

# Regional Development through the Lens of Geographical Indications in Northeast Brazil

**Desenvolvimento regional sob a ótica do reconhecimento de Indicações Geográficas no Nordeste Brasileiro**

**Desarrollo regional en la perspectiva del reconocimiento de Indicaciones Geográficas en el Nordeste brasileño**

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## Abstract

Regional development is directly linked to the historical evolution of communities and the occupation of their territories, as well as the current state of the occupied or explored spaces, and their economic dynamics. In this sense, knowing that discussions on regional development are crucial, one should note that geographical indications (GIs) can contribute to its achievement. Therefore, this paper aims at investigating the relations between geographical indications and the regional development of Brazil's Northeast, seeking to understand if there has been any relevant development in the region since the granting of GIs. By adopting a qualitative and quantitative approach, including bibliographic study, documentary analysis, and data survey through questionnaires applied to representatives of the 16 current geographical indications in the Northeast, we observed that there was, in fact, regional development after the certification of these GIs, especially concerning the valorization of manufacturers, products, and locations. However, it was also evident that there is a need for restructuring, mainly of the GIs that are not using the stamp. It is of the utmost importance to establish a partnership between public and private institutions, associations, and manufacturers to strengthen and integrate the actors of different production chains, generating a kind of development guided by the balance between economic, environmental, social, and cultural benefits.

**Keywords:** Regional development. Geographical Indications. Brazilian Northeast.

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## Resumo



O desenvolvimento regional está atrelado à evolução histórica das comunidades e da ocupação dos territórios, à situação atual dos espaços ocupados ou explorados e também à dinâmica econômica. Neste sentido, sabendo que discussões sobre o citado desenvolvimento são fundamentais, nota-se que as Indicações Geográficas (IG) podem agir como propulsoras dele. Dessa forma, este trabalho tem como objetivo investigar as relações existentes entre IG e desenvolvimento regional no Nordeste do Brasil, buscando entender se houve desenvolvimento na região após a concessão das IG nordestinas. Adotando uma abordagem quali-quantitativa e utilizando procedimentos que envolveram estudo bibliográfico, análise documental e levantamento de dados através de questionários com representantes das atuais 16 indicações do Nordeste, observou-se que ocorreu desenvolvimento regional após o reconhecimento das referidas IG, sobretudo, quanto à valorização de produtores, produtos e localidades. Porém, evidenciou-se a necessidade de reestruturação, principalmente, das IG que não estão utilizando o selo. É primordial a parceria entre instituições públicas e privadas, associações e produtores para fortalecer e integrar os atores dos diferentes elos das cadeias produtivas, gerando um desenvolvimento pautado no equilíbrio dos benefícios econômicos, ambientais, sociais e culturais.

**Palavras-chave:** Desenvolvimento regional. Indicações Geográficas. Nordeste brasileiro.

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### Resumen

El desarrollo regional está ligado a la evolución histórica de las comunidades y la ocupación de los territorios, a la situación actual de los espacios ocupados o explotados y también a la dinámica económica. En ese sentido, sabiendo que las discusiones sobre el mencionado desarrollo son fundamentales, se advierte que las Indicaciones Geográficas (IG) pueden actuar como propulsores del mismo. Así, este trabajo tiene como objetivo investigar las relaciones existentes entre las IG y el desarrollo regional en el Nordeste de Brasil, buscando comprender si hubo desarrollo en la región después de la concesión de las IG del Nordeste. Adoptando un enfoque cualitativo-cuantitativo y utilizando procedimientos que involucraron estudio bibliográfico, análisis de documentos y recolección de datos a través de cuestionarios con representantes de las 16 indicaciones actuales en el Nordeste, se observó que el desarrollo regional ocurrió después del reconocimiento de la referida IG, especialmente en cuanto a la apreciación de los productores, productos y lugares. Sin embargo, la necesidad de reestructuración era evidente, especialmente para las IG que no utilizan el sello. La alianza entre instituciones públicas y privadas, asociaciones y productores es fundamental para fortalecer e integrar a los actores de los diferentes eslabones de las cadenas productivas, generando un desarrollo basado en el equilibrio de los beneficios económicos, ambientales, sociales y culturales.

**Palabras-clave:** Desarrollo regional. Indicaciones Geográficas. Nordeste brasileño.

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## Introduction

Regional development encompasses a series of aspects that, upon analysis, demonstrate the importance of actions that improve people's quality of life. The study of regional development must consider factors such as the historical evolution of communities in the region and its territorial occupation, the current situation of the occupied or explored spaces, as well as the dynamics of its predominant economy.

According to Corrêa, Silveira & Kist (2019), development is an open concept. The initial definitions of the terms, established in the 17th century, regarded economic growth as either a synonym or a necessary condition of development, highlighting that wealth is directly proportional to the amount of precious metal accumulated. Building on this idea, Lima & Simões (2010) argue that development occurs in a geographically unequal manner, favoring the most diligent places or regions while neglecting less active ones.

However, it is crucial to emphasize that the drivers of regional dynamics and, consequently, regional development include social, economic, political, and cultural demands. Pellin (2019) points out that the strategies for achieving development in a particular region can rely on regional assets, which are typically intangible and strengthened by cultural and natural aspects.

Therefore, distinguishing a place from others and employing this distinction to enhance its value and promote regional development is a significant challenge, especially in an increasingly globalized world that tends to standardize products and homogenize society as a whole. Bruch and Vieira (2016) state that several processes are working against the idea of massification and valuing the culture of know-how and origins.

In this sense, discussions arise regarding the contribution of geographical indications (GIs) in promoting a kind of geographical distinction that generates and adds value. According to Brazil's National Institute of Industrial Property (INPI, 2020), GIs value the reputation, quality, and features of products and services that are linked to a specific geographical origin. Therefore, it is possible to disseminate globally the information that a region specializes in something and is capable of producing a unique and exceptional good, whether material or immaterial.

On the other hand, it is important to clarify, as Vanin (2016) points out, that these geographical indications are related to industrial property. Together with copyright and *sui generis* right protection, comprise intellectual property, which in turn is a sector of jurisprudence responsible for safeguarding any product of the intellect. The Law of Industrial Property (Law nº 9,279/1996) represents the legal landmark of GIs in Brazil according to Brazilian legislation, regulating rights and obligations related to industrial and intellectual property in the country.

Currently, the Ordinance INPI/PR No. 04, dated January 12 2022, regulates GIs in the country. This document outlines the conditions for registering indications, with the INPI being the competent body responsible for granting legal registration of the GIs in the country either through a protected designation of origin or an indication of source. According to Santos (2021), a protected designation of origin certifies that a given product is different from the others. This certification is based on geographical factors, such as climate, altitude, or environmental aspects. It also takes into account the means of producing the product. On the other hand, an indication of source acknowledges that a given region has become known by a product manufactured there. This recognition also distinguishes the product from the others.

Regardless of whether the product or service registration is associated with its origin or source, there is a series of possible benefits stemming from the certification of a geographical indication. This includes the valorization of the local culture and unique manufacturing methods, the addition of value to the product, its international recognition, and consequently, job creation, income generation, and increased regional development. Therefore, the certification of a GI in a given region creates significant potential for stimulating regional development.

In this context, the present paper aims at investigating the relations between geographical indications and regional development of Brazil's Northeastern region. It is important to note that the primary question addressed in this paper is as follows: Did the granting of geographical indications result in proper development of Brazil's Northeast? The methodological approach adopted in this study involves a bibliographic survey of relevant studies and scientific papers, analysis of document data, and a questionnaire administered to representatives of the 16 current Northeastern GIs in the country. In summary, this paper aims to: (a) employ the fundamental concepts relevant to the theme at hand and examine documents related to the GIs in question; (b) analyze the literature on regional development associated with GIs; and (c) analyze the results of the applied questionnaire both quantitatively and qualitatively.

### **Theoretical approach**

The upcoming sections include a brief discussion of the theoretical foundations of this research, along with an analysis of its basic concepts. They encompass the

concept of regional development, the process of granting geographical indications, as well as the general features of GIs in Brazil's Northeastern region.

### **Regional development**

The term “development” has a broad definition according to different aspects. What was once discussed exclusively from an economic point of view can now be found in several contexts and approaches. This requires a multifaceted analysis through different areas of research. Therefore, as social dynamics has advanced and continues to do so, it is increasingly necessary to have a holistic view of what development entails. This view includes all kinds of different factors and subjects that impact it, such as geography, culture, economy, as well as urban and regional planning.

Regarding the concept of region, Fajardo (2005) explains that a region comprehends various forms of culture, economy, discourse, and modes of action, creating a social aggregate known as “territoriality”. It should be noted that this territory includes a a physical natural space, as well as social and cultural identities that attract groups of individuals seeking capital accumulation and focusing primarily on the economic spatiality of the region.

