international integration of higher education institutions, particularly those traditionally excluded from the internationalization process. A study by Sudam (2023) emphasizes the importance of strengthening cooperation and exchange networks among ST&I (Science, Technology, and Innovation) institutions within the region to promote innovative initiatives that align with the Amazonian reality. Although the internationalization of science and universities materializes through various actions - such as the dissemination, collaboration, and international impact of their outputs - it is crucial to highlight that these indicators heavily focus on foreign journal rankings and the production of official documents, primarily in English, given its status as the *lingua franca* of science. This reinforces the influence of dominant standards in perpetuating the internationalization of higher education (Santin; Vanz; Stumpf, 2015).

In Brazil, the increase in the number of graduate programs in recent years and the evaluation restructuring led by Capes have contributed to the growth of scientific production (Sousa; Fuza, 2021). Capes attaches great importance to qualified academic production in the evaluation of PPGs, benchmarking them against those with international-level performance (Soares; Nova, 2017). However, the challenge for Brazilian science is not limited to the volume of published articles, but also extends to publishing them in high-impact journals with international reach (Borini; Ferreira, 2015).

Consequently, PPGs must undergo organizational and structural transformations that guarantee both quality and international integration. This implies coordinated efforts from various actors and strategic planning to incentivize scientific production in other languages, foster cooperative projects, offer courses in foreign languages, promote continuous training through international mobility, and host foreign professors, students, and researchers. The funding and research support

provided by funding agencies are fundamental for PPGs to align with international standards (Tosta; Stallivieri; Tosta, 2016).

Funding agencies are key to defining excellence strategies for universities. In Brazil, the primary funding for graduate education comes from the Brazilian Federal Agency for Support and Evaluation of Graduate Education (Capes) and the National Council for Scientific and Technological Development (CNPq). Capes plays an essential role as the evaluating body for PPGs, monitoring quality through quadrennial evaluations and annual reviews, while considering the specificities of each field of knowledge. The internationalization dimension is one of the evaluated variables and distinguishes programs of excellence, which achieve scores of 6 and 7 (Ramos, 2017). According to Velloso (2004), Capes has had a considerable impact on Brazilian graduate education through its funding policy, evaluation system, and the awarding of scholarships.

Financial support from funding agencies and the promotion of research play a crucial role in carrying out activities that foster academic mobility and other collaborative initiatives, allowing PPGs to establish themselves according to international standards. A concrete example is the launch of the Capes PrInt program in 2018, designed to select projects focused on the internationalization of higher education institutions. One of its requirements was that institutions have at least four recommended PPGs in the latest Capes evaluation prior to the program's launch. It planned to implement initiatives over a four-year period, including funding for international missions, project maintenance, and scholarships abroad and within Brazil. However, it is important to highlight that no institution from the Amazon region was selected, leaving only those with greater international consolidation to benefit from the program (Sousa; Fuza, 2021).

To achieve international recognition, universities have undergone restructurings to meet the social, political, and economic demands of their specific contexts. However, in economically peripheral regions, these challenges are even more complex.

One possible explanation for the unsatisfactory results regarding regional inequalities in Brazil relates to the greater scientific and technological challenges faced by peripheral regions. A case in point is the North region, which shows low representation in terms of doctoral degrees (5.7%), scientific production (2.0%), and patents (2.1%) compared to other regions in the country (Rodrigues; Rodrigues, 2013). Furthermore, the study by Sudam (2023) identified that indicators such as "ST&I Expenditure" relative to total state revenues and "Patent Applications" place the Legal Amazon and the North region in the lowest positions of national rankings, highlighting the urgency of advancing this agenda. The lack of public investment in ST&I can result in missed opportunities to generate new products and technologies, as well as to revitalize the regional economy.

These data reinforce the notion that the North region faces difficulties in attracting and retaining qualified Ph.D. holders and researchers. To overcome this limitation, the availability of graduate programs in the Legal Amazon has grown, increasing from 2.7% to 7.4% between 2000 and 2015 relative to the national total. To sustain this growth, it is essential that the institutional environment of universities fosters research aligned with regional demands and encourages publication in high-impact scientific journals (Rodrigues, 2017; Sudam, 2023).

