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Food safety and traceability in specialty coffees: What do Brazilian consumers value?

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ABSTRACT

This study aims to identify how aspects of food safety and traceability influence the consumption of specialty coffees from the consumers' perspective. Forty regular consumers of specialty coffees were interviewed. Aspects of food safety and traceability were identified and classified into formal and informal mechanisms. This research is a pioneer in addressing the importance of food safety aspects in the consumption of specialty coffees and can be a useful tool for agents responsible for marketing, farm management, consumer relations and sustainability of the specialty coffee production chain.

Keywords: Food safety; Traceability; Specialty coffees; Brazilian consumers.

1   Introduction

The effects of globalization that directly affect world agribusiness, population growth, growing demand for food, and the search to guarantee food security, in order to meet the availability of quality food, have become objects of concern in several countries. From another perspective, food safety, when associated with health and increasing health risks, such as the risk of contamination, raises even greater concerns to be fought by private and public agents (Gouel and Guimbard, 2018; Cui et al., 2019; Dias et al., 2019).

According to Spers (2003), the term safety from the food perspective has two distinct and complementary approaches. The first comes from the operation of governmental and non-governmental agencies to regulate laws and technical standards that seek to ensure food quality and that can validate safety requirements, which are called formal mechanisms. In the second approach, called informal mechanisms, food safety has attributes that can be verified by consumers, such as the packaging and its information on the label, making it possible to view the expiration date, physical appearance, inspection seals, quality certificates, aroma and provenance/origin.

It is perceived that these aspects stand out as guidelines for the purchase and consumption of food by consumers in Brazil and other countries, generating a perception of quality (Spers, 2003; Cassiano, 2008; Vieira et al., 2010). In addition, society has been looking for novelties and exclusivities, especially concerning the consumption of foods considered differentiated. These emerged as a way to meet a demand, and also to value artisanal cuisine and gourmets. In this sense, food safety attributes have proven to be important concepts to ensure the quality and safety of the consumption of these foods (Dias et al., 2019).

When dealing with food consumption with a differentiated market appeal, specialty coffees fit into a market segment in which the consumer has a higher level of engagement, that is, other motivations in consumer relations, compared to the traditional coffee found on a large scale (Guimarães et al., 2018). According to data from the Brazilian Association of Coffee Industries (ABIC, 2022), coffee is the second most consumed beverage in the world and is present in practically all countries. This global representativeness stimulates the development of new market niches and products considered special. These have superior quality and diversified attributes that are not found in traditional coffees, or simply commodity coffee (Torga and Spers, 2020).

Food safety involves an even broader research problem, in which the discussion about potential risks to the safety and health of the individual can result in a possible weakening point in the production chain. Understanding how consumers internalize the aspects involving these concepts and identifying how they act in the consumption practice can demonstrate factors that enhance or weaken the relationships of the actors in this market. Therefore, this study aimed to identify how aspects of food safety and traceability influence the consumption of specialty coffees from the perspective of consumers.

Traceability promotes greater quality control, production and information management, and relationships between agents in the production chain, in addition to the safety factor (Resende-Filho and Hurley, 2012; Kennedy and Mcentire, 2019). Regarding specialty coffees, traceability plays an important role in the production chain, acting as an attribute of origin and as a direct trade practice. Consequently, it promotes the opportunity for strategic marketing relationships, adding value and differentiation for the consumer (Smith, 2018).

This work contextualizes the relationships that occur in the social environment (consumers, cooperatives, rural producers and merchants), and in the economic and public or private policy environment (government and regulatory entities/associations), with regard to the control and inspection of the commercialization of food, and food quality and safety assurance. The information provided here allows stakeholders to improve relations in the production chain with a focus on meeting the needs and expectations of consumers. They help to answer some questions from agents in the production chain, such as, for example, the best type of packaging, what information should be present on the label, and how to guarantee the quality expected by the consumer.

