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VALUE CREATION AND DISTRIBUTION IN THE SPECIALTY COFFEE CHAIN: A STUDY OF THE RELATIONSHIP BETWEEN AGENTS IN PARANÁ, BRAZIL AND EUROPE

Criação e distribuição de valor na cadeia de cafés especiais: um estudo da relação entre agentes do Paraná, Brasil e da Europa

Amanda Ferreira Guimarães[a], Sandra Mara de Alencar Schiavi[b], Melise Dantas Machado Bouroullec[c], Jaiane Aparecida Pereira[d]

[a]Universidade Estadual de Maringá, amandafguimaraes@live.com, ORCID: 0000-0002-4425-0306
[b]Universidade Estadual de Maringá, smaschiavi@uem.br, ORCID: 0000-0002-3285-1243
[c]École d'Ingénieurs de PURPAN, melise.bouroullec@purpan.fr, ORCID: 0000-0001-6265-3849
[d]Universidade Federal do Mato Grosso do Sul, profjaiane@yahoo.com.br, ORCID: 0000-0003-4254-6311

Abstract

We aimed to understand how the transactions of the specialty coffee value chain are organized between agents in Paraná, Brazil and Europe, with a focus transaction characteristic and measurability for value creation and distribution. 26 semi-structured interviews were performed with members of the specialty coffees global value chain involving the State of Paraná, Brazil, and four European countries. As results, this is a complex, heterogeneous and non-linear chain. What is transacted is a set of intrinsic and extrinsic value attributes. In addition to physical, sensory, socially sustainable production, social and regional attributes, we showed that pleasantness and standardization of the product are important attributes. Such attributes change along the chain and are measured differently by agents, being able to create measurement imbalances along the chain. The non-measurement by agents such as roasters and coffee shops, compromise the transmission of information since these are the first agents to identify the value demanded in the chain. Such imbalances could be identified by observing the set of transactions in the chain as a whole to the detriment of an isolated transaction. As an empirical contribution, we discuss that when exposing which attributes are considered as a value for each transaction, public and private institutions can develop more objective quality assessment mechanisms. Theoretically, we argue that to understand efficiency in global value chains it is necessary to analyze the set of transactions that make up the entire chain and not just the analysis of dyadic transactions between two agents.

Keywords: Quality attributes, asymmetric information, transaction costs, governance analysis, relational contracts.

Resumo

Objetivou-se compreender como se organizam as transações da cadeia de valor dos cafés especiais entre os agentes no Paraná, Brasil e na Europa, com foco nas características da transação e mensuração para criação e distribuição de valor. Foram realizadas 26 entrevistas semiestruturadas com membros da cadeia de valor global de cafés especiais envolvendo o Estado do Paraná, Brasil, e quatro países europeus. Como resultado, esta é uma cadeia complexa, heterogênea e não linear. O que é transacionado é um conjunto de atributos de valor intrínsecos e extrínsecos. Além dos atributos físicos, sensoriais, de produção socialmente sustentável, sociais e regionais, identificamos a agradabilidade e a padronização do produto como atributos considerados nas transações. Esses atributos mudam ao longo da cadeia e são medidos de forma diferente pelos agentes, podendo criar desequilíbrios de mensuração ao longo da cadeia. A não mensuração por agentes tais como torrefadores e cafeterias, compromete a transmissão de informações por serem estes os primeiros agentes a identificar o valor na cadeia. Tais desequilíbrios poderiam ser identificados pela observação do conjunto de transações da cadeia como um todo em detrimento de uma transação isolada. Como contribuição empírica discutimos que ao expor quais atributos são considerados um valor para cada transação, as instituições públicas e privadas podem

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desenvolver mecanismos de avaliação de qualidade mais objetivos. Teoricamente, defendemos que para entender a eficiência em cadeias globais de valor é necessário analisar o conjunto de transações que compõem toda a cadeia e não apenas a análise de transações diádicas entre dois elos.

Palavras-chave: Atributos de qualidade, informação assimétrica, custos de transação, Análise de governança, contratos relacionais.

1. INTRODUCTION

Insertion in global value chains (GVC) is an alternative for higher value production and the positioning of agents in the chain (Gereffi et al., 2005; Giuliani et al., 2005; Samper et al., 2017; Trienekens, 2011). Transactions involving different institutional contexts include greater complexity when compared to local chains due to the differences in the institutional environment, which encompasses norms, values, and standards, impacting the distribution of information (Gereffi et al., 2005; Giuliani et al., 2005; Trienekens, 2011).

Given this complexity, sustainability and improved positioning of agents depend on efficiency in the organization of the chain (Fao, 2014). Efficiency in GVCs encompasses the value creation by agents, the value distribution in all links of the chain and the remuneration of value, which is understood here as the reward for efforts in terms of quality improvements in the different stages of production and distribution.

In theoretical terms, the efficiency of the chain depends on the way transactions are organized in terms of governance structures (Barzel, 2005; Williamson, 1985). Coordination failures in any of the transactions in the chain are enough to impact efficiency throughout the chain (Clay et al., 2018; Grabs & Carodenuto, 2021). In this sense, it is understood that the efficiency of the chain requires the analysis of the set of transactions that make up each of its links.

Considering that GVCs depend on investments in differentiation, these investments can result in greater asset specificity, in addition to transaction-specific assets and dimensions that are difficult or costly to measure, which can lead to information asymmetry problems. Transaction governance can be analyzed from the perspective of the New Institutional Economy (NIE) (Ménard & Shirley, 2014), especially in its microanalytical perspectives such as Transaction Cost Economics (TCE) and Measurement Cost Economics (MCE) (Barzel, 2005; Williamson, 1985).

Despite providing subsidies to understand the transactions between the links in the chain, studies within the scope of TCE and MCE have focused on the analysis of isolated transactions in a chain (Bronzeri & Bulgacov, 2014; Clay et al., 2018; Saes, 2010; Watanabe et al., 2017). It is noteworthy that, in GVCs, it is necessary to analyze the set of transactions between the various links, which is being proposed in this paper based on the analysis of the specialty coffee chain in which the creation, distribution and remuneration of value depend on the relationship between agents in different countries and regions (Lerner et al., 2021).