In this regard, the objective of this article is to analyze the challenges of internationalizing graduate education in the Legal Amazon. It aims to clarify current frameworks in accordance with the recommendations and requirements of funding agencies, while shedding light on the meanings and possibilities for enhancing internationalization within the Amazon region.

2 Methodology

The proposed study addresses the internationalization practices and perspectives of graduate programs in the Legal Amazon region. To this end, the research procedure was based on Capes evaluation documents for Graduate Programs (PPGs) in the Amazon region that have been identified as having an international profile, specifically those awarded scores of 6 or 7 by Capes.

Within the total set of Graduate Programs in the Legal Amazon, 10 PPGs are designated by Capes as programs of excellence with higher international impact. The underlying assumption is that these specific PPGs serve as benchmarks for internationalization, which led to their selection for this study.

Of the 448 *stricto sensu* PPGs in the Legal Amazon (Table 1), only 0.448% achieved internationalization status as defined by Capes (Table 2). These programs are concentrated primarily across three states in the region, with the state of Pará making the largest contribution (70%).

Table 1: Overview of Capes-recognized PPGs in the Legal Amazon

State	Number of Programs
Acre	15
Amapá	12
Amazonas	70
Maranhão	68
Mato Grosso	68
Pará	152
Rondônia	19
Roraima	14
Tocantins	30

Source: Sucupira Platform (2024).

Table 2: Overview of PPGs with an international profile in the Legal Amazon

Higher Education Institution	Evaluation Area	PPG Name	Level	Capes Score
Universidade Federal do Pará – UFPA	Astronomy / Physics	Physics	M/D	6
Universidade Federal do Pará – UFPA	Biological Sciences I	Genetics and Molecular Biology	M/D	6
Universidade Federal do Pará – UFPA	Biological Sciences III	Biology of Infectious and Parasitic Agents	M/D	6

Universidade Federal do Pará – UFPA	Linguistics and Literature	Letters: Linguistics and Literary Theory	M/D	6
Universidade Federal do Pará – UFPA	Psychology	Psychology	M/D	6
Universidade Federal do Pará – UFPA	Geosciences	Geology and Geochemistry	M/D	7
Universidade Federal do Pará – UFPA	Interdisciplinary	Sustainable Development of the Humid Tropics	M/D	7
Universidade Federal do Amazonas - UFAM	Computer Science	Informatics	M/D	6
Instituto Nacional de Pesquisas da Amazônia – INPA	Biodiversity	Biology (Ecology)	M/D	7
Universidade Federal do Maranhão	Social Work	Public Policy	M/D	6

Source: Sucupira Platform (2024).

To achieve a broader understanding of the themes under analysis, the evaluation reports from Capes' fields of evaluation were utilized. These reports provide an overview of the fields of evaluation, along with their respective trends and characteristics during the 2017–2020 period. Capes conducts periodic quadrennial evaluations of Graduate Programs (PPGs), providing detailed information regarding their quality, performance, and specific characteristics. These reports can reveal relevant aspects of the internationalization of PPGs in the Legal Amazon, highlighting their particularities in comparison with other regions of Brazil. Consequently, they can offer insights into the internationalization of graduate education according to the guidelines established for each field of evaluation. Data collection took place in June 2023, when the reports were published by Capes.

