

Original Article

## Spirals of knowledge in geographical indications: the Brazilian wine sector case

Espiraís do conhecimento em indicações geográficas: o caso do setor vitivinicultor brasileiro

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### ABSTRACT

**Purpose:** This paper aims to verify how the construction of spirals of knowledge of geographical indications occurs in the Brazilian wine sector and to identify the conversion of the knowledge of Geographical Indication (GI) from tacit to explicit according to the SECI model (the epistemological spiral). Additionally, to identify how the ontology spiral occurs in the opinion of government agencies, associations, and managers of wineries.

**Design/Methodology/Approach:** This research was qualitative and exploratory. The study was delimited to the Brazilian wine sector. All interviews were conducted in person. There were twenty interviews with interest groups: government agencies (5 interviews), associations (5 interviews), and managers of wineries (10 interviews).

**Findings:** The Epistemological Spiral is constructed at the individual, group, and organization levels, within the wineries, converting tacit to explicit knowledge according to the SECI model. The Ontology Spiral is completed with the inter-organizational level that, in the case of Geographical Indications, is formed by the Associations. The Ontology spiral is produced in the context of GIs, and the wineries have the generation of knowledge in each one of them and, at the same time, interact within the Associations and form a representative body of GIs.

**Originality:** Within the GIs, there is the generation of knowledge, which is shared between the coopetitors. Knowledge Management of Geographical Indication emerges, and the block that forms the body of the association produces knowledge that adds experiences and strengths of each individual, group and organization, culminating in the dissemination of superior knowledge.

**Keywords:** Geographical indication; Knowledge management; Wine sector

## RESUMO

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**Objetivo:** Este artigo tem como objetivo verificar como ocorre a construção de espirais do conhecimento de indicações geográficas no setor vitivinícola brasileiro e identificar a conversão do conhecimento de Indicação Geográfica (IG) de tácito para explícito segundo o modelo SECI (a espiral epistemológica). Adicionalmente, identificar como ocorre a espiral ontológica na opinião de órgãos governamentais, associações e gestores de vinícolas.

**Desenho/Metodologia/Abordagem:** Esta pesquisa foi qualitativa e exploratória. O estudo foi delimitado ao setor vitivinícola brasileiro. Todas as entrevistas foram realizadas pessoalmente. Vinte entrevistas com grupos de interesse: agências governamentais (5 entrevistas), associações (5 entrevistas) e gestores de vinícolas (10 entrevistas).

**Resultados:** A espiral epistemológica é construída nos níveis individual, grupal e organizacional, dentro das vinícolas, convertendo o conhecimento tácito em explícito de acordo com o modelo SECI. A Espiral Ontológica se completa com o nível interorganizacional que, no caso das Indicações Geográficas, é formado pelas Associações. A espiral da Ontológica é produzida no contexto das IGs, e as vinícolas têm a geração de conhecimento em cada uma delas e, ao mesmo tempo, interagem dentro das Associações e formam um corpo representativo das IGs.

**Originalidade:** Dentro das IGs há a geração de conhecimento, que é compartilhado entre os cooepetidores. Surge a Gestão do Conhecimento de Indicação Geográfica e o bloco que forma o corpo da associação produz conhecimentos que agregam experiências e pontos fortes de cada indivíduo, grupo, organização, culminando numa disseminação de conhecimento superior.

**Palavras-chave:** Indicação geográfica; Gestão do conhecimento; Setor vitivinícola

## 1 INTRODUCTION

The concept of shared brands is defined by Tregear and Gorton (2009) as those that have a single brand as an identity for two or more partner companies, which are committed to respecting established agreements. There are distinct types of shared brands in Brazil that fit this conceptual condition: Geographical Indications (GIs), Collective Brands and Sectoral Brands. These types of shared brands have a brand name that represents them and independent associations that manage them (Castro and Giralddi, 2018). The industry brand work has contributed to the development of the wine sector both in the domestic and foreign markets with increased participation in international fairs and exports of Brazilian wine (Castro, Giralddi and Oliveira, 2018).

In addition, the work of Vargas-Sánchez (2014) shows the image that a country projects abroad affects business on an international scale because it is related to

the values and reputation it transmits. Roselli et al. (2018) studied the Geographical Indication and the certification of organic olive oil products with Italian consumers and concluded that there are correlations between the GIs and the production of certified organics. Fishman et al (2018) analyzed the effect of the shared brand, as geographically designated agricultural brands, to obtain a collective reputation for product quality. When companies of the same type share the same brand name, consumers have more quality observations and are able to predict quality more accurately than when they are just individual brands.

Coffee from the Brazilian *Cerrado* (tropical savanna ecoregion), for example, has 11 registration of own brands, geographical indication and stamps of certification by third parties. Each, in its own way, provides certainty of the product's origin and content to the different levels of actors that make up the coffee production chain. The coffee produced in the area demarcated as the Region of the Cerrado Mineiro is considered as a special differentiated coffee (Barbosa, 2015).

Melewar and Skineer (2020) explores the management of territorial brands related to a beer brand, the study was in a Greek microbrewery. Results identify how the company approached territorial brand management based on an understanding of potential consumer perceptions and reactions to the place brand origin in its brand names when targeting its key domestic, export and tourist consumer groups.