Brazil is the world's largest producer and exporter of coffee, and at the other end, the European Union is the largest importer and consumer (Usda, 2021). In 2021, the world production of coffee was almost 165 million bags of 60 kg, with Brazil being responsible for more than a third (34%) of this amount (Usda, 2021). During this period, the main destinations for Brazilian coffee exports were North America and countries of the European Union, such as Belgium, Netherlands and Sweden (Cecafe, 2021). Despite its importance in terms of quantity, according to the Cecafe (2021), less than a fifth of exports in the same year were coffee with some type of differentiation.

When considering the production of specialty coffees in Brazil, the State of Paraná stands out, where initiatives to value creating are found based on efforts

in rural production aimed at the insertion of small producers in global markets aiming differentiation (Santos et al., 2021). The value in specialty coffees can be translated into intrinsic and extrinsic aspects generated by the different agents in the chain, from rural production to the final consumer (Costa, 2020). To standardize the ranking, the intrinsic aspects encompass the sensory attributes (taste, aroma, acidity, sweetness, balance), which are measured in cup tastings and those with more than 80 points on a scale of 100 are classified as specialty (Sca, 2020). In addition, the extrinsic aspects of production systems can also add value to coffee, such as origin (involving region and geographical indications, for example), organic production and gender enhancement (production by women).

The value creation in coffee therefore depends on the harmonious action between the agents in the chain (Costa, 2020), starting in rural production and being improved and transformed in other links, such as processors, roasters and coffee shops (Samper et al., 2017; Sca, 2020). Depending on the efforts (producers), the coffee will obtain a different value/quality in the links down the chain (coffee shops/consumers). The value created by upstream agents is transformed as the asset is traded along the chain and, therefore, the attributes valued in upstream transactions may not be the same as those downstream (Samper et al., 2017).

Guimarães et al. (2020), when investigating the production of knowledge on governance in agrifood GVCs, showed that there are efficiency failures in the specialty coffee chain in terms of value distribution, evidencing problems in the remuneration of value created by producers (Clay et al., 2018; Samper et al., 2017; Vicol et al., 2018). For Samper et al. (2017), there is a problem in distributing information about what quality is in the coffee GVC, especially when considering the difficulty of producers in accessing information about the quality required by other agents. Other agents, such as roasters, do not have access to the transmission of prices paid for coffee quality throughout the entire chain. These issues of information transmission generate incentive problems in terms of remuneration to producers and inefficiencies (Samper et al., 2017).

Such problems, therefore, show governance failures in the chain that impact the creation, distribution and remuneration of the value generated. In the long term, these problems can generate disincentives to quality and barriers to improving the positioning of producers and insertion of coffee producers in global markets with greater added value, impacting the sustainability of these global value chains. Therefore, this work aims to understand how the transactions between the links along the chain of specialty coffee between agents in Paraná, Brazil and Europe are organized, with a focus transaction characteristic and measurability for value creation and distribution. Therefore, in addition to the introduction, the second part presents a Neo-Institutional contribution to understanding the efficiency of GVCs, based on TCE and MCE. The third part details the methodological procedures, followed by the presentation and discussion of the results and, finally, the conclusions.

2. A NEO-INSTITUTIONAL CONTRIBUTION TO THE EFFICIENCY OF GVCS

Faced with the limitations of neoclassical economics in explaining economic problems (Joskow, 2004), Coase (1937) questioned the reason for the existence of a great variety of organizational forms and identified that there are costs to transact via market. According to the author, there are costs to know the markets and the conditions under which the transactions will take place (Coase, 1937). The need for information about what and how to transact implies an inherent complexity to transactions. In

Coase (1937), it is possible to identify that obtaining information involves transaction costs and is an essential element for economic analyses (Ménard & Shirley, 2014).

Based on Coase's contributions (1937), NIE defends that the different types of institutions (values, norms, legal institutions, legal norms, firms) matter and that they should not be ignored (Joskow, 2004). Ménard and Shirley (2014) point out that what makes the NIE so distinct in its advances in neoclassical economics is the "golden triangle": transaction costs, property rights and contracts. Transaction costs refer to the costs of obtaining information about what and how to transact. Property rights refer to the definition of ownership to different agents. Finally, contracts that are not perfectly guaranteed or complete refer to the different agreements between the parties (Ménard & Shirley, 2014).

These concepts created different approaches, such as TCE (Williamson, 1985) and MCE (Barzel, 2005). Through distinct and complementary paths, these theories aim at the efficiency of transactions (Williamson, 1985) and have information as a central element, whether related to the risks associated with opportunism, the complexity of measuring the attributes that make up an asset or the difficulty of accessing information. For TCE, efficiency happens by reducing transaction costs through governance. For MCE, the reduction of transaction costs occurs by measuring the dimensions of an asset (Barzel, 2005). Such theories focus on the analysis of efficiency from the micro-analytical point of view of transactions, that is, how the transaction between two agents takes place.

It is central and consensus for TCE and MCE to search for efficiency considering the informational incompleteness and consequent contractual incompleteness, proposed by Coase (1937). Despite this, they have some distinct assumptions, involving distances and approximations in terms of the unit of analysis, the look at limited rationality and opportunism, information, and finally the rationale of each of the theories.

Regarding the unit of analysis, TCE considers the transaction between two parties, based on their characteristics and behavioral assumptions of limited rationality and opportunism, for the choice of an efficient governance structure (Williamson, 1985). MCE considers the asset in its set of dimensions as a unit of analysis. It is the measurement of these dimensions that will determine the appropriate governance structure, under the same conditions of limited rationality and opportunism (Barzel, 2005).

Considering the asymmetry of information as a central problem in theories, limited rationality and opportunism are presented as protagonists in the formulation of their rationale. Regarding TCE, Williamson (1985) states that individuals are rationally limited and, therefore, the cognitive ability to make decisions is also limited. Likewise, MCE assumes the difficulty of measuring and gaining knowledge about certain dimensions that make up an asset, thus making it difficult to prepare complex contracts ex ante to the transaction (Barzel, 2005). For both theories, informational incompleteness makes contracts incomplete (Coase, 1937).