2   Theoretical Background

2.1   Aspects of food safety in the perception of consumers

Food security in the Brazilian context, from the perspective of public policies (formal mechanism), is referenced in Law No. 11.346, dated September 15, 2006, which consists of pursuing the right of all Brazilians to have regular and permanent access to quality food. The law is also concerned with health-promoting food practices that respect cultural diversity and that are environmentally, culturally, economically and socially sustainable (Brasil, 2006).

In the international context, the Codex Alimentarius, which is part of the Food and Agriculture Organization of the United Nations - FAO, establishes standards for almost 200 food products and has more than 120 guidelines and codes of practice on a wide range of issues related to the food safety, quality and trade. The processes involve everything from animal breeding and feeding, through biological characteristics and technological innovations, to the use of contaminants and pesticides, as well as the determination of nutritional standards, packaging, and food label information (FAO/WHO, 2005).

From the point of view of consumers, several aspects can contribute to defining the quality of a food product. According to Grunert (2005), food quality is directly linked to food safety aspects. The characteristics of foods are not only the organoleptic properties; factors such as the production process and origin, food labeling, distribution and traceability of foods can also impact consumption. The food safety factor is directly linked to these perceptions. In Europe, about 25% of the population pays attention to quality information that can attest to the safety of consuming food (Sadilek, 2019).

In Brazil, consumers are still in the process of learning and looking for relevant information to understand aspects of food safety. Even though there may be public policies that regulate the commercialization of foods that have been previously inspected and some type of seal that attests to food safety requirements, consumers generally only evaluate accessible characteristics at the time of purchase, such as information on packaging and organoleptic characteristics. Notably, Brazilian consumers do not have the habit of evaluating characteristics beyond this type of analysis (Vieira et al., 2010; Cunha, Spers, and Zylbersztajn, 2011). This situation can support the belief or trust attribute in superior quality based on the fact that the food is considered special, artisanal, or gourmet (Del Giudice et al., 2018).

Another perspective that involves the topic is the concern about the food attributes to ensure its safety when consumed. This concern is influenced by both public and private agents, as food safety is a regional, national, and global concern (Sadilek, 2019; Gizaw, 2019). Brazilian agribusiness has its formal regulations, for example, the actions and supervision of the Ministry of Agriculture, Livestock and Supply. In addition to this, other resources were developed to guarantee sanitary hygiene and food safety in the production, distribution and commercialization of food, such as, for example, the emergence of agencies, entities and associations that issue certifications and seals (Spers, Zylbersztajn, and Lazzarini, 2003; Vieira et al, 2010; Oliveira and Spers, 2017).

Given the above, it is observed that consumers play an important role in consolidating information on food safety. In some cases, it may go unnoticed, as the belief that a brand or type of food is safe for consumption can automate the individual's behavior, in a positive or negative way. In this sense, the belief attribute can impair the consumer's judgment when validating information about the safety of food for consumption. This situation was portrayed in works on food consumption, in which beliefs regarding quality, brand, trust and safety were affected by contamination scandals, or enhanced by investments in certifications, for example (Frewer et al., 2009; Mcentire and Kennedy, 2019; Rivaroli, Baldi, and Spadoni, 2020).

2.2 Traceability as a food safety tool

Studies on food traceability have sought to promote the discussion concerning market perspectives and sanitary requirements, aiming to means to ensure consumers' health and safety (McEntire; Kennedy, 2019). The food industry is implementing new technologies in the processes related to the origin, production, marketing and consumption of the food produced, based on the success observed in the implementation of these technologies in other types of industries (Hassoun et al., 2022).