According to Oliveira (2021), the focus on regional development through the organizational study of society in spatial terms is not a new phenomenon. As early as 1755, Richard Cantillon, a French-Irish economist, conducted studies on economic theory, analyzing a series of issues related to value, price, international trade, and development. However, it was only in the post-war period, specifically during the 1950s, that systematic works concentrating on regional development began to gain visibility.

In this context, it is important to highlight that regions or economic spaces have several crucial factors in their essential structure. According to Lima (2016), one of these factors is agglomeration. Populated spaces in regions, whether urban or rural, are where production transformations and relationships occur. Special emphasis should be placed on urban agglomeration because it serves as the center of this production and is where administrative and economic decisions of these regions are made.

Oliveira & Lima (2021) bring forward a relevant aspect concerning how a region is related to growth and economical development, highlighting that economic growth is just one part of regional development. Rodrigues (2018), on the other hand, argues that factors such as access to education, healthcare, financial aid during crises, quality of life, gender equality, among other factors inherent to local cultures, are essential to the development of a region.

Boisier (1996) emphasizes the idea of development guided by economic growth and deems the following attributes as necessary or advisable: increasing regional autonomy; a strong movement of social inclusion; awareness regarding both environmental preservation and an adequate use of resources; as well as the presence of an identity that ties the population to its region. Thus, even when focusing on the economy, the inherent complexity of development becomes apparent, as its character can be described as multi, inter, pluri, and transdisciplinary, all at once.

It is essential to consider geographical and population nuances, as well as the relationships between individuals and natural resources in the region, and how they organize themselves based on their religious, ideological, and cultural beliefs. Taking these elements into account, Furtado (2009) asserts that development will only be possible if conditions for a wide social involvement are created, driven by public policies that empower civil society. Only in this way can the process of creating wealth (in its broadest sense) be enhanced, and consequently, its distribution, thus strengthening regional spaces.

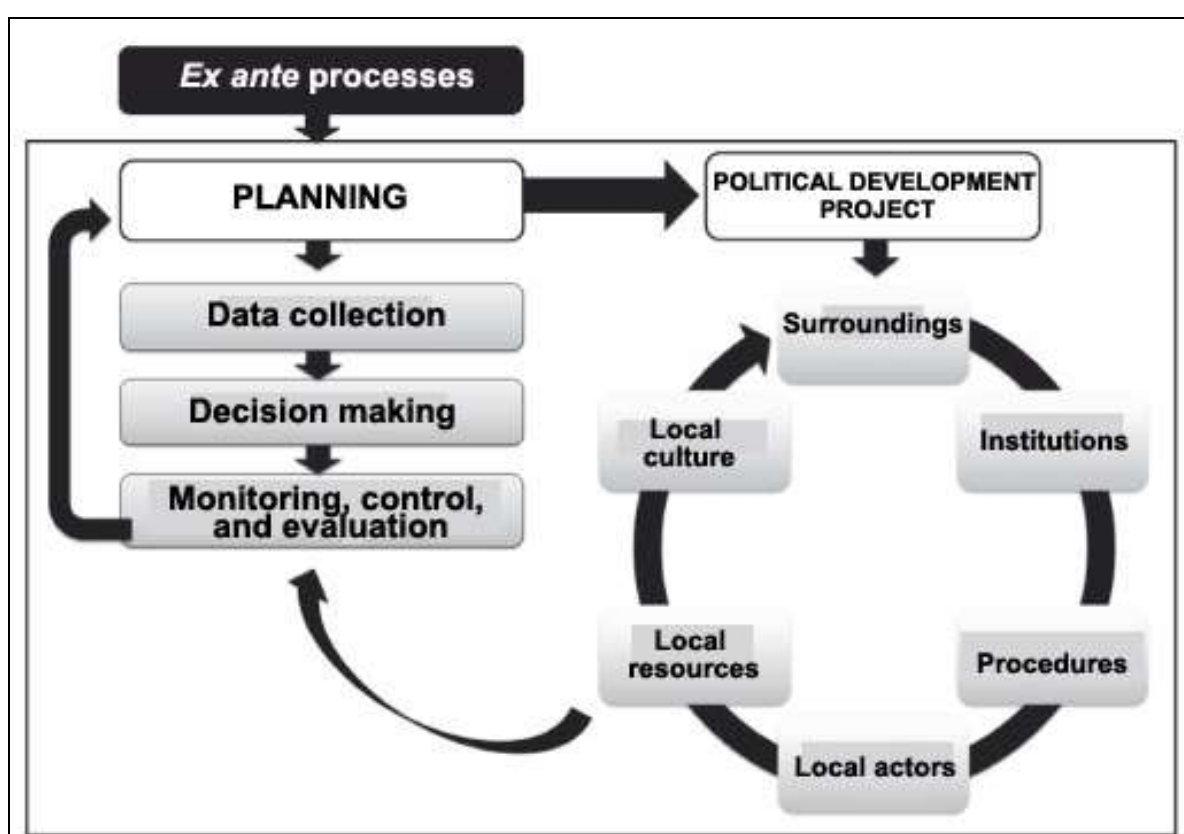
Aydalot (1985 apud OLIVEIRA, 2021) and Lopes (1984 apud OLIVEIRA, 2021) clarify that an analysis of regional development should acknowledge and distinguish specific social issues that involve the consideration of space as a relevant variable, but also of regional interdependence and issues concerning pluridisciplinary approaches. Once space is the basis of technical, economical, and social inequality, one should note that this idealization is fundamental to shape actions planned for a given time lapse, so as to minimize regional inequality.

Continuing the discussion on planning, Xavier *et al.* (2013) state that the dynamics of regional development consist of two interdependent stages: planning and the political development project. The first state involves developing a process to guide the actions of territorial governance, comprised of data collection for diagnosis and

prognosis, decision-making related to strategy formulation, and further monitoring, control, and evaluation to analyze the results achieved. The second stage involves the relationship among the surrounding environment, institutions, procedures, actors, resources, and the culture of the location in question.

Chart 1 illustrates the logic of this dynamic that begins with processes prior (*ex ante*) to its origin, covering, for example, historical, geographic, economic and cultural precedents that induced the formulation of planning and consequent political project.

Chart 1: The dynamics of regional development



Source: Xavier et al. (2013).

In his study on Brazil's Northeastern region, Furtado (1966) sheds light on the reasons behind its underdevelopment. The economist highlights that Brazilian Northeastern economy revolves almost exclusively around sugar production (first) and (then) livestock, while subsistence farming has sustained the population growth of the region. The lack of economic diversity has resulted in a stagnation process in the region's development, leading to a depression that has given the region a reputation for being poor, outdated, and lacking in productive efficiency.

The creation of the Superintendence for the Development of the Northeast (SUDENE) through the Law No. 3,692 on December 15, 1959, was a landmark that contributed to a paradigm shift in the reputation of Brazil's Northeast and to the diversification of its economy by expanding the industrial sector. This regional autarky initiated actions to improve regional infrastructure, implement development policies, and generate income. Furtado (1966) suggests that development is not only related to industry and consumer goods, but can also be achieved by balancing regional and social differences and providing fair wages for labor.

In conclusion, regional development is strongly influenced by interaction between two key actors: the state and regional leaders. According to Oliveira & Lima (2021), it is crucial to establish regional public policies that involve organized civil society in governance. This can help mitigate socioeconomic inequality and promote development. In this context, geographical indications can serve as a foundation for developing strategies to enhance regional development, as we will discuss later.

### **The process of granting a geographical indication**

Discussions on the theme of intellectual property (IP) are not a recent phenomenon. However, they have recently been more prevalent in scholarly and professional settings as a subject across various fields. Within the current corporate framework, where knowledge is increasingly crucial and valued, the safeguarding of intellectual assets is perceived as a competitive advantage. Almeida Silva, Rodrigues & Da Silva (2022) emphasize that IP provides protection for human intellectual endeavors across a range of domains, including science, technology, literature, and art.