Opportunism, in turn, is expressed in TCE by adverse selection and moral hazard (Williamson, 1985). Considering the agents' explicit maximizing behavior, adverse selection is relevant to information problems. Since individuals have limited rationality, parties can act in pursuit of self-interest with strategic behavior of hiding information (Milgrom & Roberts, 1987). In a complementary way, MCE assumes that the parties can act in an opportunistic way, to capture the badly defined property rights in the public domain due to the difficulty of measuring (Barzel, 2005). Therefore, for MCE, opportunism is taken as implicit (Zylbersztajn, 2018). For

TCE, information asymmetry comes from limited rationality and opportunism among agents. For MCE, the information is incomplete, as it is expensive and complex to transmit (Barzel, 2005).

In order to deal with real world economic problems, each of the theories proposes a different rationale. The TCE rationale considers the differences between governance structures regarding *ex post* adaptations and is centered on the efficient alignment between transaction attributes and governance structures taking into account the limited rationality and opportunistic behavior of individuals (Williamson, 1985). This rationale advocates vertical integration as an efficient governance structure in view of the high specificity of assets. This is due to the risk of loss of *ex post* value due to opportunistic behavior (Zylbersztajn, 2018).

The MCE, on the other hand, proposes that the possibility of capturing quasi-income from specific assets is due to the difficulty of measuring the assets that comprise them (Barzel, 2005). Barzel (2005) argues that even under high asset specificity, if measurement is possible, less complex governance structures can be efficient. However, the information is expensive and complex to access. Therefore, for the author, the MCE rationale is based on the idea that the efficiency of transactions depends on governance structures that have greater capacity to maximize value in the transaction through the protection of property rights over the dimensions involved in the transaction.

Uncertainty and recurrence of transactions are especially important when it comes to informational and contractual incompleteness. As mentioned above, there is information asymmetry due to behavioral uncertainty (opportunism) between agents. In these cases, the parties can choose to hide or manipulate the information. However, there are problems of access to information due to environmental uncertainties, which are contingencies independent of the agents' behavior and which are difficult to be anticipated, such as market or climate changes (Williamson, 1985). These contingencies make transactions complex by nature, implying obstacles in the preparation of contracts *ex ante* to the transaction.

Recurrence is important in these situations, since in transactions involving high behavioral uncertainty, the repetition of the transaction allows the parties to learn from each other and build a reputation on what will be produced, how it will be produced and the behavior of agents (and predict their performance). Considering the high bureaucratic and infrastructure costs of vertical integration, this reputation makes it possible to conduct transactions in hybrid ways, even in transactions involving high uncertainty (Williamson, 1985; Barzel, 2005).

The transaction of products with higher added value can involve high asset specificity, dimensions that are difficult to be measured and information asymmetry problems. In this case, investigating the phenomenon from only one of the theories compromises the understanding of the real-world problem. TCE provides results to minimize losses in asset value (Williamson, 1985). However, considering the dimensions that make up an asset enables the adoption of less complex governance structures when considering the possibility of hiring by measuring these dimensions that make up the asset (Barzel, 2005).

These problems are especially important when it comes to chains involving greater added value. TCE and MCE studies focus on the individual level, focusing on the governance of a transaction (Bronzeri & Bulgacov, 2014; Clay et al., 2018; Saes, 2010; Watanabe et al., 2017). However, as value chains involving global contexts are included in broader and more distinct institutional contexts, the need to analyze the set of transactions between the various links is discussed, as efficiency will depend on how the entire chain is organized.

3. METHODOLOGICAL PROCEDURES

This qualitative, descriptive research involved the analysis of the GVC of specialty coffees among agents in Brazil and Europe and was carried out in two stages between 2017 and 2020. The first in Europe with downstream agents (importers, roasters and coffee shops); and the second, with upstream agents (producers and exporters) in Brazil. In addition to documentary data, the main instrument for data collection was the semi-structured interview, which comprised a set of qualitative questions.

The data collection stage began as an exploratory phase, through research and extension activities. It involved non-participant observation activities with a specialty coffee exporter and properties of rural specialty coffee producers in Paraná, as well as the development of field activities with these rural producers. In addition, it involved participation in field, scientific and specific events for the coffee sector. In addition to these exploratory activities, the characterization of the chain was carried out through the collection of statistical data at the United States Department of Agriculture (USDA), the Statista, data from the Brazilian Institute of Geography and Statistics (IBGE) and the Ministry of Agriculture, Livestock and Supply (MAPA).

Primary data were collected from semi-structured interviews with key agents in the chain studied. An interview was carried out with a roaster of specialty coffees in Toulouse/FR; an interview with a president of the Specialty Coffee Association (SCA) in Europe; and an interview conducted in Sweden with the Vietnam roast champion. From these interviews, the agents could be identified.

After characterizing the GVC of specialty coffees, we sought to identify how transactions in the chain are organized. The research was carried out in France, the Netherlands, Belgium and Sweden, as they are among the main coffee consumers in the world (Torga & Spers, 2020), and among the main importing countries of Brazilian specialty coffees (Cecafe, 2021). Then, using the snowball method (Atkinson, & Flint, 2004), the downstream actors in the chain (roasters and coffee shops) of each importer were mapped.

In the survey in Europe, 18 agents were interviewed, involving importers, roasters and coffee shops. Interviews were conducted on-site with respondents in France, Belgium, the Netherlands and Sweden, and were recorded and later transcribed. In Brazil, respondents were identified using the snowball method, from chains whose downstream agents had already been interviewed in the European context. Seven agents were interviewed in Brazil, being five producers of specialty coffees, one brokerage agent and one exporter. The interviews were conducted online, recorded and later transcribed.

The question scripts were elaborated from the analysis categories, derived from the theoretical framework, namely: transaction attributes, covering the subcategories of uncertainty, asset specificity and frequency; the measurability of the dimensions (or "attributes of value" that make up the asset considered in each transaction); and transaction governance mechanisms, which relate to governance structures. The interviews were categorized using the Atlas.TI® software (Atlas.ti, 2019). From the generated reports, by analysis category, the analyzes were inferred, discussed and later arranged in textual form.

4. COMPLEXITY, HETEROGENEITY AND NON-LINEARITY OF THE GVC OF SPECIALTY COFFEES

Specifically in the case of the GVC of specialty coffee between agents in Brazil and Europe, the results showed that it is composed of rural producers,

exporters, importers, roasters and coffee shops, and may involve agents for coffee brokerage (negotiation agent between producers and coffee shoppers). In Brazil, the chain comprises a coffee exporter (E19) and a coffee brokerage agent (E20), in addition to rural producers (E21, E22, E23, E24, E25, E26). In Europe, this chain comprises different configurations of agents, covering importers (E4, E5, E12, E13, E15, E16), importers who are also roasters and coffee shops (E7), roasters (E8, E9), roasters and coffee shops (E6, E10, E11, E14, E17, E18) and coffee shops (E1, E2, E3).