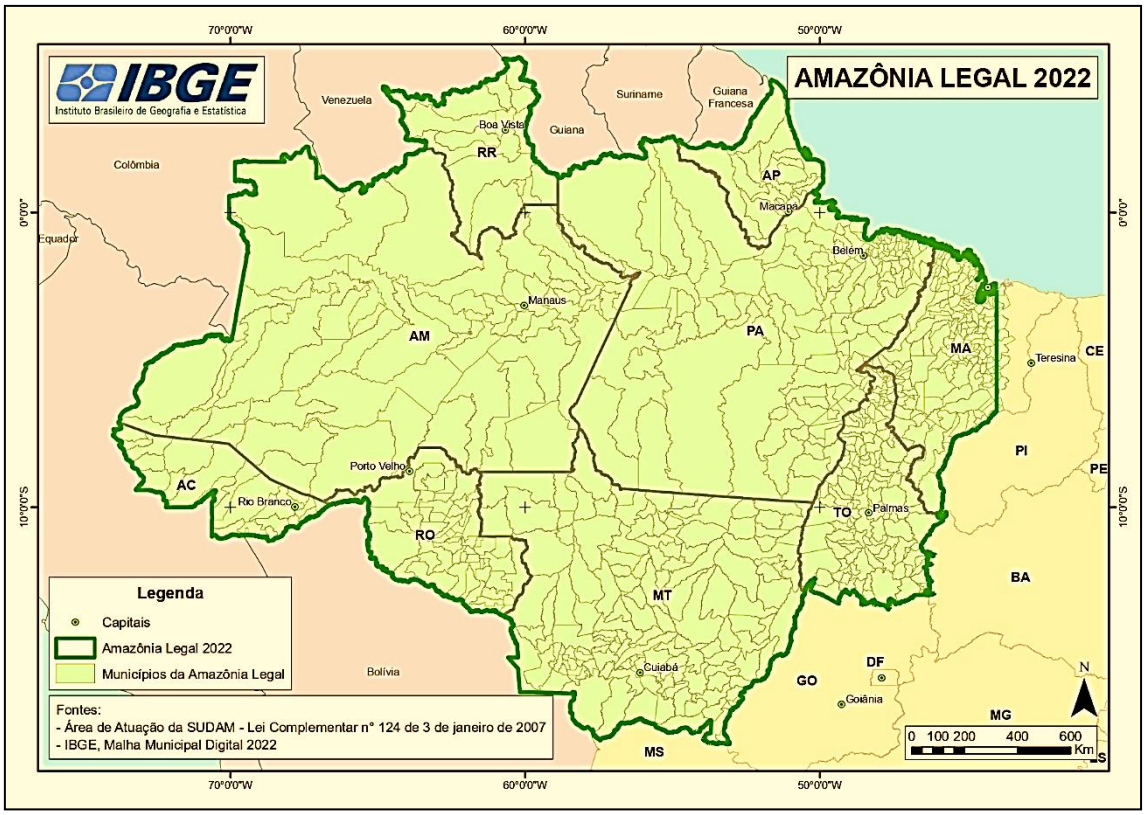
Official documents from Capes' broad fields were analyzed, examining the genres present in the statements issued by funding agencies. The purpose was to verify how internationalization guidelines are decentralized and how they influence PPGs by promoting actions to align with the required parameters. The reports from the latest Capes evaluation enabled comparisons between the fields of evaluation and their respective orientations for internationalization.

3 The Legal Amazon and its particularities

The region known as the Legal Amazon encompasses all states in Northern Brazil, namely Amazonas, Acre, Pará, Amapá, Tocantins, Rondônia, and Roraima. Furthermore, it includes a portion of the state of Maranhão, located in the Northeast region, and one state from the Central-West region, Mato Grosso, spanning 772 municipalities, as illustrated in Figure 1. This region was established to define the geographical boundaries of the operational area for the Superintendency for the

Development of the Amazon, aiming to implement territorial and economic sovereignty policies to promote its development (SUDAM, 2023).

Figure 1 - Graphical representation of the states that make up the Legal Amazon.



Source: IBGE (2022).

The total area of the region encompasses 5,015,067.749 km², representing a significant portion of the Brazilian territory, which corresponds to approximately 59.1% of the total. Despite this, it is a sparsely populated area, home to only 27.8 million residents equivalent to 13.3% of Brazil's population with an average population density of 6 inhabitants per km² (IBGE, 2022).

In 2022, data revealed that the region's Gross Domestic Product (GDP) totaled BRL 764 billion, which equals 11.2% of the national GDP. Per capita household income reached BRL 1,096, a value close to the average of the Northeast region, yet substantially lower than that of other regions and the national average. Measured by the Gini coefficient, the index for per capita household income in the Legal Amazon was 0.507, further underscoring the economic inequality relative to the national average. It is worth noting that this index had previously shown lower values, undergoing an upward trend starting in 2015 and rising continuously until 2018. However, socioeconomic instability, particularly during the COVID-19 pandemic, led to significant transformations in society, which were reflected in a subsequent decline of the index, a situation that persists to date. The data also show that there are only 11.7 million employed individuals in the region, representing 12.3% of Brazil's total working population (Amazônia Legal em Dados, 2023). This allows for the inference that a significant contingent of individuals has not yet successfully entered productive activities, thereby contributing to the region's rising unemployment rate.