Within the Brazilian wine sector, there is the example of Vale dos Vinhedos – the first Brazilian GI, registered as an Indication of Origin in 2002 and Denomination of Origin in 2012 – the acquisition of the registration reached different sectors such as the hotel and food with job creation, trade strengthening, preservation of the environment and beautification of rural properties, increasing the number of visitors (Barbosa, Peralta and Fernandes, 2013; Bruch, Vieira and Barbosa, 2014).

In contrast, there are the concepts of Knowledge Management that can be used strategically and as a competitive differential for organizations according to Roth and Diamantopoulos (2009) and authors that work with the concepts of Competitive

Advantage such as Barney (1991) and Barney, Ketchen and Wright (2011), as well as Maritan and Peteraf (2011). Thus, the work of Lai et al (2014) shows that Knowledge Management can be a mediator between industrial clusters in relation to corporate innovation, for example.

The seminal work on the creation of organizational knowledge is presented using the SECI model, developed by Nonaka and Takeuchi (1995), which is detailed in the literature review, which shows the interaction between tacit and explicit knowledge in the form of a spiral, creating the knowledge conversion process. Within this model, the two spiral possibilities - the epistemological and the ontology - are detailed, the first converts tacit knowledge into explicit knowledge, while the second allows the visualization of the individual, group, organizational and inter-organizational levels that permeate the company. (Nonaka and Takeuchi, 1995; Nonaka and Takeuchi, 2005).

Schniederjans et al (2020) shows that knowledge management can be an opportunity for scholars to obtain valuable information for organizations. The article raises questions about how scholars can utilize the largely overlooked areas of supply chain digitization as well as the growth areas to explain how the human dimension of supply chain management can be exploited in order to optimize the digital performance of the supply chain from an industry 4.0 perspective.

When considering the context outlined above on Shared Brands and Knowledge Management, the importance of deepening studies on this topic is noted, seeking to advance studies on Knowledge Management of Geographical Indication. Thus, Knowledge Management, in its tacit and explicit aspects, can enable the conversion of knowledge, focusing on the study of Geographical Indication, being a strategic and differentiating factor for the organization.

The main objective of this work is to verify how the construction of spirals of knowledge of Geographical Indications occurs in the Brazilian wine sector. The specific objectives are also presented: to identify the conversion of the knowledge of Geographical Indication from tacit to explicit according to the SECI model, forming the

epistemological spiral; and to identify how the ontology spiral occurs in the opinion of government agencies, associations and managers of wineries.

In a search in the Scopus database, the terms *tacit and explicit knowledge* were searched and 89 articles were found and SECI model with 61 articles from 2018 to 2022. However, these terms are broader and do not bring specifically the theme researched in this article. For more specific terms *knowledge management spiral, spiral of knowledge management, Nonaka spirals, spiral of knowledge, ontology spiral* were searched, and 7 articles were found, from 2018 to 2022 (Scopus, 2023). Thus, it is noted that there are few works in the area and, specifically aimed at GIs, the works are very incipient and initial. This shows the relevance of this research, integrating the theme of spirals of knowledge within the GIs model, analyzing the Brazilian viticulture sector.

In addition, the equal scarcity of works on the types of shared brands in Brazil stands out, as a shared brands are a recent study area in Brazil and which are not yet being studied widely in the academic environment. There are few studies, presented throughout the results, highlighting the practices of Geographical Indications in Brazil from the initiatives and experiences that are taking place in the market. The process of implementing the shared brands is in full evolution in the sectors of the Brazilian market, but the results of these experiences have not yet been widely studied and disseminated in academia, as they are initial and recent.

Knowledge Management can assist in the theoretical understanding of Shared Brand Management, because the concepts for the construction of organizational knowledge (SECI model, epistemological spiral and ontology spiral) can be integrated into the GIs theory. Thus, the conversion of organizational knowledge between tacit and explicit knowledge can generate the construction of knowledge on GIs. In addition, the theoretical understanding of spirals can contribute to the interaction between the individual, group, organization and inter-organization levels, improving the relationships and management of GIs.

## 2 THEORETICAL FRAMEWORK

Knowledge is information combined with experience, context, interpretation and reflection, being continuously constructed and, individual knowledge, reveals itself as a precondition for the development of the organization's knowledge. Given this importance, there is the seminal work on knowledge management developed by Nonaka and Takeuchi (1995), which addressed issues related to tacit and explicit knowledge and the SECI model (socialization – externalization – combination and internalization). In 1998, the same author introduced the concept of 'Ba'.

Thus, there are two types of knowledge: explicit and tacit. Explicit knowledge is expressed in words and numbers and disseminated in forms and specifications, being shared in the form of raw data, codified procedures or universal principles. This type of knowledge can be processed and coded, being transmissible in formal and systematic language. It represents the knowledge of rationality, which tends to be explicit, metaphysical and objective (Nonaka and Takeuchi, 1995; Nonaka and Konno, 1998).