A first result shows that, unlike the traditional configuration (linear flow of products, services and information) (Costa, 2020; Samper et al., 2017), this is a complex, heterogeneous and non-linear chain. This complexity is due to the way in which agents are organized, in the relationships between them, in the different origins of coffee purchases and in the number and size of suppliers, making them also heterogeneous. Companies range from small local producers and coffee shops to large continental importers. There are those who buy less than 10 bags of coffee a year; between 10 and 100 bags a year, and more than 100 bags of coffee per year. Regarding the average number of suppliers, there are those who buy coffee from less than 10 suppliers; between 10 and 100 suppliers; and those who manage more than 100 coffee suppliers.

Regarding the type of coffee traded, we observed that they have different characteristics. There are transactions of coffees with the same sensory profile (set and organoleptic characteristics that characterize the drink) in different harvests, and coffees with different sensory profiles. For terminology purposes, specialty coffees with the same sensory profile are here called "standardized". These coffees are not conventional coffees, but specialty coffees with the same sensory characteristics and drink score throughout every harvest. Coffees traded with different sensory characteristics in different crops are called "seasonal". This research showed that standardized coffees score between 80 and 85 points and are largely intended for the preparation of blends. Seasonal coffees score above 86 points and involve the transaction of microlots coffees (very small and exclusive portions of coffees).

There are also differences regarding the origin of the purchased coffee. Different purchase configurations were observed: 1) buyers of coffees from different origins and with different sensory profiles (E1, E2, E6, E8, E10, E11, E14, E17), with different coffees for each purchase; 2) buyers of coffees always from the same origin and with the same sensory profile in all purchases (E3, E7, E9); 3) buyers looking for coffees from different origins, but with the same sensory profile (E12, E13, E18), valuing the sensory profile, to the detriment of the region; 4) buyers looking for coffees from the same origin, which can be either seasonal or standardized (E15, E16), valuing the origin of the coffee for the most part; and 5) buyers who buy from different origins, but seek both coffees, with a standardized profile and different sensory profiles (E4, E5, E19, E20).

In this chain, good performance in terms of quality starts in rural production (Costa, 2020), which is inherently uncertain (Saes, 2010; Samper et al., 2017). We identified that the agents of the environment (exporter and importer) are responsible for articulating this chain, through different efforts with producers, in order to ensure that the coffees reached upstream meet the requirements demanded downstream. This finding differs from other works in the area, which normally point to the roaster as an articulator (Samper et al., 2017).

Some agents play a predominant role in achieving differentiation depending on the type of coffee transacted. Standardized coffees are largely the result of blending, which is the responsibility of

intermediary agents, such as exporters, importers and roasters. The importance of knowledge in the activity on the part of these agents is highlighted, indicating the specificity of a human asset. Therefore, it can be said that the efforts in differentiation start in rural production, passing through intermediaries to coffee shops. However, intermediary agents are responsible for manipulating the different coffees in order to create value, which for standardized coffees is associated, in addition to physical and sensory attributes, to product standardization, as previously highlighted by Samper et al. (2017).

Seasonal coffees involve, in addition to exceptional quality, production appeals such as production by women, the history of the producer, the region and fair trade. In this case, the search is for coffee that has some kind of rarity, to the detriment of regularity. These producers, therefore, have a predominant role in creating value. It is up to intermediaries, in addition to creating value through the subsequent processing, preparation and roasting steps, to encourage producers to achieve the exceptional quality demanded for these coffees with different appeals. These different types of coffees, in turn, result in transactions with different characteristics in terms of transaction attributes, measurability and transaction governance mechanisms. Different transactions, in turn, impact the chain. The next sections present the governance mechanisms for the transaction of standardized coffees and seasonal coffees.

4.1. governance of "standardized" specialty coffee transactions

The transaction of standardized coffees starts in rural production, as the reach of this standardization by producers involves both agronomic conditions of soil and climate, as well as the repetition of management practices, demanding knowledge from agents. As these coffees are mainly intended for blends, they pose challenges to exporters and importers, who are responsible for orchestrating the upstream chain in order to achieve the blends desired by roasters and coffee shops.

In transactions between the producer and the broker/exporter, the main uncertainties are related to the climate, inherent to the agricultural production of coffee, and to market fluctuations regarding prices. Regarding the climate, producer E22 says: "*It is always possible for you to lose the beverage. No matter how careful you are, if it rains on it, if you cover the coffee without a protection on it and cover it directly with canvas, it will get burned"*. With regard to production, uncertainties affect the production of coffee. For the E19 exporter, "*if there is little quality coffee, there is more competition in the field. […] if there is little coffee, many people will be fighting for the same product*". Despite this, producers are able to produce with the required quality. For this reason, both exporters and importers claim that an oversupply of these coffees between 80 and 85 points is common.

Price uncertainty refers to typical fluctuations in the market and pricing based on the New York Stock Exchange. As a way of dealing with this, it was observed, in cases where there is security regarding the supply, the use of futures contracts, which set the price to be received by the producer. For the exporter, this security exists, as the producers of standardized coffees have production technification, and therefore they achieve regular delivery, as illustrated by the exporter E19: "*He is a capitalized producer, he has an average care, he doesn't throw the coffee on the ground, he makes good fertilization"*.

Regarding transactions between importer and roaster, the main uncertainty is associated with price and quality. For those interviewed, there are high changes in coffee prices, but importers manage these fluctuations by offering coffee at similar prices, but with different qualities. The E6 roaster and coffee shop claims: "*[…] they [importers] will have a range*

of prices that will vary a lot from one year to the next, but the coffee will change, it will not be the same". Also, possible uncertainties were identified regarding competition in the purchase of coffee by roasters. For the E10 roaster, the search for quality coffee is high among the different roasters on the market, and that is why the relational is important, in addition to the need to signal purchase interest in advance.