Investments in Science and Technology (S&T) made by Brazilian states, when compared to expenditures on other activities, reflect state-level prioritization and efforts in this arena. Despite the recognized importance of investing in programs, projects, policies, and actions oriented toward S&T development, the Legal Amazon region recorded the lowest share of expenditures in this area compared to other Brazilian regions, reaching a mere 0.75% in 2019. This data is concerning, as it indicates that the region's potential is still not being fully exploited (Amazônia Legal em Dados, 2023).

Regarding the workforce of professionals linked to technical-scientific occupations, data from 2021 reveal a percentage of only 0.87%. Consequently, a lower number of patents is also observed. Despite increasing from two in 2011 to 81 in 2021, the region still exhibits a patent volume below the national average (Amazônia Legal em Dados, 2023).

Thus, regional disparities persist, demonstrating that the South and Southeast regions receive more substantial government support for innovation, with significant financial contributions from both the public and private sectors. Conversely, the North and Northeast regions lack equivalent resources, including those related to investments from innovative companies, remaining below the national average, as pointed out by Santana et al. (2019).

Regarding internet access in the Legal Amazon, 76.7% of the population over the age of 10 used the internet during 2021—a margin close to that recorded in the Northeast region, but lower than in the other regions of Brazil. Despite the substantial use of landline and mobile telephony by the population, the percentage in 2021 stood at 94.8%, representing the lowest rate in the country (Amazônia Legal em Dados, 2023).

In the educational sphere, the low representation of the Legal Amazon relative to the availability of *stricto sensu* graduate programs is striking; in 2022, the region had 448 programs offering master's and doctoral degrees, whereas the total number of graduate programs in Brazil reached 4,592. When compared to the South and Southeast regions, this disparity becomes even more evident, as they accounted for 1,970 and 981 programs, respectively, offering master's and doctoral degrees. The Northeast region had 956 programs, the Central-West 396, and the North region 289 programs. Another statistical indicator that highlights this inequality relates to journal article publications. In 2020, the Southeast and South regions presented 141,285 and 59,996 papers, respectively. Conversely, the Northeast region registered 56,888 publications, followed by the Central-West with 23,378, and finally, the North region with 18,146 (Plataforma Sucupira, 2024).

Regarding the rate of master's and doctoral degree holders, the region under study experienced substantial growth over the last decade, reaching a growth rate of around 109.4%. However, 2021 data show that 20 students graduated with a master's or doctoral degree per 100,000 inhabitants, which is lower than the national average of 40 (Amazônia Legal em Dados, 2023).

These discrepancies, as pointed out by Pantoja (2022), have prompted discussions within the academic sphere over recent decades, particularly regarding the need to recognize regional differences and the diverse social, political, and economic conditions existing across Brazil's regions. Consequently, attention has

turned to the unequal distribution of permanent faculty members and the disparities in access to funding, policies, and specific actions tailored to the Legal Amazon.

Thus, the distinct regional realities of Brazil, which directly impact the functioning of institutions—including universities—reinforced the need to seek mechanisms to minimize these discrepancies. Grounded in this recognition, the Forum of Rectors of Higher Education Institutions of the North Region was held in 2016. The drafting of the Rio Branco Letter (*Carta de Rio Branco*) during this event resulted in a direct request to funding agencies for specific policies that took into account the peculiarities of the Legal Amazon. As a result of this effort, a gradual increase in calls for proposals for graduate education was observed, prioritizing policies and actions aligned with the regional context (Pantoja, 2022).

Regarding graduate education at the master's and doctoral levels, there are significant inequalities in the distribution of programs across Brazilian regions—a reality also observed within the Legal Amazon region, where Pará, Mato Grosso, Amazonas, and Maranhão have, respectively in that order, the highest number of PPGs, while Amapá has the lowest. These programs are predominantly located in the capital cities of these states, demonstrating the limited internal expansion of public higher education institutions (SUDAM, 2019).

In this context, the South and Southeast regions offer greater appeal to researchers, owing to their larger number of programs of excellence with national and international recognition. This facilitates the advancement of numerous research projects that contribute to the regional development of these areas. Consequently, a region like the Legal Amazon, which possesses immense potential for expanding research into local and regional realities, faces distinct disadvantages by failing to serve as an attractive hub for researchers due to the aforementioned reasons.