Tacit knowledge is personal and difficult to formalize and share with others as subjective insights and intuitions. It is characterized by subjective conclusions, insights and hunches, which is difficult to see and express and is immersed in the narratives and stories that circulate within the organization. The association of this knowledge is a personal, inalienable and non-transferable skill that each person builds individually. Tacit knowledge is related to personal nature and is inseparable from the people who have it. This makes it difficult to formalize, communicate and share tacit knowledge. It is not always possible to convert tacit knowledge into explicit knowledge, articulating it in a code. (Nonaka and Takeuchi, 1995; Richards, Foster and Morgan, 1998; Chergui, Zidat and Marir, 2018; Oliva et al, 2019).

For Nonaka and Takeuchi (1995), the assumption that knowledge is created through the interaction between the tacit and explicit aspects leads to four different modes of knowledge conversion, commonly called the SECI model – Socialization,

Externalization, Combination and Internalization. Accordingly, the study by Baldé (2018) was carried out with 431 employees from 59 work teams belonging to 51 companies in different sectors and showed that the SECI model can mediate individual creativity and the intrinsic motivation of the work group/team.

Bandera et al. (2017) work in the context of Knowledge Management and the application of the SECI model for small and medium-sized North American young startups, connecting with the theme of entrepreneurship. The study highlights how the four phases of the SECI model apply to startups and this provides insights into the entrepreneurs' knowledge creation process and suggests how entrepreneurs can improve the survival of startups through greater awareness and the use of Knowledge Management, business planning and operational activities.

Therefore, the spaces shared with common activities in business incubators and business meetings are growing to favor the acquisition of implicit assets and build a community, promoting the socialization of knowledge. Externalization and combination is important because no organization, small or large, can function well without institutional memory, codified in processes and detailed documentation (Bandera et al, 2017). The work of Woodfield, Shepherd and Woods (2017) was carried out with family wineries in New Zealand and shows the sharing of knowledge between older and younger generations (grandparents, parents and children) in a two-way process, with transposition of knowledge both from the oldest to the youngest and vice versa.

The creation of knowledge has two dimensions – epistemological, in which the conversion of tacit knowledge into explicit and ontology knowledge occurs, which involves the level of knowledge, be it individual, group, organizational or inter-organizational (Nonaka and Takeuchi, 1995). The first spiral – epistemological – can show itself more concretely as the development of a new product, for example. However, products are not the only result of knowledge creation. Thus, the second spiral – ontology – shows the more abstract aspect of knowledge with less tangible



results such as management systems, operational mechanisms or human resources management programs (Nonaka and Takeuchi, 1995).

Thus, for example, the work proposes an approach for the acquisition of tacit knowledge based on an ontological model that works with explicit and self-confrontation techniques, know how, know that, situation and video. Once tacit knowledge is acquired, it can be reused and shared. This will allow future actors to explore this tacit knowledge when carrying out the activity with added value to tacit knowledge, inferring new knowledge that the actors themselves are unaware of (Chergui, Zidat and Marir, 2018).

Fifteen years after the seminal study of Nonaka and Takeuchi (1995), Nonaka and von Krogh (2009) worked on structuring the theory of organizational knowledge that can assist managers in the development of their work. We see individual, team and organizational knowledge and knowledge creation permeates all spheres within the organization. The study also shows a strong connection between knowledge and social practice.

In the case of shared brands, specifically GIs, it is important to preserve the memories, skills, arrangements and learnings acquired by producers collectively. Thus, there can be a leverage for new knowledge with spiral growth and gains in scale through previous learning and training. The work by López-Bayón et al. (2018), on corporate governance, shows GIs as a decision that improves the quality of the product and takes advantage of the resources of the viticulture chain, through the requirements and challenges that the registration of a GI brings to wineries.

Valaski, Malucelli and Reinehr (2012) performed a literature review to explore how ontologies are being applied in the organization. In general, ontologies and IT encourage knowledge sharing and formalization; discussion and an integrated and collaborative learning environment is encouraged through interaction between people, who share their knowledge in appropriate communication channels. The main role of



ontologies is to structure and retrieve knowledge; however, their application can be learning when combined with various types of IT solutions.

Both spirals are equally important in creating innovation within the company and, in contrast, in acquiring sustainable competitive advantage in the market (Nonaka and Takeuchi, 1995).

Knowledge and spiral management helps coopetitors share general and specific knowledge of the project, while retaining basic knowledge about their companies and customers. Thus, the study by Gast et al (2019) was qualitative and gathered data from 11 interviews with key informants from Latin American companies. To achieve this balance, companies combine formal and informal knowledge and protection practices.

Knowledge needs a physical context in time and space to be created. Thus, Ba is the shared space that serves as the foundation for the creation of knowledge. It is in constant motion and can be built intentionally or spontaneously (Nonaka and Konno, 1998; Nonaka, Toyama and Konno, 2000; Nonaka and Toyama, 2003). This space can be physical, such as office and business spaces; virtual, such as e-mails and teleconferences; mental, such as shared experiences, ideas and ideals or the combination of these items. The Ba concept unifies the physical, virtual and mental space, being a world where individuals fulfill themselves as part of the environment in which their lives are inserted (Nonaka and Konno, 1998).