For transactions between roasters and coffee shops, it was found that uncertainties are also related to the quality of the coffee to be purchased, given the high changes in prices. Coffee shops define limit prices to be paid for the purchase of coffee and work on the purchase based on this maximum price. Thus, coffees with different qualities will be purchased based on prices, causing uncertainty as to this quality.

Finally, although respondents claim that there are no high risks of opportunism, transactions are not immune to them. In the words of the E11 roaster, *"in the specialty coffee chain there is an ethics"*, nevertheless, agents adopt protection mechanisms against opportunism related to the manipulation of information, such as measuring by more than one agent and carrying out visits to observe the production process, and even the exporter measuring the quality of the coffee and describing the characteristics. Nevertheless, the risks associated with behavioral uncertainties seem to be mitigated by the importance of reputation, the repetition of the transaction and the relational construction of these visits. The E20 broker says: "*Have you seen the animal game (a game of chance in Brazil)? It's a gentleman's agreement. Legally it's not worth anything, but everyone complies, everyone complies"*.

Standardized coffee transactions are recurrent. In all transactions in the chain, there is a tendency to maintain the relationship and repetition with the same suppliers. Exporter E19 states: "[…] *once he sells to us he will try to sell next year*". Transactions between agents take place, on average, since the beginning of the companies' activities. Despite the high recurrence, we identified that the bilateral dependence between agents changes in transactions along this chain. In transactions between producer and exporter, although obtaining coffee is impacted by uncertainties, the high supply of coffee can be a factor that minimizes the buyer's dependence on the producer. Likewise, there is low dependence of the producer on the buyer, since he is a capitalized producer and is able to find other buyers, as illustrated by producer E21: "*I don't see this as a difficulty anymore"*.

Regarding transactions between exporter and importer, it can be said that dependence may be associated with purchasing capacity. As highlighted by the E4 importer, "*So I believe that if any of them [exporters] lose our account, I think they will be in bad shape. Because there are high volumes of good coffee*". For the transaction between roaster and importer, the dependence based on purchasing capacity becomes low again, as the purchase of coffee involves smaller volumes, and therefore agents can easily find other suppliers/buyers, as well as not representing large losses for both the importer and the roaster in the event of ending transactions.

In addition to purchasing power, dependence may be associated with the type of coffee purchased, which involves the same sensory profile in all transactions. The E14 roaster and coffee shop claims: "*[...] we will need to look for it, get the same taste. Because it's a blend. it must have the same taste from January 1st to December 31st"*. Finally, the coffee shop indicates that it is easy to find other suppliers. This low bilateral dependence can be explained by the coffee shop buying coffee after blending. Although it is easy to find other suppliers, it emphasizes the existence of the relationship built between them and the roaster.

The investments made by the producers are associated with the activity and not the transaction itself. Despite this, it was these investments that made

it possible to enter this chain of specialty coffees, as highlighted by producer E21: "*So I needed standards, I needed to improve the quality of the product, the roasting, and I needed a place to store my crop. […] selling to the exporter ended up being a consequence of all this"*.

On the part of exporters and importers, there was a high specificity of human assets, since the preparation of the blend depends on the knowledge of the exporter, importers and roasters. Although producers are trained in production, the typical uncertainties of coffee production make standardization difficult, bringing complexity to the product. Therefore, it is up to the agents responsible for processing the coffee (exporter, importer and roasters) to adjust the combination of coffees in order to obtain a standardized sensory profile. Thus, given the difficulties in obtaining a coffee with a specific sensory profile, the agents use their knowledge to formulate a new blend that meets the same desired characteristics. In addition to the specificity of human assets, the specificity of physical assets on the part of buyers was identified due to the need for a coffee with the same sensory profile for the preparation of this blend.

In this chain, the coffees that have scores by the SCA protocol between 80 and 85 are measured according to their physical and sensory attributes. The set of attributes and how they are measured changes along the transactions in the chain. In the transaction between producer and exporter, the physical attributes of green coffee are evaluated, considering defects, appearance, grain size, and sensory attributes after the preparation of the beverage. Producers, when measuring quality, mostly observe physical attributes, and may rely on a specialized team to measure sensory attributes, as highlighted by producer E21: "*Every batch that comes from the farm, we do the physical classification, the test classification"*.

The exporter and the broker formally assess the coffee, through the SCA protocol, in each sample, before and after purchase, through a specialized team, as the upstream agents are responsible for accessing, purchasing and guaranteeing the supply of coffees with different qualities in the downstream chain. Likewise, the importer assesses the physical and sensory attributes of the coffee in each sample, before and after the purchase, through a specialized team, since they are the downstream agents responsible for ensuring the supply of coffee with different qualities to roasters and coffee shops. Although we observed that transactions in this chain have a risk of opportunism mitigated by reputation, there is a double measure, which can be associated with access to the characteristics of the coffee and the guarantee of compliance with the required standards.

Since this chain does not involve extrinsic attributes related to social and ethical production appeals, transactions take place based on the description of the quality of the coffee. This description consists of the communication about a certain desired coffee profile (in terms of physical and sensory attributes) and the measurement takes place to verify the conformity of this description. Exporter E19 states: "*a sale is a description of a product, of a quality. And with the purchase, you will get the same description. I don't go after the producer there; I just go after the product*".

Roasters assess the coffee before the purchase, not necessarily through a specialized team or protocol, and can assess the physical attributes of green coffee, but always assess the sensory attributes of the coffee. The process for coffee evaluation carried out by exporters/brokers, importers and roasters is similar, and begins with the receipt of different coffee samples. In each sample, the physical and sensory attributes are evaluated, visually and through the sampling test.

Finally, coffee shops assess the sensory attributes of coffee, focusing on a profile that pleases in terms of individual preferences, as highlighted by the roaster and coffee shop E6: "*it is a coffee that*

we will like or not. It is our taste that will determine whether or not to buy the coffee. A coffee that anyone else can love, we won't necessarily buy". It is noteworthy that coffee shops do not always evaluate coffee, relying on the evaluation of supplier roasters, as indicated by coffee shop E1: "*[...] I don't have time to do [the measurement], so I trust the roaster".*

Coffee transactions take place through the sending of samples by suppliers and evaluation of the quality of available coffees. From this, whether for physical, sensory, or individual preference, there is a purchasing decision by purchasing agents. During the collection, shipping and transit of coffees, transactions usually make use of physical documents, such as shipping documents. In transactions between exporter and importer, a new evaluation of the coffee is carried out during transit and after the arrival of the product, in order to ensure that the coffee purchased is the same as the one delivered. Respondents state that cases of divergence in quality are low and that there is an interest between the parties to ensure the continuity of the transaction, but that it is possible to return, discount or break the relationship in cases of divergence. Finally, roasters and coffee shops evaluate the coffee before the purchase and decide whether or not to buy the coffee. From there, the coffees are delivered by importers.