Picinin et al. (2012) also highlight that regional concentration manifests in the number of researchers and qualified professionals. When these professionals relocate from their regions of origin to major centers, they often choose not to return, consequently reflecting on the low level of development in the country's peripheral regions.

As detailed by Carvalho (2021), the excellence and prominence of PPGs are not measured exclusively by the intellectual output of technical-scientific publications—particularly in stratum A journals and books classified as L4 and L3—as investments in internationalization emerge as a potential indicator of quality. The internationalization process of Brazilian universities is not homogeneous; it is possible to identify differences regarding the adopted policies, the methods utilized, and the results achieved in relation to the proposed goals and the possibilities for adaptation within the operational reality of each PPG.

Based on information obtained from the Sucupira Platform (*Plataforma Sucupira*, 2024) and GeoCapes (2020), universities that possess high scores—with grades between 6 and 7 in their graduate programs—have internationalization as a preponderant criterion (Haeffner; Zanotto; Guimarães, 2021). Of the 52 institutions mentioned by the aforementioned authors, only two are located in the Legal Amazon: the Federal University of Pará (UFPA), which ranks 27th, and the Federal University of Maranhão (UFMA), located in 52nd place. The top ten positions in the ranking, in order of classification, are as follows: University of São Paulo (USP), Federal University of Rio de Janeiro (UFRJ), Federal University of Rio Grande do Sul

(UFRGS), Federal University of Minas Gerais (UFMG), State University of Campinas (UNICAMP), São Paulo State University (UNESP), Federal University of Santa Catarina (UFSC), University of Brasília (UnB), Federal University of Viçosa (UFV), and Pontifical Catholic University of Rio Grande do Sul (PUCRS). In other words, these are higher education institutions located primarily in the South and Southeast regions, with the exception of UnB, which is situated in the Central-West region.

It is relevant to highlight that there is a larger number of universities in the aforementioned regions, not only in the top positions but also among the 52 listed universities (Haeffner; Zanotto; Guimarães, 2021). When focusing attention on the Legal Amazon, it is possible to observe, as presented, a disparity regarding the internationalization of graduate programs across its constituent states, even among those that achieved grades of 6 and 7.

In addition to the aforementioned issues concerning internationalization, it is important to address regional linguistic inequality, which is also significant in this context. Regarding English proficiency, data from Education First (2023) place Brazil within a "low proficiency" band in the global ranking, occupying the 70th position out of 113 countries. This classification reveals a regional discrepancy, particularly when compared to the worldwide proficiency average, where Brazil still shows a low score of 487 points, against the global average of 493 points. In the Latin American context, the country ranks 15th in proficiency, while Argentina leads as the country with the highest proficiency level in the region. These data point to considerable challenges regarding linguistic equity across the different regions of Brazil, with the states of Santa Catarina (555), Rio Grande do Sul (542), and Distrito Federal (540) scoring the highest, whereas Mato Grosso do Sul (478), Tocantins (474), Rondônia (471), Amapá (461), Piauí (451), Acre (450), and Maranhão (441) register the lowest scores—underscoring the need for linguistic policies and initiatives aimed at reducing these disparities.

Achieving academic internationalization is conditioned not only by factors internal and external to universities but, above all, by their connection to territorial and regional dynamics. The development challenges faced by the Legal Amazon region can pose an additional obstacle along this path. As justified by Oliveira et al. (2019), despite the vast biodiversity present in the region, obstacles related to economic, social, and environmental progress arise. These challenges are accentuated in a context where the implementation of public policies is not always aligned with current realities, leaving gaps in satisfactorily addressing existing regional demands.

In the academic sphere, internationalization demands not only internal efforts but also a careful consideration of local conditions. However, in the Legal Amazon, additional hurdles stemming from socioeconomic and environmental issues can aggravate the situation. The wealth of biodiversity, while a strong suit of the region, coexists with challenges that affect development in its various facets. In this context, the pursuit of academic internationalization requires not only overcoming internal challenges but also a careful approach adapted to the unique characteristics of the Legal Amazon (Oliveira et al., 2019).

Participating in this dialogue, as highlighted by Theis, Butzke, and Santos (2021), implies understanding that the process of regionalization encompasses the practice of territorialization, thereby establishing boundaries within the context of a

national social formation. A region is characterized as a relative and relational geographic space, distinguished from other spaces delimited by a common criterion, thus shaping itself as a distinctive territory with respect to other regions.