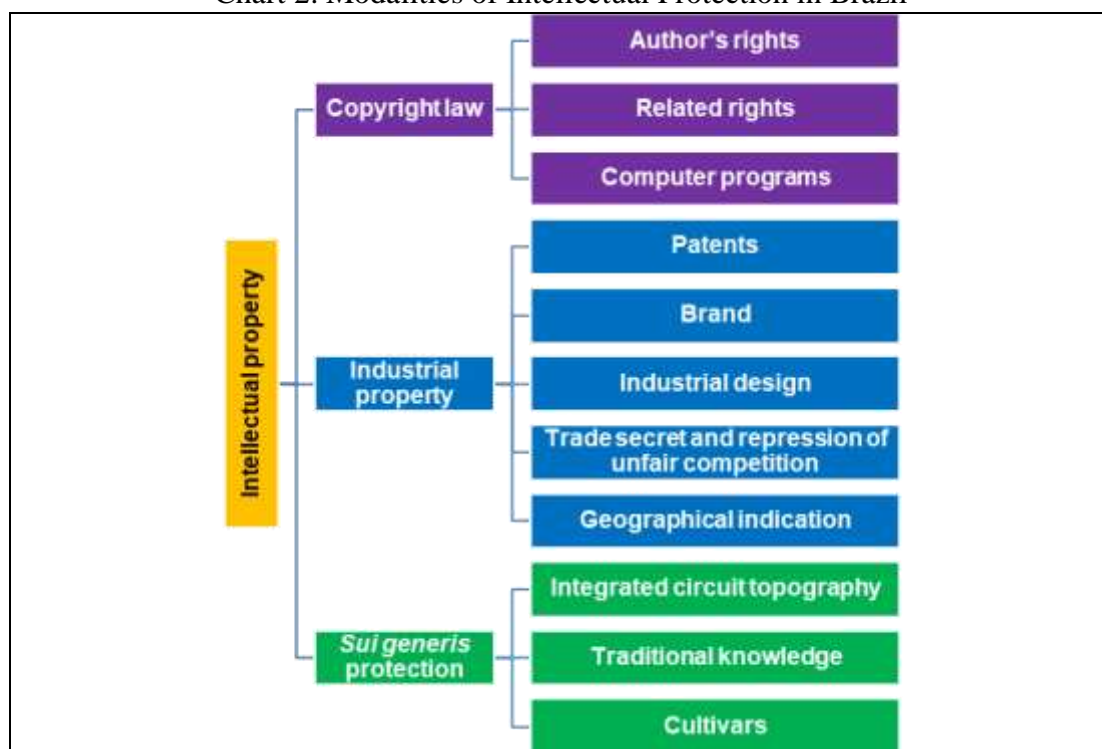
According to Di Blasi (2005), IP refers to the rights held by a natural or legal person over their intellectual creations, within certain legal frameworks and with a predetermined expiration period. Di Blasi also notes that the very first reports on legal protection of knowledge date back to the second half of the 15th century, when kings and feudal lords granted privileges over literary works written by certain authors. In Brazil, on the other hand, evidence of the first intellectual protection can be traced back to 1752, when benefits were granted to the profiteering of a rice mill for a period of 10 years.



The World Intellectual Property Organization (WIPO, 2002) convention provides a detailed definition of intellectual property. It refers to the following bundle of rights: literary, artistic, and scientific works; performances by performers, phonograms, and radio broadcasts; inventions in all fields of human activity; scientific discoveries; industrial design and models; industrial, commercial, and service trademarks, commercial firms and brand names; protection against unfair competition, as well as all rights concerning intellectual activity in industrial, scientific, literary, and artistic domains.

In Brazil, there are three modalities of IP, namely: copyright law, industrial property, and *sui generis* protection. Chart 2 illustrates this division, showing how **copyright law** comprises authorial rights, related rights, and computer programs, according to Law No. 9,610, February 19, 1998, and Law No. 9,609, February 19, 1998. **Industrial property** includes patents, trademarks, industrial design, trade secrets, and repression of unfair competition, as well as geographical indication, according to Law No. 9,279, May 14, 1996. ***Sui generis* protection**, on the other hand, includes integrated circuit topography, traditional knowledge, and cultivars, according to Law No. 11,484, May 31, 2007, and Law No. 9, 456, April 25 1997.

Chart 2: Modalities of Intellectual Protection in Brazil



Source: The authors, 2022.

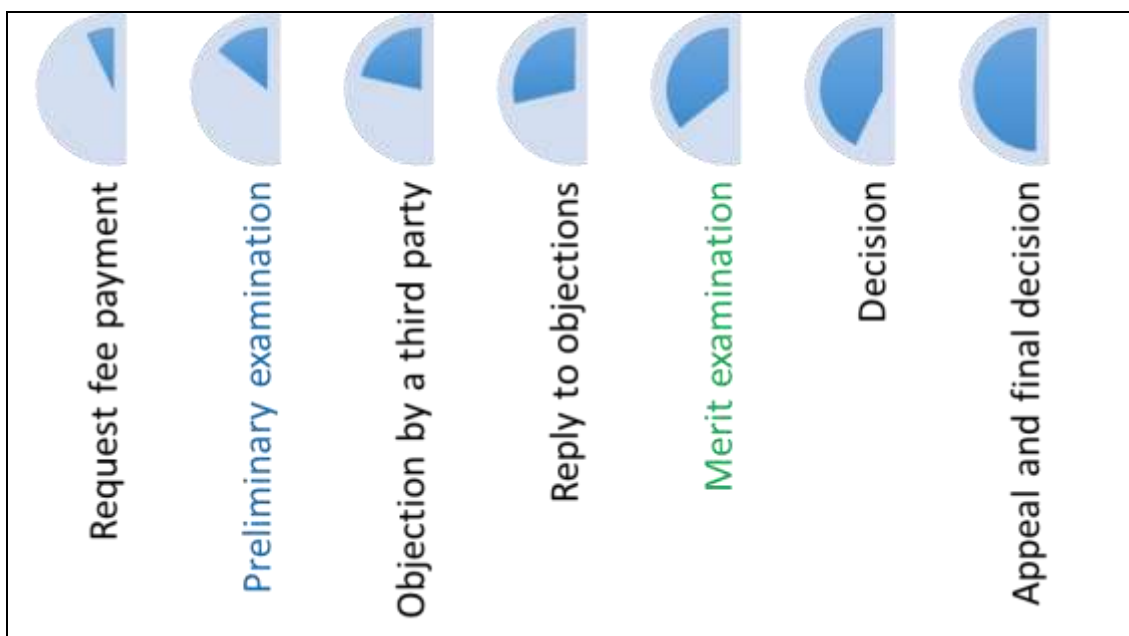
Within the legal framework that protects industrial property rights for both natural and legal persons *vis-à-vis* industrial creations, there is also protection to geographical indications. According to the Brazilian Service of Support to Micro and Small Enterprises' website, (SEBRAE, 2017), the term “geographical indication” was not recently coined and its usage has increased as manufacturers, merchants, and consumers have become more aware of how certain products were distinguished from others due to their geographical origin. Although “geographical indication” is not a new expression, it only became widely used in the mid-1990s after the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS). This international agreement requires member countries from the World Trade Organization (WTO) to establish policies that protect intellectual property rights (ITC, 2009).

It is important to point out that INPI is the organization responsible for granting the GI certification in Brazil. As previously stated, this certification can be either a designation of origin or an indication of source. According to Brazil's national law, the Ordinance INPI/PR No. 04/2022 regulates GIs. This Ordinance establishes the conditions for the registering indications, determines aspects concerning the reception and processing of applications, and is responsible for the Instruction Manual of Geographical Indications. The Ordinance itself is divided into five chapters, namely: a) preliminary provisions; b) petitions; c) registration requirements; d) manual for geographical indications; and e) transitional and final provisions. The text complies with Decree No. 9,191/2017, which regulates subordinate normative acts, as well as the Industrial Property Law (Law No. 9,279, May 14, 1996).

According to Ordinance INPI/PR No. 04/2022, requests for GI registration must be submitted online through the INPI website, which comprises the institution's electronic management system, e-INPI. User enrollment, habilitation, and payment of a fee must precede access to the appropriate forms for GI registration via e-INPI. Submissions are exclusively accepted through this platform. Payment of the fee enables petitioners to fill the application form and attach the required documents, which vary depending on the type of requester. This can be an association, union, or other procedural representative; a single manufacturer, natural person, or company established in the area; or a foreign applicant from a country that grants reciprocal treatment to Brazilians (INPI, 2020).

In summary, as shown in Chart 3, the whole process of obtaining GI certification can be outlined in seven main steps: payment, preliminary examination, publication of the request for the claim of a third party and response to the claims, examination of merit; decision, appeal, and final decision. The applicant who makes the payment carries out the first step, while subsequent steps involve responses from INPI. In cases where INPE requires additional information, the applicant must respond within 60 days.