The ability of producers to reach the coffees with the desired quality allows exporters/brokers and subsequent agents certain security in obtaining the coffees. Upstream, in production, is a chain supported by the 08/2003 rule elaborated by MAPA. In this way, exporters can benefit from the preparation of future purchase contracts, which consist in the definition of formal long-term contracts, containing the desired quantity and quality, at a pre-established price.

Regarding the transaction between exporter and importer, we identified that, although future contracts may be drawn up between the parties, they do not define formal long-term contracts. In this case, the parties prepare physical contracts at the time of the transaction, containing transaction information, such as quantity, quality, terms, and prices, according to the importer E12: "*every time we buy coffee, there is a contract with quantity, price, and a description of the quality".* Finally, there are no contracts between roasters and coffee shops, and coffee shops look for roasters when there is a need to restock.

4.2. Governance of "seasonal" specialty coffee transactions

The seasonal coffee chain comprises the transaction of coffees considered microlots, with scores above 86 points on the SCA scale, and may also involve extrinsic attributes for socially sustainable production (fair trade), region (North Paraná), gender (production by women) and social (producer's story). Unlike the standardized coffee chain, the producers that make up this chain are less capitalized. In these chains, obtaining coffee with this quality in terms of score depends, in addition to the agronomic conditions of production involving soil, climate and variety, on the management set from planting, fertilization, to harvest and post-harvest.

This type of production suffers, in addition to the impact of climate uncertainty, as occurs in standardized coffees, with uncertainty due to the low production capacity of producers. The exporter E19 illustrates: "*I do work in the field so that it [the coffee] exists. But there's no way I can guarantee that I'll receive it. Because it's a risk to sign a contract for a coffee like this".* The production of micro-batch coffees requires specific management techniques (such as selective harvesting), which, added to the low capacity of the producer, make this production typically more complex and uncertain when compared to the production of standardized coffees. Therefore, the exporter plays an active role in mitigating these problems, through monitoring mechanisms and production incentives. Once the

exceptional quality of coffee has been achieved by producers and exporters, this uncertainty decreases in transactions between exporters and importers, since the purchase involves precisely the differences and particularities each year.

There was uncertainty regarding the prices paid. Although remuneration in this chain is based on quality based on prices agreed between the parties, it can be based on supply and demand. The importer E15 highlights: "*Every year, for example, there may be a big drought, or a big rain, and suddenly half the coffee is gone. And so, this price will be affected*".

Finally, the importer E14 highlights an informational uncertainty regarding the price to be received by the rural producer. "*[..] an uncertainty that we definitely have to deal with, but that we would not like to have, is whether producers are being paid the fair share of the price paid by us for the coffee"*. Finally, roasters highlight uncertainty about quality compliance. Even though roasters can taste and assess the quality of the coffee prior to the purchase, there is uncertainty about the conformity of the coffee quality: "*the biggest uncertainty is whether the coffee will actually have 86 points when I taste and roast the coffee [after receiving the coffee]"*. This perception of uncertainty by agents can show behavioral uncertainty in the chain. Despite this, the importer E13 highlights: "*[...] this coffee environment is very small. So we know what happens"*.

Transactions in seasonal coffees are recurrent and there is bilateral dependence between producers and exporters, and between them and importers. These three agents make investments to obtain these coffees. Producers depend on trading with these buyers (exporters and majors) to obtain higher prices, while buyers will only buy these coffees if they meet the higher quality.

Regarding producers, the importer E7 states that they can find other buyers, but "*not at the same price*". Regarding exporters and importers, it was identified that, although it is easy to find other suppliers of micro-batch coffees, the relationship is built over the years, and it is difficult to find other suppliers in the event of a disruption in the transaction, as highlighted by the importer E7: "*[...] it's hard because we've worked with these people for a long time"*.

In transactions involving roasters and coffee shops, we identified that despite the investments and the relational aspect of the chain, this bilateral dependence decreases, as they seek coffee with exceptional quality, to the detriment of regular quality. Despite this, the roaster and coffee shop E14 highlights the importance of the relational aspect: "*It is important to have a good relationship with the importer, with the coffee grower [producer], with the exporter, and with the roaster"*.

Physical asset specificity was observed, since, although producers can sell this coffee to other buyers, there will be a loss of value. Specificity of locational asset, which refers to the extrinsic characteristics of coffee, since the valuation of the product depends on the transmission of information and remuneration by buyers in a differentiated manner by the production in Northern Paraná. And the specificity of human assets, which concerns the efforts necessary for the production/transaction of seasonal coffees, ranging from production, through processing, roasting, preparation.

Regarding exporters, the human specificity is highlighted, based on courses, field days, supply and support in production through an agronomist who monitors and provides technical assistance. For the exporter E19, these investments take place in the production process, especially to increase the quantity of higher quality coffees, as reported in the example: "*in the case of women investing in improving quality, production, harvesting, post-harvest, right... because a potential was identified, but we are still working there for them to increase"*. This specificity of human assets builds the buyer's dependence on the producer.

Coffees are measured based on intrinsic attributes (physical and sensory) by scoring more than 86 points in the SCA assessment protocol. In addition, the extrinsic attributes related to socially, gender, region and socially sustainable production appeals, which are difficult to measure, are evaluated. Not all agents measure the intrinsic characteristics of coffee in this chain, as do producers. In the other stages of the chain, the measurement takes place in a similar way to the chain of standardized coffees.

In the case of extrinsic attributes, exporters and importers carry out visits and development and follow-up initiatives with producers in an attempt to monitor the process. Despite this, it is noteworthy that the difficulty of measuring these attributes can compromise the transmission of this information throughout the chain or the guarantee of these attributes. These initiatives are at the same time measurement and monitoring mechanisms required for quality assurance.