Bennett's (2001) work with 113 sales force leaders from large London companies set out to verify whether the Ba concept influences the construction of the spiral of knowledge within the SECI model. As a result, Ba's impact on one or more dimensions of sales force management was achieved. In contrast, the work of Krahe, Lalley and Solomons (2014) examined the Ba space in a class of doctoral students in nursing. They believe that Ba is an educational innovation and point out that the Ba context is fundamental for sustaining and promoting knowledge, enriching learning environments and collaboration between group members.

In this way, the Ba context provides energy, quality and the place for the development of individual knowledge and its conversion along the spiral of knowledge. Ba emerges from individuals, work groups, teams, informal circles, meetings and virtual spaces. Thus, Ba comes from a platform that moves from individual to collective knowledge, integrating all information (Nonaka and Konno, 1998; Nonaka and Toyama, 2003).

The following Propositions for the work can be written: P1 –There is a conversion of the knowledge of Geographical Indication from tacit to explicit according to the SECI model, forming the epistemological spiral. P2 – There is the construction of the ontological spiral in the opinion of government's agencies, associations and managers of wineries.

### **3 MATERIAL AND METHODS**

This research was qualitative and exploratory, in order to develop concepts more clearly, establish priorities and improve research planning to understand the problem, and refine the research question. Indirect documentation will be used through bibliographic and documentary research as well as conducting in-depth interviews (Cooper and Schindler, 2003; Sampieri, 2006).

In the field of study, direct observation and interviews were used. In this way, the researcher was personally close to the studied structure, visiting associations and wineries. Direct observation of the context was carried out, which made it possible to understand the scenario studied and direct contact with the owners and employees, collecting informal and indirect data that complemented the information given verbally. In-depth interviews were conducted, dealing with a relatively spontaneous speech based on what the interviewee lived, felt and thought about a situation. The analyst is faced with a set of interviews and his goal is to be able to infer something (Bardin, 2011).

The study was delimited to the Brazilian wine sector. In October 2019, six wine-growing municipalities in the state of Rio Grande do Sul were visited for collection, namely: Bento Gonçalves, Flores da Cunha, Nova Pádua, Farroupilha, Pinto Bandeira, and Garibaldi. All interviews were conducted in person. The interviews were recorded with the interviewees' consent and were later transcribed. Twenty interviews with a duration of around one hour each were conducted with three groups: government agencies (five interviews), associations (five interviews), and managers of wineries (10 interviews).

The government agencies interviewed were Embrapa Grape & Wine (Brazilian Corporation of Agricultural Research), SEBRAE/RS (Micro and Small Business Support Service), IFRS (Federal Institute of Rio Grande do Sul) and a former director of IBRAVIN (Brazilian Wine Institute) totalling five hours of interviews. The letter "O" is used to represent the organizations.

With regards to the data collected from the associations that manage fine wine GIs, the following were interviewed: APROVALE (Association of Fine Wine Producers of Vale dos Vinhedos), ASPROVINHO (Association of Pinto Bandeira Wine Producers), APROBELO (Association of Wine Producers of Monte Belo do Sul), APROMONTES (Association of Wine Producers of Altos Montes) and AFAVIN (Farroupilhense Association of Wine Producers, Sparkling Wines, Juices and Derivatives), in a total of five hours of testimony.

Finally, data was also collected through in-depth interviews with winery managers. The interviews were carried out with producers (in managerial positions) in the wine sector. There were 10 interviews carried out, totaling around 10 hours of reports. With the final number of interviews (20 interviews/20hours), the so-called "moment of saturation" was obtained, in which the researcher, according to Bauer and Gaskell (2005), assesses that there will be no new surprises, perceptions and revelations in additional interviews.

For data analysis, content analysis was used, which is a set of communication analysis techniques, in which the analyst delimits the coding or registration units and the documentary analysis aims to shape or represent the content of a document. Categorization allows the classification of elements, introducing an order in the apparent disorder of the material. It brings together groups of elements (registration units) undertaken due to the common characteristics of these elements. (Bardin, 2011). Categorization aims to provide a simplified representation of raw data. The investigation of the themes or thematic analysis consists in discovering the core of meaning that may have meaning for the proposed objective and is quick and effective in the condition of being applied to direct and simple speeches. (Selltitz, 1965; Bardin, 2011). Therefore, to fulfill the objectives and proposals outlined, the following category of analysis is used: Creation of Knowledge of Geographical Indication – interaction between tacit and explicit knowledge; epistemological spiral and ontology spiral.

## 4 ANALYSIS AND DISCUSSION OF RESULTS

### 4.1 Country brand and GIs

Regarding the country-brand/country of origin and the GIs it was reported that in the foreign market there is still a lack of knowledge about the country brand and the wine GIs. Overseas generally, some GIs are another GI is known all that exist in the sector. It is understood that the work of publicizing the GIs is closely linked to the communication efforts of the country brand (O<sub>4</sub>). Thus, it can be pointed out:

“...the GIs have not yet reached the point [of being widely recognized]... I think it is still very recent... so it is something that can contribute, but the volume is still small... first it is gain space and notoriety internally [internal market]... consolidate internally...” (O<sub>4</sub>)

Producers understand that it is important to have a strengthened country brand that, consequently, will help in the construction of the regional brand (GIs) and individual brands.