According to McEntire and Kennedy (2019), the term traceability refers to a combination of internal and external systems, consistently applied and interoperable, that generate and store data from all processes in the food industry. For Machado (2005), food traceability is associated with the voluntary control of all production processes, that is, the agents involved can estimate the cost to be invested in maintaining a quality control system that guarantees safety and reliability, but in exchange, they need to achieve profitability returns. Resende-Filho and Hurley (2012) investigated how the reliability of a traceability system affects food safety. The authors argue that food traceability can act to reduce the anonymity of companies, enabling the identification of stakeholders, and to improve the distribution of responsibility among them.

As an example of the application of traceability to a special food, Smith (2018) points out that farmers who invested in traceability achieved results in high-quality coffee with greater added value. From another perspective, Raynolds (2009) states that the practice of fair trade in the production of specialty coffee encourages partnerships between agents in the production chain, strengthening traceability as a security tool, and information about production, guaranteeing quality through certifying seals, or direct marketing between producer and consumer.

Traceability is important, but by itself, it is not enough to guarantee the safety of the origin of the food. Regulatory sanctions and mandatory standards can help with control, but they do not guarantee that the traced food will be safe for consumption (Stevens, 2019). In this sense, investment in new technologies capable of controlling and validating

food traceability locally and globally is necessary (McEntire; Kennedy, 2019). Still, from the consumer's perspective, other attributes are relevant, such as legislation, government inspection and control, certificates and seals, trust, news, and their own perception of quality and safety (Loureiro and Umberger, 2007; Pouliot and Sumner, 2013).

The main traceability attributes mentioned in studies involving the food production chain were: (i) traceable information about the producer, region of origin, lot number and dates of the main production processes (Smith, 2018); (ii) responsibility, security and supervision (Pouliot and Sumner, 2013); (iii) tracking technology, guarantee of origin, information about the production chain and data security (Lilavanichakul and Boecker, 2013); (iv) stakeholder identification, tracking technology and reliability (Resende-Filho and Hurley, 2012); (v) supply chain management mechanism and process control, certification and regulatory requirements (Raynolds, 2009); (vi) country of origin labeling, production management, regulatory system, security guarantee and certification (Loureiro and Umberger, 2007).

It is observed that the concept of traceability starts with the responsibility of food producers, passing through quality management techniques and tools, and supply chain management, aligning with the obligations and requirements of regulatory authorities (public or private), and finally reaching the companies that certify the processes between the food's origin and destination (seals, certifications, technical standards). In summary, traceability can be considered an attribute or characteristic of food safety (Loureiro and Umberger, 2007; Pouliot and Sumner, 2013).

2.3   Specialty coffees and their characteristics in the Brazilian market

The Brazil Specialty Coffee Association – BSCA, an entity created in 1991, aims to promote the universe of specialty coffees through partnerships for research, dissemination of quality control techniques and product promotions, in addition to seeking to raise the standards of excellence of Brazilian coffees offered in domestic and foreign markets. For the organization, specialty coffees are grains free of impurities and defects that have distinct sensory attributes, such as sweet and clean flavor, balanced body and adequate acidity, and are qualified with more than 80 points in sensory analysis. In addition to their intrinsic quality, specialty coffees must meet environmental, economic and social sustainability criteria at all stages of production, in addition to having certified traceability (BSCA, 2023).

The specialty coffee market has complexities that cover several links in the production chain. Guimarães (2019) reported that the impositions of grain roasting companies made the original SCA score reach even higher levels, in addition to the level of demand by more rigorous consumers. This situation requires the coffee bean to achieve a score above 83 points, which can lead to even more financial investment in production, thereby increasing costs. However, the selling prices do not always keep up with these producer investments. One of the ways to overcome this situation is through direct trade, where the producer and the roasting company, coffee shop, or specialty store conduct buying and selling transactions directly. These companies generally rely on their own evaluations of the beverage's attributes, rather than being bound by reports provided by other professionals or specific entities (Guimarães, 2019).