Roasters and coffee shops evaluate coffees before each purchase, observing physical and sensory attributes, but focusing on individual preference for certain coffees. In this chain, the producer's history is valued, as highlighted by the importer E15: "*they [consumers] don't just want good coffee. They want a story, they want the assurance that the coffee has been traded fairly, that it can be traceable"*.

This transaction begins with sending samples, measuring, approving purchases, sending and distributing. Unlike the standardized coffee chain, producing coffees with superior quality and appeal involves uncertainties regarding the guarantee of the intrinsic and extrinsic attributes involved in production. According to the exporter, this is a transaction with information and coffee procurement risks. Differences in relation to the standardized coffee chain include higher pricing and producer development projects to reduce uncertainty in obtaining coffee.

There are no long-term contracts between exporters and rural producers. The contracts that govern the transactions are the physical contracts constructed at the time of purchase/sale of coffee. Despite involving dependence between the parties and investments in production, the exporter assumes that it is difficult to guarantee the receipt of these coffees. Likewise, importers, roasters and coffee shops do not draw up contracts for the purchase.

Although upstream there is a difficulty in obtaining quality coffees 86 points on the SCA scale, due to the low capacity of producers to meet the requirements, uncertainty and measurement difficulty, down the chain this difficulty is not the same. Downstream, the challenge is associated with obtaining standardized coffees at the expense of micro-batch coffees, since micro-batch coffees are different for each transaction, making it easy to find other suppliers.

The difficulty in transmitting information about the extrinsic attributes in coffee requires an explicit coordination between agents. The producer E23 highlights that in this chain, "*transactions are normally non-contract and recurring. The world of specialty coffees is still made up of partnerships and friends"*. The relational and joint efforts carried out in this chain make the parties dependent on each other. Therefore, it is necessary that the parties commit to the transactions, in order to guarantee the value of the coffees and guarantee the return for the efforts made. Both suppliers depend on remuneration through higher prices, and buyers depend on the supply of these coffees with the desired quality.

4.3. Discussion

Unlike what the literature proposes about the specialty coffee chain following a linear flow between agents (Costa, 2020; Samper et al., 2017), it was identified that the specialty coffee chain between agents in Brazil and Europe is not linear, it is complex

and heterogeneous, and within the same chain, there are those in which the same agent plays more than one role.

A second result showed that the GVC of specialty coffees does not transact the coffee itself, but a set of value attributes that make up the coffee asset. This scenario is different from what is currently presented in the literature, which considers coffee as a central asset in the transaction (Clay et al., 2018; Saes, 2010; Vicol et al., 2018; Watanabe et al., 2017). Intrinsic and extrinsic attributes in coffee that change along the chain were considered, such as physical characteristics (defect, density, moisture, size and appearance of the green/roasted bean); the beverage's sensory characteristics (fragrance, cleanliness, uniformity, sweetness, flavor, acidity, body and aftertaste); socially sustainable production attributes (such as fair trade), social attributes (production by women and producer history) and region (Northern Paraná).

In addition to the literature, which had already identified the intrinsic and extrinsic attributes (Bronzeri & Bulgacov, 2014; Costa, 2020; Samper et al., 2017; Santos et al., 2021; Sca, 2021; Sepúlveda et al., 2016), this work showed that standardization and individual preference of agents further down the chain constitute value attributes that should be considered in the coffee transaction.

The set of attributes considered along the chain is different for each transaction. In transactions between "producers and exporters" and "exporters and importers" the predominant attributes are physical and sensory attributes, which may involve standardization in the coffee profile and the appeals of socially sustainable production, gender, region. When looking for coffee, exporters consider not only the attributes related to the green coffee bean, but also the beverage. In transactions involving "importers and roasters" the physical attributes of the coffee are predominantly less considered, as they have already been measured in previous transactions, and the sensory attributes relating to the drink and individual preference in terms of pleasantness are valued. Finally, transactions involving "roasters and coffee shops" have sensory attributes and individual preference as predominant attributes.

Differences in the set of attributes imply differences in the information involved in the transaction. As the information is central to the way transactions are organized (Barzel, 2005; Gereffi et al., 2005; Williamson, 1985), considering a set of attributes along the transactions requires different governance mechanisms for the transaction and the chain.

The SCA assessment protocol consists of a tool for measuring the intrinsic attributes of coffee, which, by measuring it, can minimize the problems of information asymmetry. However, this protocol considers a single category as specialty coffee: coffees scored on the rating scale above 80 points. Even if this protocol consider the different coffee attributes (Sca, 2021), this work showed that within the same category "specialty coffees" above 80 points there are different types, such as standardized coffees and seasonal coffees. The transaction of these coffees in the chain involves differences in transaction characteristics, such as different levels of uncertainty, asset specificity, difficulty in measuring and complexity of information in the chain.

These different levels of complexity due to the different coffees within the same category are not explored by the SCA protocol. Therefore, even if this protocol is a way to minimize the problems of information asymmetry in the specialty coffee chain, not considering the differences within this category can lead to a failure in value distribution, impacting remuneration and value creation in the long term.

Different traded coffees imply different characteristics in the transactions. Regarding uncertainty, the GVC of specialty coffees, both

standard and seasonal coffees suffer, upstream, by uncertainties related to the coffee production activity, mainly affected by climatic uncertainties. These uncertainties also permeate transactions involving importers, since the distribution of coffee downstream directly depends on obtaining upstream coffees.

When considering the different types of coffee traded in the two chains, it is highlighted that obtaining both coffees is difficult, but involves different uncertainties. While standardized coffee has more of the "standardization" attribute, seasonal coffee involves the typical rarity of microlots. Since coffee is a typically uncertain activity (Saes, 2010), uncertainty in obtaining seasonal coffees is more associated with the low capacity of producers to meet the demanded requirements, as well as the greater complexity of the product. In the production of standardized coffees, the complexity of the product is lower, and therefore the uncertainty is related to the standardization attribute.

Regarding downstream transactions in the chain, uncertainties for both standardized and seasonal coffees are related to quality compliance, which may be associated with the agents' behavioral uncertainty in the disclosure of information. Therefore, it can be said that the types of uncertainties along the chain are different, which can be explained by the fact that what is transacted changes along the chain.