"...and why do we know that first of all before creating the Perini house we have to have a strong Brazil brand... that this will help us sell our products and build our brand and, speaking of the international market for geographical indication, it is still not as relevant because we still have a step before, which is the creation of the Brazil brand..." (V<sub>9</sub>)

"...we have different micro-regions and different geographical indications that end up also affecting the style of the product and the way of communicating this product... then I see the product, I don't know exactly what it is, but it is from Brazil and has the stamp... so I have credibility..." (V<sub>9</sub>)

The *Projeto Imagem* (Image Project) was an action initiative in agreement between SEBRAE and IBRAVIN with the objective of bringing opinion makers as journalists to work/publicize the GIs. They visit the GIs, sometimes go to a winery and the other members meet everyone at that winery to promote the GIs. And opinion makers, knowing all the work, become multipliers of this information and generate spontaneous news and media (O<sub>1</sub>). Thus, it is evidenced:

"You value your region... it means valuing your terroir... valuing your grape... you give your grape and your wine an identity..." (A<sub>4</sub>)

"...wine is to understand the place, the origin, the land... how people live in that land... how the elements of nature act in that land..." (A<sub>3</sub>, V<sub>3</sub>)

As the literature presents to us, the image of a country is a holistic construct that derives from attitudes towards perceived attributes. It is based on stereotypes, which can be changed or reinforced through the development of a strong country brand, which helps the nation to boost the country's image and make it more competitive worldwide (Hakala, Lemmetyinen and Katola, 2013). Thus, according to the reports, the continuous development of the country brand helps to strengthen regional brands and GIs. One can think that a solid and consolidated country brand will benefit the different sectors that have GIs.

Some studies such as those by Viot and Ducros (2010); Zamparini, Lurati and Illia (2010); Rubini, Motta and Di Tommaso (2013), Cazurra and Un (2015) have shown that

there is a relationship between product and country of origin and this communicates the quality of products to consumers. This type of knowledge can improve the ties between the players and strengthen exports through knowledge of the country brand previously worked and in parallel with all the communication actions of the wine GIs. Marco-Lajara et al (2022) corroborate this thought when researching six Spanish wine clusters, verifying that the areas with Protected Designation of Origin (PDO) had growth in production, sales volume and economic value, through the use of the strategy of differentiation and the collective brand.

## 4.2 Domestic market – Wines from Brazil

Regarding the growth in the consumption of Brazilian wine in the domestic market, it was reported that the numbers show growth mainly in relation to sparkling wines that have quality with acidity and freshness. The competition with fine wines is already a little fierce mainly because Europe has a supply of good wines with more affordable prices. An important apprenticeship was in relation to sparkling wines that have fewer competitors and world renowned producers and we have the climatic advantage that gives us a total non-ripening of the grapes and guarantees a good acidity and a product of superior quality.

The sector also obtained from the National Congress the *Simples Nacional* taxation regime, which facilitated the taxation condition mainly for small producers. The sector also faces the difficulty of depending on each vintage for the production of red wines and, if the vintage is not very good, it will compromise the quality of that year's wines. However, there was the learning that this constancy can be maintained with the sparkling product and this can be a competitive differential in the market. The region has a favorable climatic condition for sparkling wine, which gives lightness and Brazilianness ( $O_4, V_3$ ).

However, there is still a portion of consumers who believe that national wines do not match imported wines, although the recent success of Brazilian brands of

sparkling wines is gradually changing this perception. The sparkling wines produced in the domestic market are well known in Brazil and are at the same level as the French brands in terms of levels of perception/awareness (IBRAVIN, 2020)

“The last effort that was made was the campaign [advertising] your wine... its rules that was at the end of last year (2018)... our sparkling wine can be consumed with less pomp than a French one...plastic cup... that was the image built... the product has quality... great cost vs. benefit and has to be perceived by the public with that lightness... for a long time, Brazilian wine was worked with pomp... with much ritual...it is to demystify consumption...” (V<sub>3</sub>)

In the Brazilian market, the Aurora brand, for example, has 13 brands. There are other brands that are not in the Brazilian market and are exclusive brands for export. It can be said that within Aurora there are two companies: one that produces huge volumes of conventional products and another that is dedicated to noble products with superior added value. Mostly, the company keeps the image of a cooperative that sells a lot of products at low prices such as Marcus James, Country Wine, and Sangue de Boi. Thus, it is difficult for the consumer who associates Aurora with basic products to recognize that it manufactures premium products with Indication of Origin.