Currently, Brazil stands out as the world's largest supplier of coffees with scores starting from 80 points, produced with social and environmental responsibility. Furthermore, the country has been establishing itself as an important consumer of high-quality coffees, with 5% to 10% of internal consumption already consisting of specialty coffees sold through various platforms, such as coffee shops, restaurants, hotels, supermarkets, and online channels. This growth has been driven by consumers' curiosity to discover new flavors and experiences. In absolute terms, the consumption volume of specialty coffees in Brazil already surpasses that of many countries, and this trend is expected to continue evolving with the involvement of more producers and greater awareness and appreciation from customers (Ministry of Agriculture and Livestock, 2023).

In Brazil, the specialty coffee market has been seeking greater investments in promoting and raising consumer awareness of the beverage (Torga and Spers, 2020). However, a significant portion of the national production is still exported, as the domestic market has not fully capitalized on the opportunities generated by the superior quality of the beans produced in the country. This situation continues to strengthen the commodity coffee market. However, stakeholders within the coffee production chain have ways to develop actions that promote the attributes of specialty coffees and can reduce price sensitivity while emphasizing the value of quality, sustainability, and origin of Brazilian coffees. In this context, the awareness-raising process becomes crucial, acting as an ally to the efforts of Brazilian associations in effectively promoting the specialty coffee market (Guimarães et al., 2018; Teles and Behrens, 2020; Ratton and Spers, 2020).

According to Guimarães et al. (2018), the most avid and engaged Brazilian consumers of specialty coffees are the enthusiast and expert profiles. The authors were able to identify that the classification provided by the Specialty Coffee Association of America (SCA) may not always be decisive for these two consumer profiles. There are other aspects such as origin, roasting date, certifications, packaging, price, altitude, variety, and processing method that act as motivators. Another essential factor is the connection between the consumer and the producer, namely direct trade, which illustrates how engagement in consumer relationships has become relevant in the current context. The information, the reality of production and the stories of the family that produces the coffee are also appreciated.

Leme (2015) emphasizes that in Brazil, it is not enough for Brazilian coffees to be produced with quality requirements; it is necessary to sell this quality to both internal and external consumers who are increasingly demanding in aspects such as beverage quality, safety, origin, traceability, and sustainability. In this regard, understanding how consumers internalize these motivations that can guide their purchasing behavior becomes an essential factor to be analyzed and disseminated among stakeholders within the production chain.

3   Methodology

This research is characterized as qualitative and descriptive. Data collection was conducted through in-depth interviews. Consumers of specialty coffees were approached both in person and online, targeting specific groups related to specialty coffees on Facebook, profiles of specialized coffee shops, and professionals in the specialty coffee field on Instagram. In addition, the snowball technique was used, which consists of indicating other consumers by the research participants (Baldin and Munhoz, 2011).

The research involved 40 consumers, with 35 participating online and five participating in person. The online approach facilitated researchers' access to interviewees interested in participating through video conferencing via Google Meet. The interviews were conducted after obtaining the Free and Informed Consent Form and a sociodemographic questionnaire from the participants.

The research participants are characterized as frequent consumers who drink at least one cup of specialty coffee per day and have a high level of engagement with specialty coffee consumption. These consumers reside in the following states: Minas Gerais (24 interviewees), Espírito Santo (6 interviewees), Bahia (3 interviewees), São Paulo (2 interviewees), Goiás, Pará, Pernambuco, Rio de Janeiro, Santa Catarina (1 interviewee each).

The interviews were recorded and transcribed in their entirety. To analyze the data, the researchers used content analysis (Bardin, 2011) by reading the transcriptions to identify consumers' perceptions regarding aspects of food safety, as well as their interpretations.

4   Analysis and Discussion of Results

4.1   Socio-demographic profile of consumers and their consumption characteristics

Among the 40 consumers of specialty coffees who were interviewed, 52.5% are male and 47.5% are female. The predominant age groups were between 22 and 32 years old (47.5%) and between 33 and 42 years old (35%). In terms of marital status, respondents were single (50%), followed by married or in a stable relationship (45%). Regarding the education of the interviewees, postgraduate studies predominated (55%), followed by higher education (22.5%). As for monthly financial income, two ranges stood out: from 1 to 3 salaries (45%) and from 4 to 6 salaries (27.5%).