Regarding frequency, they are recurrent throughout the GVC. The recurrence in transactions leads to learning about "what" and "how" will be transacted (Williamson, 1985), minimizing uncertainties regarding obtaining coffee. This learning is largely associated with the complexity of the product and the ability of producers to meet requirements. Standardized coffees have less product complexity compared to seasonal ones, and therefore it is more likely to encode information and subsequently measure. Therefore, the capacity of standardized coffee producers can be the result not only of production structures, but of learning through the codification of information about this coffee, which is less complex when compared to seasonal coffees. Learning by repeating transactions can minimize uncertainties regarding obtaining coffee.

Furthermore, it was possible to observe different levels of bilateral dependence depending on where efforts to differentiate in each type of coffee are concentrated. For standardized products, the intermediate stages in the chain are highlighted, involving exporters, importers, and roasters, as they are responsible for carrying out the blends. These agents depend, therefore, on obtaining coffees with the same sensory profile, implying bilateral dependence between them. For seasonal coffees, differentiation takes place predominantly from efforts in production. Therefore, there is a high bilateral dependence upstream in the chain, involving mainly producers and exporters.

Regarding the asset specificity, it was observed that the transaction of specialty coffees involves a physical asset specificity, since its valuation depends on commercialization with buyers. In addition, transactions in the chain encompass the human asset specificity, whether for production, processing, blending, roasting or preparation. In addition to the specificity of physical and human assets, we found that the specificity of the asset is different throughout the transactions and is largely concentrated in the transactions upstream the chain, since it also involves locational and temporal asset specificity in the case of the seasonal coffee.

With respect to measurement, different value attributes are considered and measured across transactions. Both chains consider physical and sensory attributes, but they differ in terms of standardization and rarity associated with exceptional quality and extrinsic attributes. Although part of these attributes is measurable, this involves costs. Physical and sensory attributes can be measured using the SCA

protocol. Although the appeals of social production, gender, region, and sustainable production can in theory be codified, they are not. Therefore, they are difficult or costly to measure. The individual preference considered downstream, mostly by coffee shops, is measured from the pleasantness, being highly subjective. The difficulty of measurement generates information asymmetry problems, given the difficulty in transmitting information about these attributes. The different sets of value attributes, intrinsic and extrinsic, lead to different information asymmetry problems, being more present in the seasonal coffee chain when compared to the standardized coffee chain.

In the chain of standardized coffees, the capacity of producers associated with less product complexity (because it involves intrinsic and more objective attributes) and greater coding capacity, reduces the risks of opportunistic behavior by agents. Therefore, it demands fewer monitoring mechanisms than the seasonal coffee chain. Therefore, the efficiency of the specialty coffee chain depends on the efficiency in the governance mode of the set of micro-analytical transactions that comprise it.

Even with works that show more formal relationships in the coffee chain (Watanabe et al., 2017), we identified that the different transactions in the specialty coffee chain, both standard and seasonal coffees, are organized through hybrid governance structures. In the chain of standardized coffees, upstream there are no contracts between agents and the aim is to build a relationship between producer and exporter to guarantee supply. The low uncertainty regarding the capacity of the supply base enables the adoption of future contracts between the parties.

In the seasonal coffee chain, although there are efforts on the part of the exporter and importer to develop the supply base, there are no mechanisms that make producers captive to the transaction. Upstream transactions in this chain are organized through less complex governance structures than vertical integration, strongly supported by the relational aspect between agents (transaction repetition and reputation). In transactions further downstream, involving exporters, importers, roasters and coffee shops, contracts are not adopted, and transactions are organized through physical purchase and sale contracts at the time of the transaction. However, in complementarity with Samper et al. (2017), this chain is supported by the relational aspect between the agents, in which the parties commit to the transactions.

5. CONCLUSIONS

This work showed that within the category "specialty coffees" there are different types of coffees, which require different governance mechanisms. Therefore, improvements in the category are suggested in terms of governance and reduction of information asymmetry problems depend on considering coffee as a set of value attributes that imply differences in transactions, highlighting the importance of considering the decomposed asset in its value attributes as proposed by Barzel (2005).

Measurement imbalances along the chain were identified as being able to compromise its long-term survival. Although exporters and importers play an important role in measuring and, therefore, in ensuring information, the non-measurement by agents further down the line, such as roasters and coffee shops, compromise the transmission of information since these are the first agents to identify the value demanded in the chain. Therefore, this study contributes with subsidies for the destination of quality assessment policies as it reveals that the value considered in coffee changes with each transaction. Thus, by exposing which attributes are considered as a value for each transaction, public and private institutions can develop more objective quality assessment mechanisms. Still, the measurement concentrated only in a few links can generate

information distribution failures along the chain, which can bring problems such as value appropriation and market distortions. This shows the importance of agents acting together to ensure perpetuity in the chain.

We identified that this chain involves governance failures, especially when considering the imbalances in coding and measurement. Even though the SCA protocol acts as a measurement mechanism making the intrinsic attributes objective, not all agents in the chain do this measurement. On the one hand, this can be justified by the role of the exporter and importer in coordinating the chain. On the other hand, as agents further downstream do not measure all attributes and value, there is room for problems of value appropriation and power asymmetry in the chain. There is also a problem with the return of information from downstream to upstream, which can impact not only the remuneration of the value, but the sustainability of the value created by the difficulty in accessing information about the quality characteristics required in coffee.

As a theoretical contribution, it is argued that in GVCs it is necessary to analyze the set of transactions in a chain. This is because if the information transmission does not flow between all the transactions, if there are measurement imbalances and the coordination of the chain is concentrated in only one transaction, conflicts, disincentives can occur compromising the chain's efficiency. Therefore, it is proposed that understanding the efficiency of a GVC requires an analysis by the set of transactions and not just the analysis of isolated (dyadic) transactions.

Based on this finding in the specialty coffee chain, it is suggested that further studies be developed in other chains to understand the dynamics of action considering other products. In addition, there are other elements that can contribute to the field, such as issues of power, path dependence, territory, and social order elements. Studies on upgrading agents further up the chain can provide clues about the efficiency of chain organization in creating value. Downstream, we suggest studies related to consumer behavior and how the value in coffee is considered.

The limitations faced by this work, the non-inclusion in the research of other relevant European markets when it comes to the import and consumption of coffee stands out, such as Italy and the United Kingdom. In addition to including such countries in future research, this study could benefit from the inclusion of other important coffee producing regions in Brazil, such as the state of Minas Gerais, São Paulo, and Bahia.

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