“...so, for example, if I see Cave Geisse with IO... a Valmarino with IO... it costs... oh, for that I pay... now, Aurora, or I can think that Aurora doesn't have ability to do something of such quality or I can think that Aurora is exploiting me because it is charging a price far beyond its line, right?” (V<sub>3</sub>)

“... Aurora will soon have three Auroras because the grape juice is also very expressive... and the [line] of non-alcoholics... and Aurora being the Aurora group... we are developing this strategy, this brand will be from the quality wines line... it is the perception of value... they are different audiences, different products, different prices, different communication...” (V<sub>3</sub>)

Regarding *Vinhos do Brasil* (Wines of Brazil), which works in the domestic market, it was reported that there was an improvement in the perception of quality by the Brazilian consumer. Over the years, it was possible to carry out several collective actions to promote Brazilian wine in the national territory, such as tasting tours. The



Brazilian consumer already has a perception of the quality of national wines, but there is still a dissociation between quality and the price that the consumer is willing to pay (O<sub>4</sub>)

"...our communication has to change, no more showing the winery, barrel, stopper and bottle... this is not part of the communication... we have to show people, consumption situations, glasses, hands, smiles... this was designed in 2008 and today most companies have also absorbed this new way of communicating and positioning... they are gains from collective work..." (O<sub>4</sub>)

"...keep investing in Marketing... in blind tasting... and campaigns like 'your wine your rules'... we are in a country with little consumption [per capita]... people think that consuming wine it's very complicated..." (O<sub>4</sub>)

"...logistics is a major problem... we produce in the Santa Catarina, Rio Grande do Sul and Northeast regions... 50% of consumption is in the Southeast... with the road modal we have, it is complicated... this is a challenge point for consumption for viticulture..." (O<sub>4</sub>)

When making an analysis of the knowledge acquired and advances achieved in these 18 years of the first GI of wines (Vale dos Vinhedos) it is noted that the knowledge was academic and was, first, within Embrapa Grape & Wine. Currently it involves many companies and there are 6 GIs of fine wines registered and others in progress. At this moment, a process of involvement of the grape producer and small and medium-sized wineries begins, because before it was mostly in the domain of large entrepreneurs.

"...it reached the producer... the European Geographical Indications have a regulatory council or interprofessional committee... there are grape producers and there are the wine industries... here [Brazil] there is usually only the wine industry... the producer is not yet associated... and they have not yet seen advantages... because I have 13000 wineries and 600 wineries... even small and medium wineries, sometimes they buy grapes from third parties... and they buy from own region..." (O<sub>4</sub>)

"... but the producer is not part of the strategy... it is not established nor which grape and how he/she should produce a certain grape... if he/she is trained or guided he can do a better work... if he/she qualified with the establishment of a GI rule and, on the other hand, the strategy has not yet been absorbed collectively..." (O<sub>4</sub>)

Thus, the domestic market through the Vinhos do Brasil brand is still in a consolidation phase due to the low per capita consumption of wines in Brazil and the population's lack of knowledge about national production. Often the consumer seeks some foreign wine and does not try the national product. There is a need to intensify the sector's strategic plans so that it broadens the dissemination and communication of the product and expands actions already implemented such as tastings, training sommeliers, campaigns that simplify the attributes and occasions of consumption of the product.

### **4.3 Verification of Proposition 1 (P1)**

As can be seen, there is a relationship between the research findings and the conversion of knowledge from tacit to explicit, within the SECI model, constructing the Epistemological Spiral. For this spiral, we have the individual, group and organization levels and the transformation of tacit and explicit knowledge according to the SECI model of Nonaka and Takeuchi (1995).

In this sense, there is a viticulture and oenology course that trains winemakers on an individual level. This trained professional interacts with groups and areas within the company and this knowledge is shared, stored and transmitted, culminating in the level of organizational knowledge, completing the Epistemological Spiral.

Thus, the organization decides on strategic paths such as producing only grapes and selling them as commodities and/or winemaking with added value to produce the final product and sell it through a physical store to the tourist and/or virtual store. There is also the decision-making process between participating or not in IO/DO within the territory with registration issued by INPI (Instituto Nacional da Propriedade Industrial).

Thus, Proposition 1 – There is a conversion of the knowledge of Geographical Indication from tacit to explicit according to the SECI model, forming the epistemological spiral – was confirmed. This result shows that knowledge conversion occurs with

socialization, externalization, combination and internalization within the studied wineries that make up the Geographical Indications in the Brazilian viticulture sector.

#### **4.6 Verification of Proposition 2 (P2)**

After the formation of the Epistemological Spiral, the evolution to the next level occurs – Inter-organizational – it breaks the interaction of knowledge only within the organization itself and reaches a level beyond the organizational boundaries. In the case of the viticulture sector, through the GIs, this inter-organizational level is represented by the Associations, which are the holders of GIs, when the region obtains registration with the INPI.

When contemplating the individual, group, organization and inter-organizational levels, the Ontology Spiral is formed, according to Nonaka and Takeuchi (1995) and Nonaka and Konno (1998). At this inter-organizational level, producers are seen within Associations such as APROVALE, ASPROVINHO, APROBELO, APROMONTES and AFAVIN. This is complemented by what was explained in the work of Nonaka et al. (2014), which shows the organizational ways to explore and take advantage of the knowledge that integrates and synthesizes tacit and explicit knowledge, driving the transformation of sustainable knowledge within and between organizations and their environments.