Chart 3: Simplified flowchart of steps required for GI registration and granting

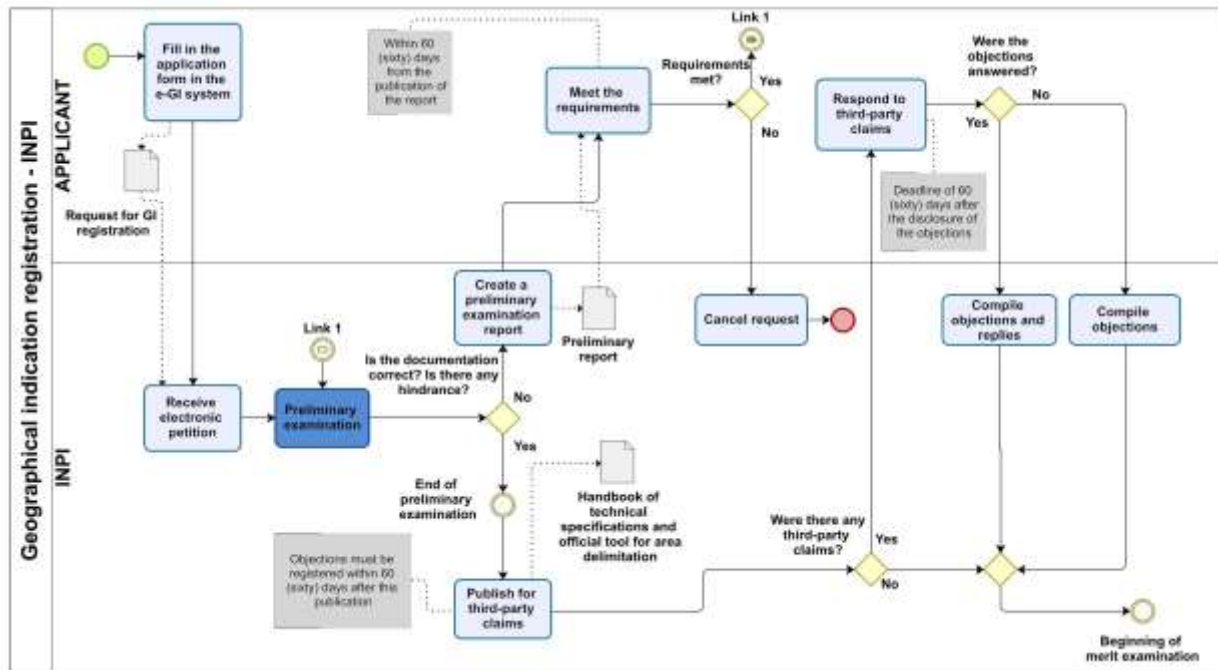


Source: The authors, 2022.

Regarding the steps for GI registration and certification, it is important to highlight two critical activities: preliminary examination and merit examination. To clarify the steps involved in the GI registration process outlined in Ordinance INPI/PR No. 04/2022, we utilized BPMN (Business Process Model and Notation), a graphical representation comprised of icons that symbolize each step of the process. This was done to model the business process associated with the registration of geographical indications (White, 2006). To enhance comprehension, we will divide the registration process in two parts, each pertaining to a specific type of examination. Chart 4 outlines the steps related to fee payment, the preliminary examination and, finally, and third-party objection. Chart 5, illustrates the steps involved in the preliminary examination, merit examination, and the final decision by INPI.

As indicated in Chart 4, the registration process starts with the submission of an online application for GI registration via the e-GI system. After filling out the forms and attaching the necessary documents, the website automatically generates a request file, which is directed to the Brand, Industrial Design, and Geographical Indications Board (DIRMA). After the request is routed to DIRMA, the preliminary examination process begins by validating both the GI registration request and the required documents. If the request is being made through an attorney, the board will verify the validity of the letter of attorney. If there is any issue with the document, the board will issue a report informing the applicant of the need to comply with the requirements within a deadline of 60 days, otherwise the request will be canceled. The aim is to regularize the applications and prepare it for publication for objections by a third party. If the applicant fails to meet the requirements within the given deadline, additional requirements may be established. If there are any obstacles that prevent the examination from being resumed, such as ongoing negotiations for international agreement, pending judicial decisions, or the non-implementation of a given service by the INPI, the request may be suspended until the issue is resolved.

Chart 4: Flowchart of GI registration (application filing - preliminary examination - third-party claims)

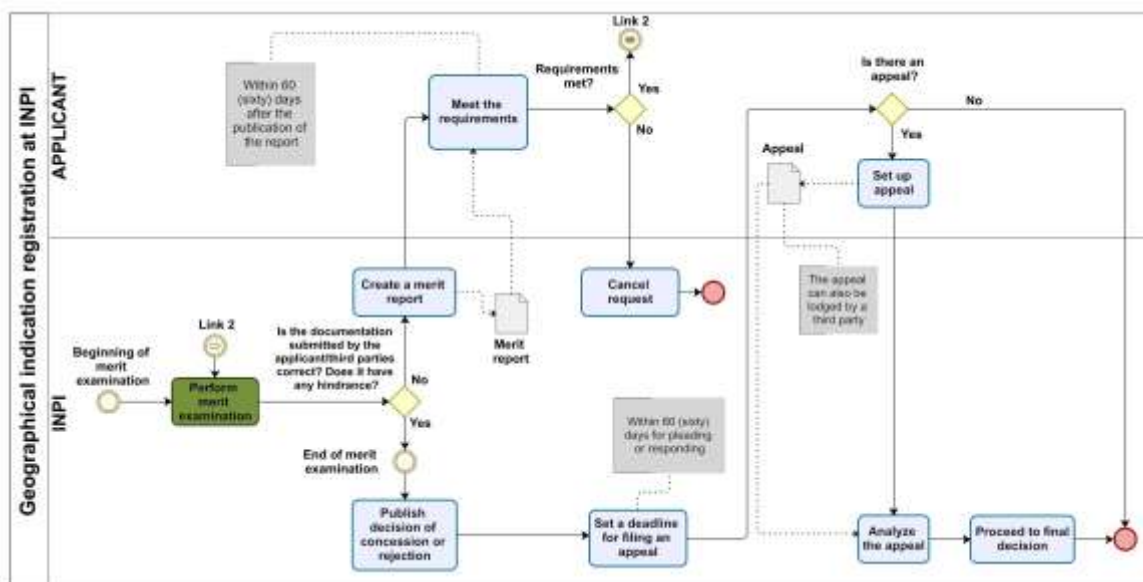


Source: The authors, 2022.

Still regarding Chart 4, it is worth noting that the preliminary examination concludes when the process has no pending issues and is ready to be published for third-party objections. Ordinance INPI/PR No. 04/2022 governs the publication of the preliminary examination results, which must include the manual of technical specifications and the official tool for area delimitation. During this step, it is also possible that an objection concerning the request for a GI registration (either favorably or unfavorably) takes place in a 60-day period. The applicant may still choose to respond to the objection within 60 days of the publication, although this is not mandatory. During the merit examination phase of the process, both the objection of a third party and the response to it are filed together and analyzed.

Chart 5 provides a more comprehensive explanation of the merit examination stage and the determinations made by INPI throughout the process of registering a GI. Briefly, this exam involves analyzing all the documentation presented by the applicant and concerned third parties up until that point. During the analysis, additional requirements might be defined, providing the applicant with the opportunity to adjust to the process. These requirements must be met within 60 days after the report on merit is published, otherwise, the request will be canceled. If the requirements are not satisfactorily met, INPI can devise new ones. Once all the requested requirements are fulfilled, the merit examination is concluded, and the request is routed to the decision either granting registration or rejecting the request. In either case, the applicant has the right to appeal, according to article 31 of Ordinance INPI/PR No. 04/2022. Third parties may also file an appeal.

Chart 5: Flowchart of GI registration (fee payment – preliminary examination – objections by a third party)



Source: The authors, 2022.

Moreover, the INPI makes the decision to approve or reject the appeal, in accordance with §3 of Article 212 of Law No. 9,279/1996 (Law of Industrial Property). Regardless of the outcome, the final decision must be published. It is also important to highlight that the decisions that result in the cancellation of the GI request, whether during preliminary or merit examination, cannot be appealed.