This analysis, as pointed out in the study conducted, highlights the discrepancies in metrics, which are corroborated by scientific and academic research, data compiled by different organizations, and socioeconomic indicators, among other sources. Such evidence reveals the disparities among Brazilian regions, not only in terms of biodiversity but also regarding imbalances within the economic, social, and political fields. This underscores, for instance, the prominence of the South and Southeast regions compared to the Legal Amazon. In the words of Coêlho (2017a, p. 66), "the Semi-Arid Northeast and the Amazon region comprise some of the major national spaces segregated by this selective regional dynamic."

From this perspective, it is crucial to understand the concept of regional development, which is intrinsically related to the growth of prosperity within a given area through activities that enable such advancement. Although its primary objective is economic improvement, regional development also seeks to promote social and cultural aspects. Thus, spatial planning at the regional scale represents a process in which a region's geography undergoes successive transformations driven by human interference in the occupation of these spaces. These changes manifest across diverse dimensions, encompassing the economic, environmental, social, and physical spheres, thereby influencing both rural and urban landscapes, as well as the geographic distribution of the population and human activities (Fórum das Cidades, 2023).

Public policies play a crucial role in directly impacting regional development by promoting the intensification of linkages and closer dialogues among different sectors. This approach seeks to ensure equitable access to public resources, not only for the more affluent population but also to benefit regions inhabited by the most vulnerable, thereby recognizing subregional diversity (Neto et al., 2017). Thus, there persists an imperative need for a national project that plans and organizes various essential actions for regional development, encompassing areas such as basic education, public health, technology availability, infrastructure, and credit (Coêlho, 2017b).

However, the absence of an adequate policy to promote regional development—one that privileges the bundling of actions—can trigger fragmentation between states and municipalities and, consequently, the pursuit of localized and particularistic initiatives in the search for federal resources, which may even drive the attraction of private investments (Coêlho, 2017a). As Coêlho (2017b) mentions, there is an apparent paralysis of regional policy, coupled with severe inequalities in income and social indicators; in Brazil, these discrepancies are among the most pronounced in the world.

The core issue centers on the governance of regional development, given the economic and political complexities inherent to a country of continental proportions like Brazil. The formulation of strategies and linkages by social actors, as well as the construction of a favorable institutional environment, are not achieved solely through the enactment of laws and regulatory decrees, especially when they lack contextualization within regional realities. It becomes imperative to understand the specific institutional and historical context, aligned with the aspirations for local and

regional autonomy present in each geographic space. In this sense, the experiences built within the social fabric enable an economic reorganization and, consequently, its coordination, while consistently considering growth and competitiveness at both national and international levels (Pires et al., 2017).

Nonetheless, the discrepancies resulting from the differentiated allocation of resources and the formulation of public policies, programs, and actions by government agencies generate considerable challenges regarding regional development. These disparities become difficult to overcome, especially when they are disconnected from the diverse regional and local realities. As evidenced in this study, the Legal Amazon faces obstacles in its pursuit of higher standards of regional development aimed at narrowing socioeconomic gaps in relation to the country's other regions. Given this scenario, there is an urgent need for strategies that are more contextualized and sensitive to the regional specificities of the Legal Amazon, with a view to fostering a more equitable and sustainable development.

4 Results and Discussion

This research aims to address the challenges of internationalizing graduate education in the Legal Amazon, highlighting its relevance for the region's academic and scientific advancement. The detailed results identified in this study are available in Sousa (2024).

Internationalization has proven to be a significant strategy adopted by universities to meet regional needs and promote the construction of scientific and technological knowledge. It is increasingly featured on the national political agenda, aiming to expand the visibility of PPGs through high-impact scientific production, partnerships, academic mobility, and knowledge dissemination, thereby overcoming linguistic and global barriers. However, only 0.44% of PPGs in the Amazon are considered internationalized, given that only PPGs with grades of 6 and 7 reach this benchmark level. Consequently, understanding this empirical object and its specificities is of paramount importance.