Regarding the characterization of the consumption of specialty coffee consumers who participated in this research, the questionnaire addressed individual or collective activities related to the various contexts of consumption that permeate the universe of specialty coffees. As an example, one can mention the investment in specific materials and utensils, courses and training with professionals, following social networks of brands, rural producers and coffee shops. Among the different options available, the interviewees could select more than one, and in this sense, it is clear that the answers of the interviewees have similar characteristics regarding the consumption of the beverage, since all the activity options available in the questionnaire were marked.

Activities that stood out were those related to the act of gifting family and friends, following coffee-related pages on social media, and maintaining a personal stock of specialty coffee. These activities can be considered individual, as they are related to the preferences and consumption context of the interviewees. However, the act of giving coffee as a gift suggests a collective gesture, as it demonstrates affection to the person receiving the specialty coffee chosen by the interviewee. Table 1 presents the percentages related to each activity selected by the interviewees in the questionnaire.

Through the application of the questionnaire with sociodemographic information and the approach to the characteristics that permeate the consumption of specialty coffees, it is possible to state that the consumers interviewed in this research have high levels of engagement and compatibility with the object of study (Guimarães et al., 2018).

Table 1.
Characteristics of specialty coffee consumption

Individual or collective activities related to the consumption of specialty coffees	Percentage of interviewees who selected the option
Holding meetings, get-togethers or dinners to enjoy, discuss and/or harmonize the drink	55%
Participating in coffee enthusiast groups or clubs	10%
Joining subscription clubs	8%
Taking specialized barista courses	25%
Engaging in tourism activities in grain producing regions	43%
Expressing personal evaluations and ratings.	33%
Follow social media pages	70%
Gifting family and friends	78%
Maintaining own stock	70%
Buying appropriate utensils	60%
Subscribing to specialized magazines	5%

Source: Research data

4.2 Formal and informal mechanisms related to specialty coffee safety

The analysis of the interviews identified nine elements related to the attributes of specialty coffees. These elements were categorized into six concrete attributes and three abstract attributes. Table 2 presents the six concrete attributes found in the research, which are classified as elements that can be handled and visualized by consumers and can be altered by the agents who market specialty coffees.

Table 2.
Description of concrete attributes

Code	Concrete attributes	Description of categories
1	Whole bean coffee	Consumers pay attention to the fact that the product is sold in the form of whole and already roasted beans, although there is an option for the coffee to come in ground form.
2	Origin	Consumers observe the region where the coffee was grown and harvested. There are geographic regions that have superior qualities in production and marketing, in addition to tradition and market valuation. In addition, each region has distinct and accentuated sensory characteristics.
3	Roast level	It refers to the intensity of the coffee roast, whether in the form of whole beans or ground. There are three roast levels: light, medium, and dark. The roast level influences the sensory perceptions, characteristics, and flavor notes of the beverage.
4	Packaging	Responsible for communicating various information about coffee to consumers, such as expiration date, date and roasting level, sensory notes, characteristics of the drink, region of origin, the history of that coffee, producer and roaster. It is also capable of generating visual perceptions such as design, images and colors. Additionally, it includes safety information, such as sealing, quality seals, traceability, and sensory aspects, such as the aroma sensed through the packaging valve.
5	Price	The price is higher compared to regular coffee, but interviewees reported variations in prices depending on the purchasing method, whether through direct trade, coffee shops, or websites. In some cases, more accessible and fair prices are observed, while in others, this may not be the case. The price can influence consumption perceptions, highlighting the product's value or even determining the ideal moment for consuming the beverage. Generally, the price is linked to the producer's reputation and the value derived from quality contests and marketing efforts.
6	Certifications and seals	Currently, there are different certification standards and each one covers different aspects, ranging from the production to the commercialization of the product. The certification seals prove attributes of quality, fair trade, sustainability, safety and traceability. The main certificates mentioned by the interviewees were: Organic, Rain Forest Alliance, Utz Certified, Fair Trade, and the Brazilian Specialty Coffee Association (BSCA).