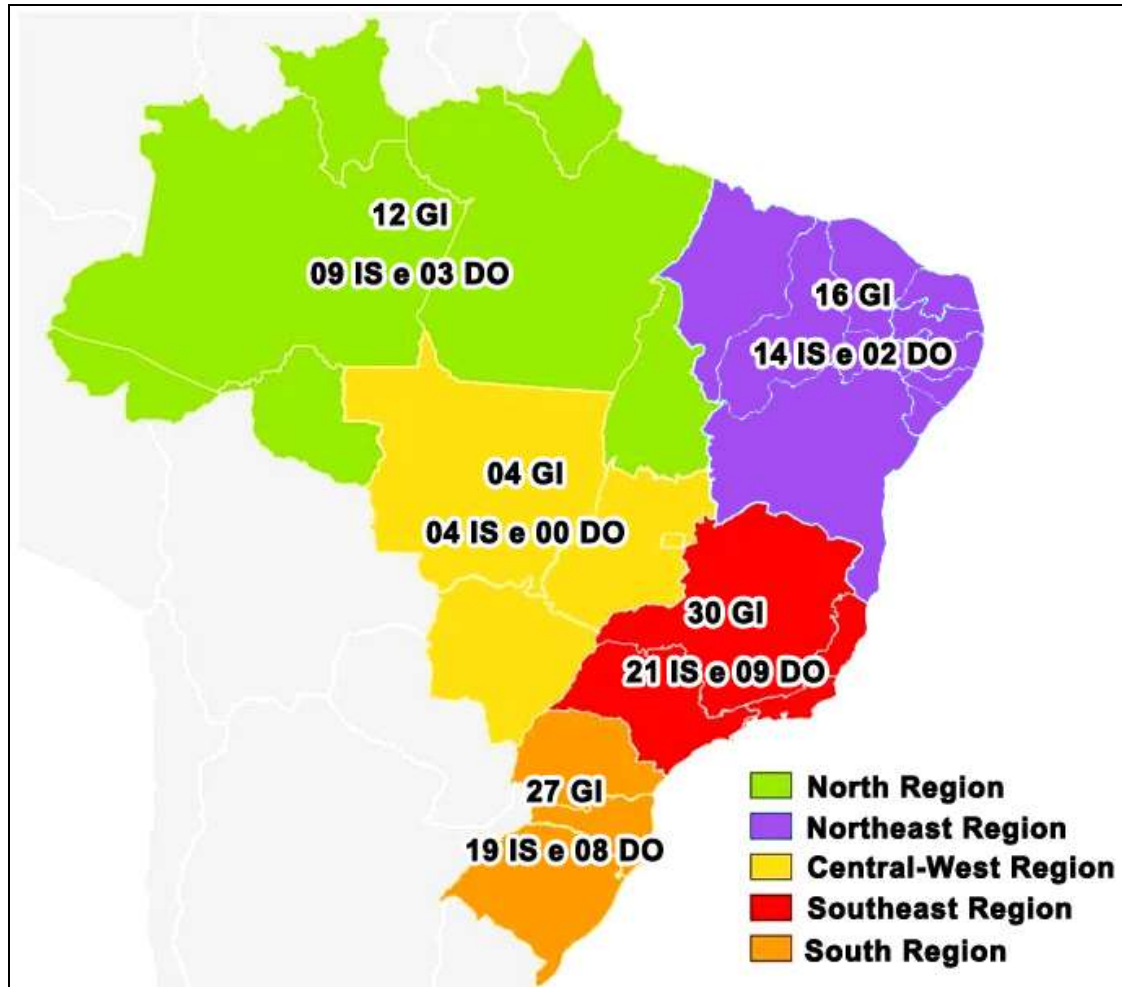
### Geographical indications in Brazil's Northeast

As previously mentioned, the criteria that determine whether a particular region qualifies for the rights offered by a GI are mainly established in Ordinance INPI/PR No. 04/2022 and the Law of Industrial Property. This legislation grants the INPI the authority to establish the registration conditions, among other aspects. These conditions are outlined in Normative Ruling (IN), No. 95/2018. Additionally, there are other regulations that address the matter, in a more general manner, such as Federal Constitution (CF/88) and the international conventions and treaties that Brazil has ratified (ALMEIDA SILVA; DA SILVA, 2021).

According to data provided by INPI (2022), GIs are present in all five regions of the country. Additionally, there are only four out of the 27 federal units – comprising of 26 federal states and the Federal District – that do not have GIs in their territories,

namely: Amapá, Federal District, Maranhão, and Roraima. In this context, Chart 6 presents a new illustration of Brazil's five regions, showcasing the total numbers of geographical indications in each region with the number of indications of source and designations of origin. It is important to note that Brazil currently has 89 GIs, consisting of 67 indications of source and 22 designations of origin.

Chart 6: Number of indications of source and designations of origin per region (Brazil)



Source: Adapted from Menegaz (2007) and based on data from INPI (2022).

Brazil's Northeast has 16 geographical indications, of which 14 are classified as indications of source and the remaining two are categorized as denominations of origin. These GIs are present in eight different states of the region. It is worth pointing out that the oldest registration belongs to Vale do Submédio São Francisco, which was granted in 2007, while the most recent one belongs to Jaguaruana, whose registration was

approved in 2021. Table 1 presents a list of GIs from Brazil's Northeast, showing the names of regions, their respective federal units, the type of protected product or service, the modality, and the date of approval.

Table 1: Detailed list of GIs from Brazil's Northeastern region

Nº	Geographical name	State	Product/service	Modality	Grant
1	Vale do Submédio São Francisco	PE	Table grapes and mangoes	IS	July 07 2009
2	Costa Negra	CE	Sea shrimp of the <i>Litopenaeus vannamei</i> species	DO	August 16 2011
3	Pedro II	PI	Precious opal from Pedro II and jewelry	IS	April 03 2012
4	Manguezais de Alagoas	AL	Red propolis and red propolis extract	DO	July 17 2012
5	Paraíba	PB	Colored natural cotton textile products	IS	October 16 2012
6	Porto Digital	PE	TI and computer service through development, maintenance, and support	IS	December 11 2012
7	Divina Pastora	SE	Needle lace	IS	December 26 2013
8	Mossoró	RN	Melon	IS	September 17 2013
9	Cariri Paraibano	PB	“Renaissance” lace	IS	September 24 2014
10	Piauí	PI	Cajuína	IS	August 26 2014
11	Microrregião de Abaíra	BA	Cachaça	IS	October 14 2016
12	Região das Lagoas Mundaú-Mariguaba	AL	Filet lace	IS	April 19 2018
13	Sul da Bahia	BA	Cacao beans	IS	April 24 2019
14	Oeste da Bahia	BA	Green coffee	IS	May 14 2020
15	Caicó	RN	Embroidery	IS	23 June 2020
16	Jaguaruana	CE	Hammock	IS	25 May 2021

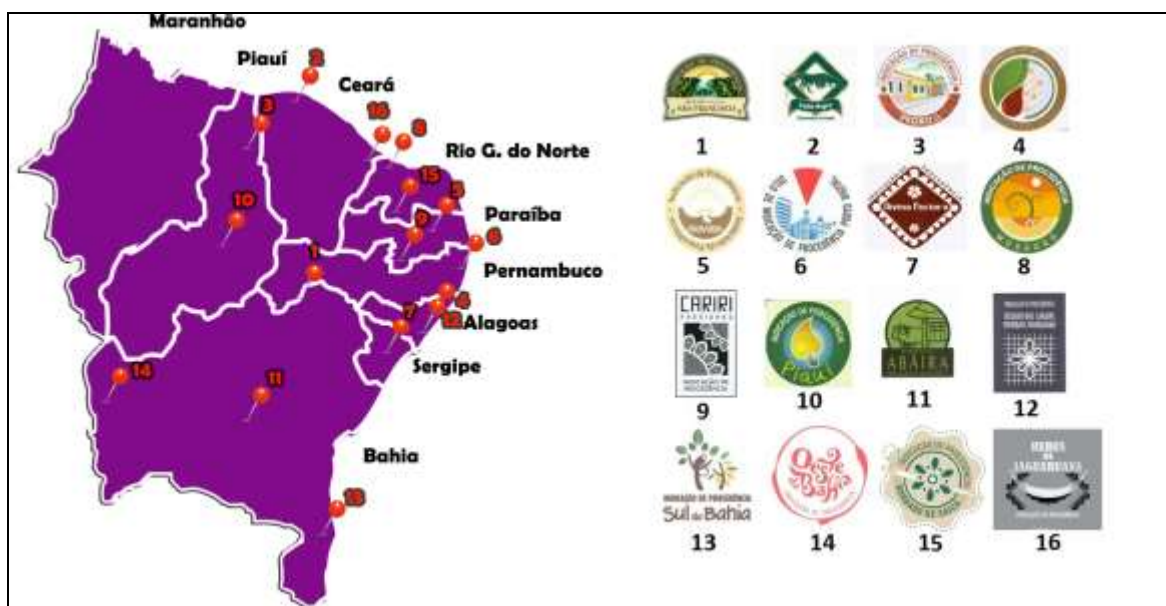
Source: Adapted from INPI (2022).

It is worth noting the diverse range of GI-protected products found in the region, including food, crafts, beverages, fruits, and other types of goods. Additionally, the state of Pernambuco is home to the country's only service IP, Porto Digital. To provide a clearer overview of the focal points of GIs *vis-à-vis* the different territories across the country, Chart 7 features a map of Brazil's Northeastern region, highlighting the



locations of INPI-approved GIs and their respective stamps. The numbers in the picture indicate the order of registration concession.