The choice of the Legal Amazon as the empirical object of this research is justified by its rich biodiversity and cultural diversity, even though the region faces significant socioeconomic and scientific inequalities, which attract the interest of researchers and scholars worldwide. Statistics confirm the region's difficulties in attracting and retaining PhDs and qualified researchers, for instance. Although there has been growth in the offering of graduate programs within the Legal Amazon, indicators remain relatively low compared to other regions of Brazil (Sousa, 2024). Therefore, it is crucial that the institutional environment of universities stimulates research aligned with regional demands, alongside the requirements of funding agencies related to centripetal forces, in order to foster the internationalization process of PPGs.

A lack of research on the topic was observed in the literature in recent years, indicating the need for further investments in studies of this nature to boost the internationalization process in the region (Sousa, 2024). Based on this identified gap, it is important to expand research of this kind to support public managers in formulating public policies targeted at the Legal Amazon. Therefore, this entails

addressing the specificities of the region, which is marked by socioeconomic and scientific exclusion when compared to other Brazilian regions, particularly the South and Southeast.

Ultimately, it is fundamental to adopt specific measures to develop effective internationalization actions, considering the competitive environment of higher education in Brazil. Despite the importance of public policies, structural challenges—such as the lack of qualified professionals to manage PPGs—can compromise their effectiveness. Universities' access to public policies can reduce regional disparities and boost the internationalization of regional higher education. However, current policies are not yet adapted to the reality of the Legal Amazon, and the effective implementation of these policies faces hurdles; for instance, no higher education institution from the region was selected in the Capes-PrInt program, the most recent specific call to promote internationalization in graduate education. For now, regional and socioeconomic inequalities must be considered to ensure that everyone has access to internationalization, thereby preventing the concentration of resources in specific regions.

National internationalization policies must be periodically reviewed and improved, taking into account the needs of higher education institutions and the region. It is important that internationalization be viewed as a continuous process in the pursuit of academic excellence, prioritizing the country's scientific and technological development and promoting the inclusion of marginalized groups. To achieve these goals in the Legal Amazon, it is crucial to strengthen cooperation among educational institutions, funding agencies, and governments, in addition to investing in adequate infrastructure and support. Internationalization must be seen as a transformative process, contributing to societal improvements through human resource training and, consequently, to regional development.

When analyzing the internationalization practices of Graduate Programs through the reports of the latest quadrennial evaluation of Brazilian graduate education conducted by Capes, it was verified that several main points emerge from the academic discourses of the fields of knowledge regarding graduate internationalization. Initially, the data analysis on graduate internationalization revealed not only significant variations in the approaches adopted by different fields but also reflections on the factors influencing these strategies and how they can be improved to foster a more robust and collaborative international presence across diverse fields of knowledge. For instance, the weighting of internationalization criteria in Capes' graduate evaluation for each field suggests an analysis of its relative weight and impact within the academic landscape.

When considering the criteria for internationalization, the role of *Qualis* stands out as an important guide for global impact metrics, influencing faculty and student publications in well-ranked journals and, therefore, contributing to an evaluation of the quality of the research conducted and its dissemination on a global scale. However, it is necessary to further explore the potential for cooperation actions among Latin American and African countries following a South-South cooperation approach, leveraging geographic and cultural proximity to boost internationalization. Although some fields mention this possibility in the reports submitted to Capes, it is crucial to avoid specific regional or epistemological asymmetries when encouraging internationalization policies, ensuring they also benefit regions with inequalities, as

opposed to favoring institutions in the South and Southeast of Brazil in the Capes-PrInt call.

Linguistic barriers also represent a significant challenge. Strategies to promote the use of other languages in writing scientific publications and participating in online courses are fundamental to overcoming them. However, there are concerns regarding the increase in regional and social inequalities driven by internationalization, as well as the commodification of education due to productivity demands. In this context, it is essential that the academic-scientific discourse of the major fields of knowledge is aligned with Capes' internationalization policies, prioritizing academic mobility, technical-scientific cooperation, and publication in high-impact journals in English, provided that it also addresses the specificities of the Legal Amazon.

Although not all statements within the graduate evaluation reports are perfectly aligned with the practices of the PPGs, especially those in transition (grade 5), it is notable that these programs are gradually seeking to comply with what funding agencies propose. This reflects a responsive and active stance in adapting to internationalization requirements, particularly in the face of the challenges encountered by the Legal Amazon to overcome inequalities and obstacles in regional development, with the aim of narrowing socioeconomic disparities compared to other regions of the country. Funding agencies play a crucial role in guiding best practices for knowledge production and dissemination; thus, the compliance of technical-scientific products developed by PPGs with these guidelines is essential. This underscores the influence of the centripetal force, which manifests in the stabilization and standardization of academic processes (Bakhtin, 2016). Concurrently, the pursuit of internationalization drives the development of competencies necessary to thrive in an interconnected and diverse world, serving as an essential centrifugal force to empower professionals to face global challenges (Bakhtin, 2016).