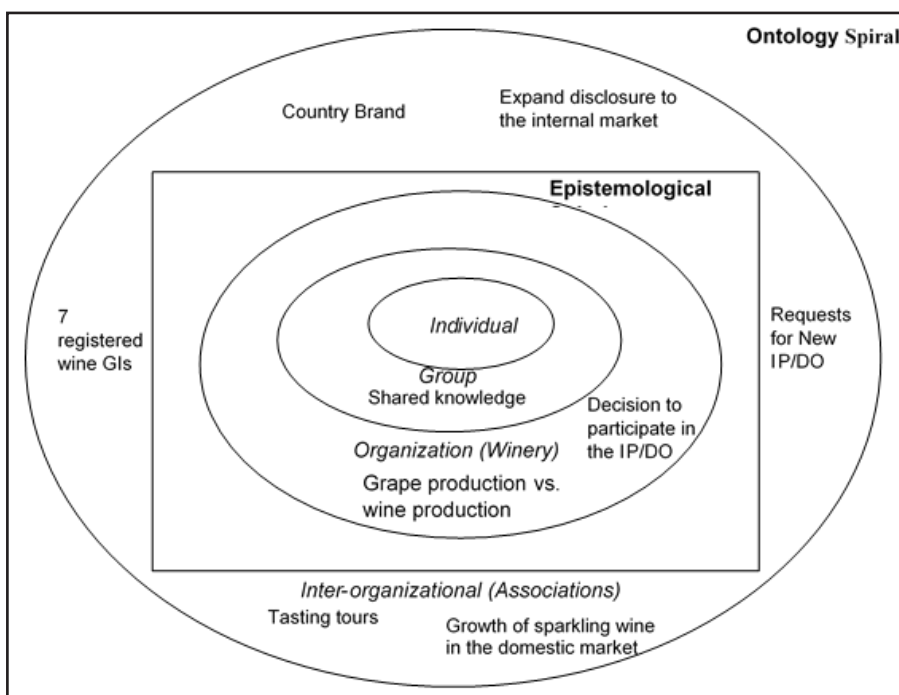
In this context, if there are seven GIs registered in the Brazilian viticulture sector (six GIs of fine wines and one of Goethe grapes), there are new applications for registration for the DO of Pinto Bandeira in the state of Rio Grande do Sul, for example. There is a qualitative leap in products with the IO/DO stamp and the presence of these records as a competitive differential in the market. There is a relationship between Country Brand and GIs' development, and a strengthened Country Brand can collaborate with the development and visibility of GIs.

Work is undertaken to develop an identity for each GI according to the technical characteristics such as soil, terroir, grape typicality, the characteristics of the associated members, the strategic directions that each GI decides to follow and,

also, for location issues, tourist attractions and customer service/enotourism. Thus, it is noted that Proposition 2 – there is the construction of the Ontology Spiral in the opinion of government agencies, associations and managers of wineries, was confirmed, with the formation of the Ontology Spiral (Nonaka and Takeuchi, 1995). The work of Bartolacci et al. (2016) complements this idea when it shows that the virtual evolution of the Ba concept (organizational context) can take the SECI model to an inter-organizational level.

From this, one can outline the Epistemological and Ontology Spirals (Propositions 1 and 2) proposed by Nonaka and Takeuchi (1995). The theory of spirals of knowledge was confirmed by this research, being applicable to the Geographical Indications of the viticulture sector, in which the conversion of knowledge occurs through the SECI model, forming the Epistemological and the Ontology Spirals, which covers a broader level – inter-organizational –. For this, the interviewees' reports were grouped, looking at the occurrence of the two spirals, as can be seen in Figure 1.

Figure 1 – Spirals of Knowledge - Epistemological and Ontology in the Brazilian wine sector