Chart 7: Picture showing GIs from Brazil's Northeastern region



Source: Adapted from Almeida Silva, Rodrigues & Da Silva (2022).

According to Almeida Silva, Rodrigues & Da Silva (2022), every state in the region, except for Maranhão, has at least one geographical indication, with some states boasting multiple GIs, including Alagoas, Bahia, Paraíba, Pernambuco, and Piauí. There are also indications whose delimitations span through more than one state, such as the indication of source from Vale do Submédio São Francisco. Finally, there has been a significant increase in the number of indications granted not only in the Northeast region, but also across the entire country since the date of the first grant.

### Material and methods

This section covers the materials and scientific methods used in the present study. As Ciribelli (2003) notes, a method begins with defining of a set of steps and tools that will lead the researcher in his or her work, based on scientific criteria. Therefore, it is necessary to classify the research work and determine the most appropriate material to use. This will allow for proper data management and ensure accurate and reliable results.

In this sense, the research work that underpins this study can be classified as follows: a) Its **approach** is **qualitative and quantitative**, since it considers both the subjective aspect of the data that cannot be quantified and their numerical factors; b) Regarding its **nature**, the present work qualifies as **basic** or **pure** research because it aims at acquiring new theoretical knowledge, contributing to the advancement of science; c) With respect to its **goals**, it qualifies as **exploratory** research, insofar as it provides insight into the context of the theme under scrutiny. This approach fosters a closer relationship between the researcher and the research subject; and d) Regarding its **procedures**, the present study qualifies as **documentary** research, since it employs material that has not yet undergone detailed analysis. In addition, this study collects data through a questionnaire, making it a **survey** research (TRIVIÑOS, 1987; MATTAR, 2001; 2001; GIL, 2019).

In terms of the adopted methodology, the bibliographic portion consisted in consulting studies that resulted from the search string (“development” AND “geographical indication”), published within the last 10 years (2012-2022) and retrieved from one of the following three databases: the CAPES Foundation Journal Portal, selected for its prestige in the Brazilian scientific community and its capacity to provide access to the latest high-quality national and international scientific work; the Digital Dissertation and Thesis Library (BDTD), chosen for its integration of dissertation and thesis information systems from 128 higher education and research institutions in Brazil; and finally, Google Scholar, adopted because it provides access to a broad range of journals, events, and other publications, including many current studies not indexed in other scientific journals databases.

In general, the selection of studies was based on their relevance to the central theme of this paper. Thus, we followed the guidelines of Kitchenham & Charters (2007) and established criteria for their inclusion or exclusion. The **criteria of inclusion** were as follows: a) works that approach the subject in a similar way to ours; b) works that are fully available for download or reading. On the other hand, the **criteria of exclusion** were: a) works that do not mention GI and their development; b) works that are not available in full for download or reading; and c) works published before 2012.

We additionally devised some strategies for study selection. These **search and selection strategies** are comprised of four steps, namely: a) selection of the first 10

works, listed in order of relevance; b) reading the title, abstract, and keywords of the selected studies to verify whether they were relevant to the central theme of this paper. Works that did not exhibit any connection with the topic under scrutiny or were not available for download were excluded; c) reading the introduction and conclusion sections of selected works, excluding any duplicated works, and choosing those related to the subject of our research; and d) reading of the remaining works in full to extract relevant information for the research.

For the documentary aspect of our research, we utilized information that was accessible on the INPI website. Specifically, we focused solely on documents that pertained to GIs, including the “list of granted indications of source”, the “list of granted designations of origin”, “applications under examination”, “records of geographical indications”, the “catalog of Brazilian geographical indications”, the “map of Brazilian geographical indications”, and relevant manuals, legislation and ordinances.

In addition, it is worth mentioning the data survey that was conducted using a questionnaire developed through Google Forms. The questionnaire consisted of five general personal information questions, 14 closed-ended questions, six opinion-based questions, and one question regarding business indication. For the closed-ended questions in the questionnaire, we used a Lickert scale, allowing the respondent to analyze the proposed statements and indicate their level of agreement. Silva Júnior & Costa (2014) state that the Lickert scale is straightforward to use because respondents can easily express their agreement or disagreement with a given statement and specify their inclinations. However, it is important to note that a preliminary content analysis and further clarification of the level of agreement is necessary.

To measure the level of agreement with the proposed statements, ratings were assigned to each of the answering options, which were used to calculate the average agreement. According to McClelland (1976), this is a consistent and straightforward approach to analyze data. Thus, we established the following ratings: ‘totally disagree’ (TD) – one point; ‘partially disagree’ (PD) – two points; ‘neither agree nor disagree’ (NAND) – three points; ‘partially agree’ (PA) – four points; ‘totally agree’ (TA) – five points; as well as ‘I do not know/I do not wish to respond’ (DK) – zero points. To calculate the average, we used the Average Ranking (AR) method, which is based on the frequency of answers given by the respondents.

According to Oliveira (2005), the average ranking method determines the level of agreement and can be obtained by calculating the weighted average of the number of answers and their rankings, as shown in the equation in Chart 8 (a). We have modified the equation to better suit the characteristics of our research. In the original calculation, the average ranking did not encompass those who responded “I do not know” or chose not to answer. However, in our adapted equation, we subtract the number of these respondents to accurately indicate the level of agreement and disagreement, as seen in Chart 8 (b). Here, “NR” corresponds to the total number of respondents, while “ND” represents the number of respondents who answered “I do not know” or chose not to respond.

Chart 8: Equations for the measurement of the average ranking – (a) calculation suggested by Oliveira (2005) and (b) calculation used in the present paper

$$AR = \frac{\sum_{i=1}^5 i \times NR}{\sum_{i=1}^5 NR} \qquad AR = \frac{\sum_{i=1}^5 i \times NR - ND}{\sum_{i=1}^5 NR}$$

(a) (b)

Source: The authors, 2022.

The questionnaire was directed towards representatives of the 16 geographical indications currently present in Brazil's Northeast. As the focus of the data collection and examination was not on human subjects, but rather on information or administrative processes related to the locations under scrutiny, it was considered a Management and Process Improvement Study. Therefore, it was not necessary to submit the study to the Ethics Committee in Research (CEP) for analysis and appraisal. This is in accordance with the definitions provided in Resolution No. 466, from December 12, 2012, and Resolution No. 510, from April 7, 2016. Nonetheless, a consent form was provided to the participants to ensure greater transparency and reliability in the research.

In summary, the materials and methods used in this study enabled a threefold result. Firstly, the introduction of basic concepts related to the granting process of geographical indication (GI) registrations, which helped enhancing the understanding of

the research subject. Secondly, the quantitative and qualitative analysis of the relevant literature over the past decade, which allowed for the observation of trends in publications on the subject of GIs and their further developments. Lastly, the utilization of the data collected from the questionnaire, which enabled the characterization of each of the 16 GIs in Brazil's Northeast and an investigation into their connection to regional development.

## **Results and discussions**

In the following sections, we will present the results and discussions stemming from the research work outlined in the 'Material and Methods' section. Firstly, we will present the state of the question as presented by the literature on regional development related to GIs. Following this, we will analyze the results of the questionnaire, focusing on both quantitative and qualitative nuances of the responses, in order to discuss the relationship between geographical indications and regional development.

### **Examination of the recent literature on regional development related to GIs in the Brazilian Northeast**

Base on the information provided in the "Material and Methods" section, we selected relevant works from three databases to analyze the relationship between GIs and regional development in Brazil's Northeast. However, most of the material found focused on the development resulting from the grant of GIs to a given location, although it did not specifically cover the GIs of Brazil's Northeast. Therefore, Table 2 displays the screening process of the works that are relevant to the topic of this research.

Table 2: Screening and selection of related works

Database	Initial search	Ruled out 1 (relevance)	Preliminary selection	Ruled out 2 (content and availability)	Secondary selection	Ruled out 3 (content and duplicates)	Final selection
<b>CAPES Foundation journals</b>	55	45	10	1	9	8	1
<b>BDTD</b>	16	6	10	1	9	7	2
<b>Google Scholar</b>	94	84	10	3	7	7	0
<b>TOTAL</b>	165	135	30	5	25	22	3

Source: The authors, 2022.

We found 165 studies by searching for “development” and “geographical indication”. Of these, 55 were on the CAPES journal portal, 16 were in the Digital Dissertation and Thesis Library, and 94 were on Google Scholar. Out of those 165 studies, 135 were discarded, and the 10 most relevant were selected from each database. The remaining 30 studies underwent a preliminary selection, out of which five of them were discarded after examining their titles, abstracts, and keywords. We also excluded unavailable studies. Consequently, 25 studies moved on to the secondary selection phase, where their introductions and conclusions were evaluated. Finally, after removing duplicates, only 3 studies were selected in the final screening process.