On the other hand, when analyzing the internationalization practices of PPGs in the Legal Amazon, it was observed that significant challenges exist for graduate education in the region. It is inferred from this research that PPGs face difficulties in achieving greater autonomy due to the pressure to follow Eurocentric standards, which undermines their classification in the Capes evaluation. Only a small number of PPGs achieved grades corresponding to an internationalized profile, demonstrating an asymmetry between internationalized PPGs and those in the process of transition to become consolidated and internationalized within the Amazon region.

Sousa Santos (2016) contributed to the discussion of this topic by highlighting the need for a shift in educational and scientific paradigms, emphasizing the importance of recognizing and valuing historically marginalized knowledge. The reflection of this research is that South-South cooperation emerges as an alternative for equitably distributing knowledge, strengthening the capacities of universities in developing countries and in regions with acute inequalities, such as the Legal Amazon. Internationalization should not solely follow the standards of the Global North, but rather promote an Epistemology of the South that respects cultural and social diversity.

For PPGs transitioning toward an internationalized profile, a possible strategy would be to strengthen cooperation among Southern countries before seeking

recognition in the North, especially with countries bordering the states of the Amazon region. By internationalizing, universities in the Legal Amazon can contribute to the region's economic and social development, attracting investments and also promoting scientific and cultural tourism, for instance. On the other hand, it is essential that internationalization practices are proposed in a responsible and sustainable manner, respecting the knowledge of traditional peoples and the region's biodiversity, aligned with an Epistemology of the South. Universities can play a crucial role in valuing the specificities of the Legal Amazon, promoting scientific and technological development in line with the needs of the PPGs and the region as a whole.

Finally, the results of this study indicate that most of the analyzed PPGs have responded to the challenges faced in the Legal Amazon. In particular, a significant focus is observed on strategic studies related to environmental issues and the region's endemic biodiversity. This finding evidences that internationalized PPGs have managed to coherently articulate both regional and global concerns. This alignment demonstrates a commitment to South-South cooperation, as highlighted by Sousa Santos (2016), thereby consolidating an integrated and comprehensive approach to addressing the inherent challenges of the Legal Amazon.

Lastly, when analyzing whether PPGs in the Legal Amazon adopt an attitude of active responsiveness upon receiving demands for internationalization actions, it is observed that they are gradually seeking to comply with the proposed requirements, despite facing greater challenges in the internationalization process compared to PPGs in more consolidated regions of the country. This has been verified in the data analysis, where the responsiveness of PPGs to internationalization demands is evident in the development of specific strategies and the pursuit of international partnerships, as well as in the publication of scientific research aimed at achieving a global impact with the technical-scientific products generated by PPG collaborators. Therefore, the internationalization of PPGs in the Legal Amazon is a dynamic process, essential for scientific and academic advancement, driven by the convergence and diversification of knowledge and collaborations. Both centripetal and centrifugal forces play important roles in this process, promoting the quality, diversity, and global recognition of the PPGs.

5 Conclusion

This research represented a significant contribution to graduate education in the Legal Amazon by comprehensively reflecting on the internationalization of PPGs in the region. The study demonstrated that only a small fraction of PPGs in the Legal Amazon are formally considered internationalized. Nevertheless, it is highlighted that these programs have played an important role in responding to the specific challenges faced in the region, focusing particularly on strategic studies related to the environment and biodiversity, thereby articulating regional concerns with global agendas.

Furthermore, the research highlighted the increasing adaptation of PPGs to internationalization demands, as evidenced by the pursuit of international partnerships (with potential for South-South cooperation) and the production of

scientific works with global reach, despite the socioeconomic and scientific inequalities present in the region. This dynamic internationalization process, influenced by centripetal and centrifugal forces, plays a crucial role in the scientific advancement and regional and global recognition of PPGs in the Legal Amazon, thereby contributing to narrowing socioeconomic disparities in relation to other regions of the country.

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