Source: Prepared by the authors

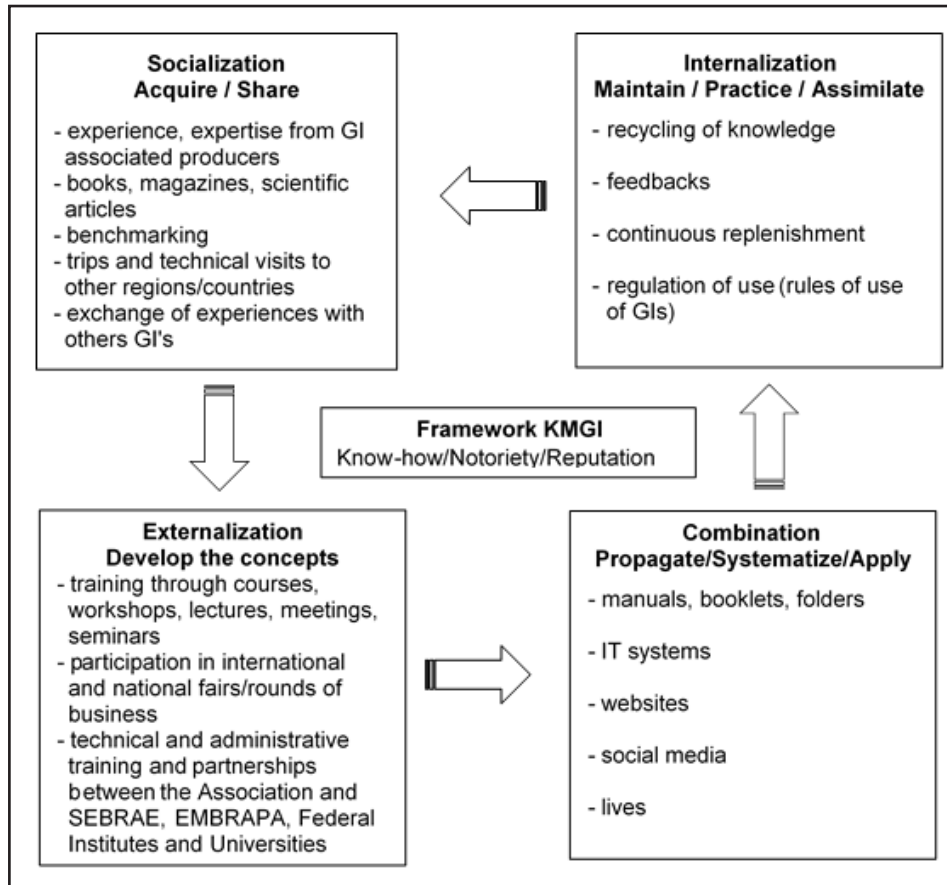
As seen in Figure 1, Knowledge Management interacts with the theme of Geographical Indications, which are developed from the creation and dissemination of knowledge. The Epistemological Spiral occurs within the winery while the Ontology Spiral occurs with the insertion of the inter-organizational level. According to Gast et al (2019) it is important to clearly define what kind of knowledge is shared or protected when companies cooperate with competitors. The originality of the work is on the condition that the Ontology spiral is produced in the context of GIs, and the wineries have the generation of knowledge in each one of them and, at the same time, interact together within the Associations and form a representative body of GIs.

From this differentiation between Knowledge Management applied to the company (Epistemological Spiral) and the Knowledge Management of GI (Ontological Spiral) in the level of interaction between the associates that belong to the GI, Figure 2 can be drawn, which specifies Knowledge Management of the GI, presenting the steps that occur for its execution within the Association that manages it. In this way, the steps to acquire, develop and disseminate knowledge take place within the complex of producers that make up the GI. From this process, knowledge is maintained, which leads to a level of shared knowledge among the different producers, as seen in Nonaka and Takeuchi (1995) with the SECI model and based on data obtained in interviews with the Brazilian wine sector.

As can be seen in Figure 2, the exchange of knowledge in the acquisition, development and propagation generates a deeper and more robust knowledge than that achieved by each organization individually, producing a unique and differentiated knowledge by the community. This interaction, dissemination and sharing can lead to an enrichment in the development of the activity with market and competitive gains, improvement of processes and quality. It is understood that the block that forms the body of the association produces knowledge that adds up to the experiences and strengths of each individual, group, and organization, culminating in a propagation of

knowledge superior to that obtained if there were no interactions between the GI and each organization isolated in its activity.

Figure 2 – Framework KMGI Knowledge Management of Geographical Indication



Source: Prepared by the authors based on the Nonaka and Takeuchi's SECI model (1995) and data obtained in interviews

## 5 FINAL CONSIDERATIONS

This work had as a general objective to verify how the construction of spirals of knowledge of Geographical Indications occurs in the Brazilian wine sector. Thus, the general objective, the specific objectives and Propositions 1 and 2 were verified. The Epistemological Spiral is constructed at the individual, group and organization levels, within the wineries, with the conversion of tacit to explicit knowledge according to the SECI model. Spiral Ontology is completed with the inter-organizational level that, in

the case of Geographical Indications, is formed by Associations. An essential condition for obtaining registration is the to constitution of an Association that represents the winemakers of each region that seeks registration with the INPI.

It is expected that Government Agencies and Associations will be able to outline strategies related to the construction of knowledge in the existing GIs and take advantage of the knowledge acquired to innovate, expand the performance and use it as a benchmarking tool for new GIs requests. In addition, the research results can leverage business and contribute to the strengthening of the sector. And, it is also possible to carry out joint works that solidify the Country Brand, expand the sector's disclosure in the domestic and foreign markets and create a specific identity and position for each GI, bringing competitive differentials in relation to competitors.

The work has limitations due to the methodology, because the qualitative research has the aspect of the researcher's subjectivity and the results of the qualitative research are not reproducible, as the situations are specific in time for that region or research unit studied, which makes generalizations of the study difficult. As suggestions for future research, a comparative study can be made between the findings of this research and that which occurs in wine sectors in other countries of the New World of wines such as Argentina, Uruguay, Chile, Australia, and the USA. It can also be compared with the Old World with countries producing European wines. The research can also be applied to other Brazilian sectors that also have GIs such as coffee, cheese, *cachaça*, among others.

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3. Development of theoretical propositions (theoretical work)		
4. Theoretical foundation / Literature review	✓	
5. Definition of methodological procedures	✓	✓
6. Data collection	✓	
7. Statistical analysis		
8. Analysis and interpretation of data	✓	✓
9. Critical revision of the manuscript		✓
10. Manuscript writing	✓	
11. Other (please specify)		

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