Source: Created by authors

Studies on specialty coffee consumers and consumption perspectives have identified the concrete attributes of whole bean coffee, origin, price, packaging, and roast level (Guimarães et al., 2018; Boaventura et al., 2018; Sousa, Carvalho, and Pereira, 2020; Santos, Cirillo, and Guimarães, 2021). The attribute of certifications and seals was portrayed by Leme and Pinto (2018) and Smith (2018). These studies have demonstrated how these attributes are essential in differentiating specialty coffees from the traditional coffee found on a large scale for consumption.

The abstract attributes are those that can evoke typical and specific sensory impressions of specialty coffees. Table 3 presents the description of each of the three elements found in the analysis of the interviews. The abstract attributes aroma, flavor and sensory notes have been mentioned in other studies on coffee consumption, demonstrating their specific characteristics (Quintão et al., 2017; Morland, 2018; Guimarães et al., 2018).

Table 3.
Description of abstract attributes

Code	Abstract attributes	Description of categories
7	Aroma	Olfactory perception from the smell of coffee, which can come from the packaging valve and also through the preparation and post-preparation of the beverage. It helps with harmonization, variety perception, taste and sensory notes, in addition to being an invitation to have a coffee and enjoy the moment.
8	Flavor	Taste sensations that are inherent to coffee tasting after some specific preparation method. The flavor can lead to sensory perceptions about the taste of coffee and also validate the information contained on the label, presenting it. Also, it presents accentuated, striking and present characteristics, such as: sweetness, acidity, body and aftertaste.
9	Sensory notes	Specific characteristics of the coffee, whether in whole bean or ground form. They enhance sensory perceptions during the consumption of the beverage, such as cocoa, caramel, sweetness, fruity, floral, vegetal, and spicy notes.

Source: Created by authors

In the specialty coffee market, according to the interviewed consumers, there is no inspection regarding the production and commercialization of the food. In this sense, initially, this work proposed to identify the characteristics of specialty coffees that are related to aspects of food safety. As pointed out by Spers (2003), they can be classified as formal and informal mechanisms. Regarding traceability, considered one of the attributes related to food safety, it was also possible to identify some characteristics that promote its verification by consumers.

Checking the attributes presented in Table 1, it is evident that the concrete attributes: packaging (4), certifications and seals (6), origin (2), and roast level (3), together with the abstract attributes: sensory notes (9) and aroma (8), can be associated with informal mechanisms, as highlighted by Spers (2003). However, it was decided to promote the discussion about food safety aspects based on the classification of special coffee attributes: 'packaging,' 'certifications and seals,' and 'origin' as formal mechanisms, since, in the specialty coffee market, there is no public regulatory body capable of supervising and guaranteeing food safety requirements. In this way, the research can further contribute to the subject within the specialty coffee production chain and encourage producers, coffee shops, organizations, associations, or cooperatives to pay attention to food safety aspects based on the perspective assessed by the beverage consumers.

Figure 1 presents the identified attributes, which can be classified into formal and informal mechanisms. It should be noted that this classification was carried out to promote a better understanding of the relationships that are relevant to aspects of food safety and the consumption of specialty coffees, based on the content analysis of the interviews. Thus, it was decided to classify the attributes more broadly, within the concept of formal and informal mechanisms, in order to corroborate the consumer's perspective and promote discussion on the subject in the context of specialty coffee consumption.