It is important to point out that several studies were discarded as they were directly or indirectly relevant to the central theme of the research, which was to determine whether there was any development in the Northeast region of Brazil following the granting of geographical indications. Many of the research works focused on GIs of the Southern and Southeastern regions of Brazil, exploring the development that occurred exclusively in those territories. However, the final selection process yielded only three studies that specifically emphasized the Northeastern GIs and their contributions to the economic, social, and community development of the region. Table 3 provides the analysis of these studies in relation to the central theme of our research.

Table 3: Analysis of the selected papers

Primary study (PS)	Title/type	References	Relation to the MQ
PS1	The contribution of geographical indications to Brazilian rural development/Paper	Mendonça, Procópio & Santos Corrêa (2019)	The granting and consolidation of geographical indications can contribute to the process of development of the region, resulting in a rural development stemming from job creation and income generation, appreciation of local culture, improvement in the general living situation of the population
PS2	Geographical indications, regional development and the case of colored cotton from the state of Paraíba/Dissertation	Teixeira (2017)	On the concrete situation described in the dissertation, the analyses suggest that there was no increment or decrement of development once the GI grant took place, due to the failure in the conception of the structure necessary for a chain of production.
PS3	Geographical indication of leather crafting in Ipirá, state of Bahia: a possible instrument of territorial development/Dissertation	Souza (2016)	The study emphasizes, in the face of the case under scrutiny, the potential of the GIs in contributing to the structuring of associativist practices in fostering job creation and income generation, improvement in work conditions, credit facilities, in searching for production efficiency and in disclosing productions and manufacturers.

Source: The authors, 2022.

It is evident in PS1 and PS3 that the majority of the analysis is theoretical and prospective, concerning the relationship between GIs and regional development. On the one hand, PS1 highlights general issues associated with the prospect of rural development, while PS3 specifically focuses on the potential contributions of a GI that had not yet been granted. In contrast, PS2 delves into a specific case study of an already registered GI, focusing on the process of obtaining the stamp and the subsequent impact on regional and cultural development. This second study emphasizes the failure to establish the necessary structure for a certified chain of production, which has complicated the process of adding value to products under the GI stamp.

It is important to note that despite the varied focus of these studies, there was a consensus that participation of certain actors throughout the entire process of granting and the consolidation of GIs was crucial. This consensus was also found in other studies that were excluded during the screening process. Therefore, it is essential that local manufacturers receive supported from institutions such as SEBRAE, EMBRAPA (Brazilian Agricultural Research Corporation), universities, and research institutes, as

well as public authorities. This will ensure the realization of regional development, which is often only theorized in several cases. Each entity involved must have clarity of their responsibilities, which do not end with the granting of a GI registration request, but rather begin with it.

### **Quantitative analysis of the questionnaire**

Based on the discussed presented in the Materials and Methods section, the questionnaire was administered to the 16 current geographical indications in Brazil's Northeastern region. In the following section, we will present an analysis of the data collected, with a focus on the 14 questions that utilized the Lickert scale. In summary, each of the 14 questions involved six answer options, with five indicating the respondent's level of agreement with a statement and one indicating their knowledge of the answer or their willingness to respond. Those answer options were: totally disagree (TD); partially disagree (PD), neither agree nor disagree (NAND), partially agree (PA); totally agree (TA); and I do not know/do not wish to respond (DK).

To analyze the data, we first calculated the average ranking (AR) for each question. The agreement score for each statement was then compared to an average ranking value of 3 (three). The average rank is considered three when there is neutrality or indifference towards the statement. Values inferior to three indicate disagreement, while values superior to three indicate agreement. Table 4 presents the results of the questionnaire, including an identifier, the statements, the number of responses for each option, and the calculated average ranking.



Table 4: Results of the questionnaire and calculation of the average rankings

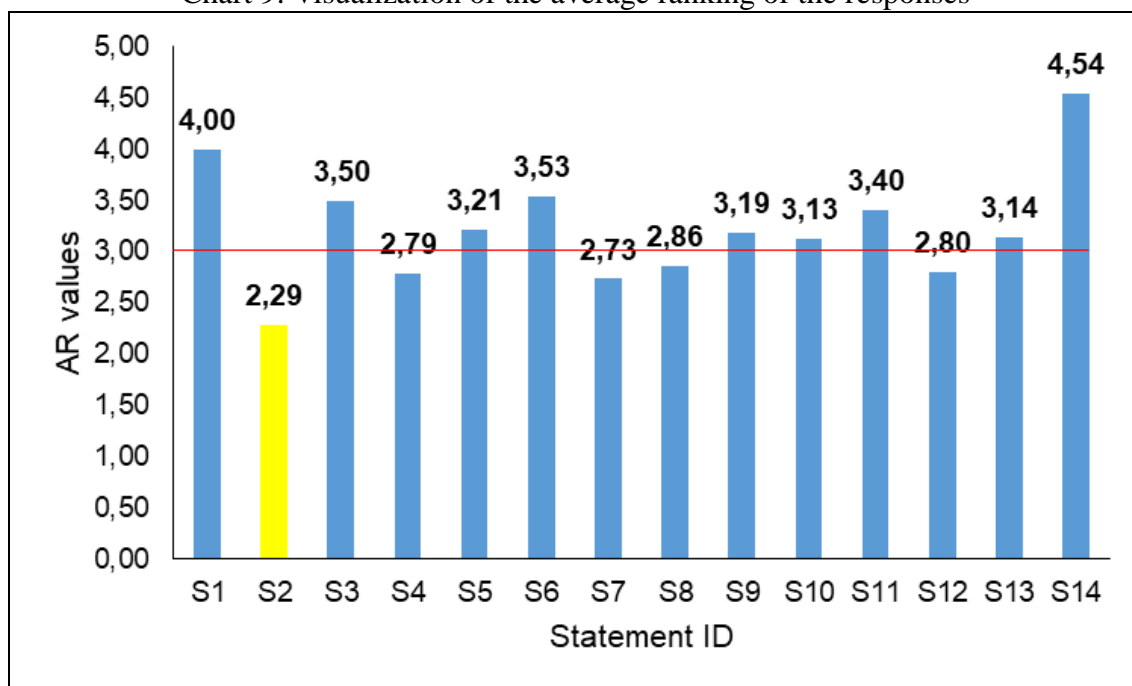
ID	Statements	Answers						AR
		TD	PD	NAND	PA	TA	DN	
S1	There was government support during the process of registration and concession of the GI	1	1	1	5	6	2	4,00
S2	The association of the local manufacturers currently has the support of the government for GI-related business	7	2	0	4	1	2	2,29
S3	The region became better known after the GI was granted	2	3	2	0	7	2	3,50
S4	It was possible to notice a growth in tourism in the region after the GI granted	4	2	3	3	2	2	2,79
S5	The products/services use the GI stamp in their labels and marketing material	4	2	0	3	5	2	3.21
S6	The market can identify features of the region in the products/services certified by the GI	2	3	2	1	7	1	3,53
S7	The costs of production increased after the GI was granted	4	4	2	2	3	1	2,73
S8	One can notice a real increase in sales price after the GI was granted	5	2	1	2	4	2	2,86
S9	The association relates the product/service to GI in its marketing activities	6	0	0	5	5	0	3.19
S10	The association of manufacturers promotes frequent meetings, education, and training with the manufacturers	6	0	0	6	4	0	3,13
S11	The manufacturers and local residents are capable of identifying the unique features that link the region to the product/service	5	0	0	4	6	1	3.40
S12	Other people were interested in being part of the association after the GI was granted	7	1	0	2	5	1	2,80
S13	The COVID-19 pandemic had an impact on the production and/or marketing of the GI products	5	0	2	2	5	2	3,14
S14	There is growth perspective regarding the GI, either with increase in production or by exploring new markets	1	0	0	2	10	3	4,54

Source: The authors, 2022.

Based on the presented data, it appears that four out of the 14 statements have received a high degree of agreement (S1, S3, S6, S14), while only one statement received (S2). The remaining 11 statements were found to be close to indifference (S4, S5, S7, S8, S9, S10, S11, S12, S13). Chart 9 provides a clearer visualization of these data, depicting the ID of the statements along with their corresponding average ranking

values. A red line has been added to emphasize the value of the average ranking that represents indifference.

Chart 9: Visualization of the average ranking of the responses



Source: The authors, 2022.

GIs' representatives observed that the government provided support during the certification process, and as a result, the region gained greater recognition. The emphasis is placed on the market's ability to distinguish the qualities of the region in the products or services certified by the GIs. Additionally, there are growth prospects in GIs, either through increased production or exploration of new markets. Moreover, the respondents held differing opinions on whether the government provides support to associations of local manufacturers in developing their GI-related business.

Furthermore, the responses indicate neutrality towards the perception of rise of tourism in the region following the GI declaration, the use of the GI stamp in labels and marketing materials, the increase in production costs after the declaration of GI, and the actual increase of sales price after the declaration. It is also evident the indifference on whether the association promotes marketing activities related to the protected products or services, or whether they hold frequent meetings, provide education, and offer training to the manufacturers. Finally, there is also neutrality regarding whether

manufacturers and local residents are able to identify unique features that link the region to the products or services, the level of interest from others in joining the association after the grant, and the impact that the COVID-19 pandemic may have had on the production and/or marketing of the GI certified products.

### Qualitative analysis of the questionnaire

We now present a qualitative analysis of the six open-ended questions from the questionnaire that was administered to the representatives of the 16 Northeastern GIs. To avoid unnecessary length, we will only present a synthesis of the responses, including literal quotes from the respondents only when necessary. Table 5 shows a list of questions and a synthesis of the respondents' opinions.

Table 5: List of questions and synthesis of the answers

Questions	Synthesis of the answers
What are the main social impacts you noticed after the geographical indication certification?	Appreciation of raw material and manufacturers; better socioenvironmental vision on behalf of the manufacturers; respect from the other institutions regarding the work made by the GI; fair relationship between manufacturers and buyers and strengthening of the community.
What are the main environmental impacts noticed after the grant?	Protection of the manufacturing areas and environmental awareness on behalf of the manufacturers; improvements related to the coexistence with wild animals and re-utilization of rainwater; better understanding of environmental legislation and their application to manufacturing practices; concern for developing sustainable solutions for the disposal of the production residue.
What are the main impacts on the market/economy noticed after the GI certification?	Improvement on production; increase in sales and appreciation of the product; increase in the manufacturers' income; increase in the demand of the products; increase in the local, national, and international prestige of the product;
What are the main challenges noticed after the GI registration?	Understanding of the importance of GIs by the manufacturers; integration of the actors in the different links of the chain; lack of knowledge of the clients on what GIs are; management, sustainability, and expansion of the GI; legal and bureaucracy bottlenecks that depend on the state.
What are the partner institutions (public or private) that contribute to the development of this geographical indication?	Most of the respondents mentioned SEBRAE, but the Ministry of Agriculture, Livestock, and Supply (MAPA), city and state governments; universities, federal higher education institutes, and other institutions were also mentioned.
How the uniqueness of the GI products is presented to the consumer/society?	Reports, articles in the media, but also in the final product by tracking the whole process; through conferences, gastronomy events, workshops on GIs, scientific papers; creation of a visual brand.

Source: The authors, 2022.

By analyzing the respondents' answers, it becomes evident that the GI grants have resulted in social impact. This impact is particularly noticeable in the relationship between the manufacturer and the product. Both are more valued, and the former receives better pay. Furthermore, this valorization also reflects the need to protect manufacturing areas and establish sustainable means of utilizing natural resources. It is worth noticing that the GI stamp has helped the production of higher quality products, which has resulted in elevated sales prices and an improved economy in the locations. However, there remains a great challenge in integrating the production chain, ensuring that everyone involved understands the importance of the indication. It is also worth pointing out that SEBRAE is frequently seen as a valuable partner, contributing to the development of GIs, and working tirelessly to promote products and services.

It is also crucial to stress an important point that arose from the responses: the synthesis presented in Table 5 does not align with the standard followed by all the representatives of the GIs. Some respondents stated that the GI stamp was not being used, such as the Vale do Submédio São Franciscos and Porto Digital. Another noteworthy point pertains to the most recent GI in the Northeastern region, which was granted in May 2021 to Jaguaruana. The representative from Jaguaruana highlighted that, despite the recent nature of their grant, the GI is undergoing a strengthening process, and the positive impacts are already evident. The strengthening of Jaguaruana's reputation, as a manufacturing facility for hammocks, has increased significantly and there is now high demand for exclusive hammocks with the GI stamp.

Therefore, the analysis of the questionnaire confirms the potential that GIs hold for developing the regions where they are located, particularly in the case under scrutiny here, namely, Brazil's Northeast region. It is crucial for public and private institutions to support associations and manufacturers to ensure not only the success of the granting process, but also the structuring and continuity of the GIs. It is also important to highlight that the aforementioned support can help to address the challenges presented in this paper, by adding value to the products and services protected by the GI, and providing adequate ways to showcase their uniqueness. Thus, every actor involved in these indications stands to benefit. For instance, manufacturers will receive recognition for their manufacturing process, leading to greater appreciation and fair compensation. Products and services will benefit from improved quality, and buyers will have access to

products with high added value. Additionally, the community will benefit from the protection of the unique culture, environment, and know-how that are inherent to those territories.

## Conclusion

This work aimed at investigating the relationship between geographical indications and regional development in Brazil's Northeast region. To achieve this goal, we asked ourselves whether there has been any development in the region following the granting of geographical indications. We adopted a qualitative and quantitative approach, and conducted a bibliographic study, documentary analysis, and data survey of the Northeastern GIs, using questionnaires. The respondents were representatives from the 16 current geographical indications in the region.

We started by emphasizing the significance of the relationship between state and regional leaders in fostering regional development. We also highlighted that regional development should not be solely understood in economic terms, but rather as an integration of various social structures such as culture, well-being, and recognition of individual efforts. This requires the elaboration of regional public policies aligned with society needs, and the strengthening of public and private entities. As a result, these efforts can help mitigating inequalities and ensure that everyone can participate in an effectively developed context. In this respect, GIs can serve as a means to strengthen regional development by adding value to the production chain of products and services with GI certification.

Protecting a product or service with GI certification consists in an important strategy to promote regional development. In Brazil, INPI plays a crucial role in granting GI registrations by conducting a preliminary and merit examination. This process can include the designation of origin or indication of source modalities. It should be noted that Brazil's Northeast region currently has 16 GIs spread across eight states. Of these, 14 are indications of source and two are designations of origin. The oldest GI was granted in 2009, while the most recent was granted in 2021.

Based on the analysis of the studies related to the main theme, it is evident that while many of them associate GIs to development, there is not enough research on the

impact of GIs on development in the Brazilian Northeast. The selected studies highlight the crucial role of institutions such as SEBRAE and EMPRAPA in certification processes. These institutions receive support of the state, as well as universities and research institutes, in providing assistance during and after the certification process. Therefore, the collaboration among manufacturers, the stamp management association, and other entities ensure the proper functioning of the GI. This process leads to a collective organization of the manufacturers, stimulates the local economy, improves the reputations of products and services in the region, strengthens the local cultural bonds, and increases the potential for tourism. These aspects have significantly boosted the region's development.

The notion that development is linked to the effective operation of GIs is supported by the responses provided in the questionnaire administered to the representatives of the GIs in the Brazilian Northeast. Overall, it is worth noting that there has been support from both the government and other institutions throughout the process of registering and granting GIs. However, the associations of local manufacturers currently receive little support for their further development in relation to their GI-related business. Therefore, this analysis reveals a growth perspective associated with the GIs, including an increase in production and exploration of new markets. To achieve this, a partnership between public and private institutions, associations and manufacturers is essential to strengthen the production chains, integrate the actors in different links, add more value to the products, and improve local business.

In summary, the bibliographic study, the documentary analysis, and the data survey presented in this paper demonstrate that there was development in the region following the granting of geographical indications in Brazil's Northeastern region, especially regarding the valorization of manufacturers, products, and locations. However, it is important to note some of the GIs in the Northeastern region require restructuring, particularly those that do not utilize the stamp. To strengthen and solidify this comprehension, it is necessary to inform and convince manufacturers of the significance and distinctiveness of the safeguarded products and services. One of the main challenges mentioned by the respondents was the need for effective organization and participation of the manufacturers. Manufacturers' lack of organization and

participation can compromise the entire manufacturing process, resulting in theoretical benefits and development established by the GIs but with little to no implementation.

A crucial recommendation for future research is to conduct studies on businesses offering GI-certified products and services. These studies should aim to understand better the presentation of the stamp and the market strategies adopted by these businesses. It is recommended that future studies focus on examining the businesses that offer GI-certified products and services. The goal is to gain insight into how they are presenting the stamp and what market strategies they are using. This research is crucial at the moment. Hence, it is possible to investigate whether businesses operating within the GI segment in Brazil's Northeast have marketing strategies for their future operation and whether funding agencies support proper planning and successful sales, balancing economic, environmental, social, and cultural benefits.

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