In Figure 1, the arrows demonstrate complementary relationships between the two mechanisms and their respective identified aspects. Therefore, the attribute 'packaging' can be considered a formal mechanism since all specialty coffees must be packaged as a purchasing requirement. Packaging is associated with the formal mechanism 'certifications' because specialty coffee with a certification indicates that a certifying entity has audited aspects of the production management process, authorizing the inclusion of the seal on the packaging label. The certification comes from a specific entity directly related to the specialty coffee universe, capable of evaluating various parameters from production to commercialization. Certification bodies play a crucial role in the specialty coffee production chain and have a significant impact on market promotion and sustainability (Ratton and Spers, 2020).
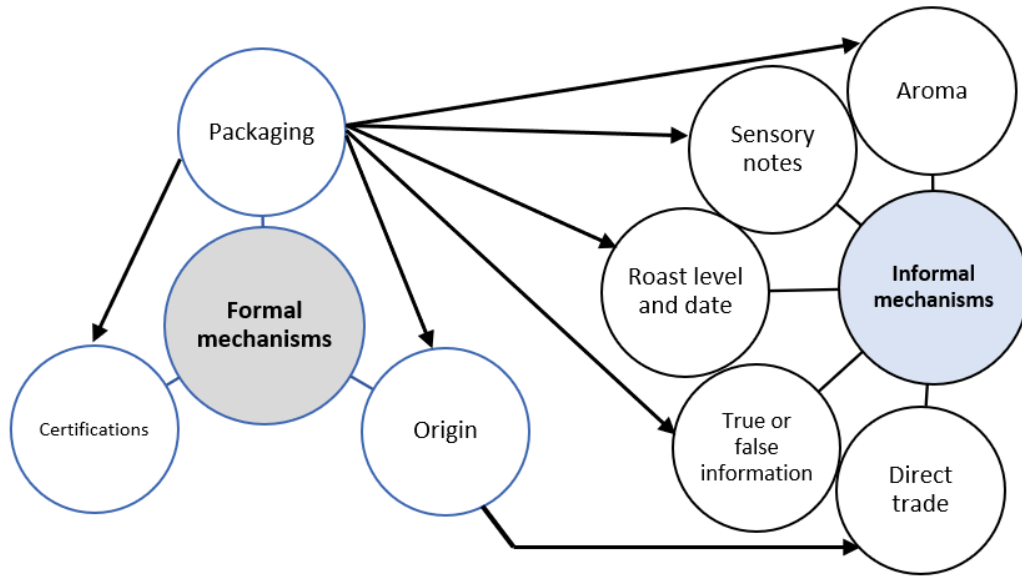
Figure 1. Formal and informal mechanisms related to the safety of specialty coffees.
Source: Created by authors

In a simplified way, the main certifications for specialty coffees are the BSCA seal, which provides complete traceability to the product; the Organic seal, aiming to certify sustainable agriculture and the supply of organic food; the Rainforest Alliance certification, which focuses on environmental relations; the UTZ Certified, aiming to improve farm management practices; the Fairtrade, promoting social sustainability and fair trade; and the 4C or Common Code for the Coffee Community seal, which verifies and ensures that the traded beans meet the criteria of good practices in coffee farming.

The packaging also has complementarity with informal mechanisms that can be validated through the information provided on its label, such as the roast level, expiration date, presence of seals, and grain processing method. Another important factor highlighted by consumers is the packaging valve, which allows them to smell the aroma and experience some of the sensory notes of the coffee. This situation does not occur in cases of packaging without this feature, which leads to a feeling of distrust from the consumer, as observed in the following statements.

> *Very, very important indeed. Because, to me, the label on the packaging is where the connection between the producer and me exists. I can't know what that coffee is if they don't put the information on the label. I've seen research that shows that the packaging communicates a lot with the consumer in terms of perception. [...] For me, it has to include the legal aspects, I think it's great to have the CNPJ (company registration number), information about the producer, expiration date, and roast date. - Interviewee 05.*

> *[...] but I always first check the aroma, look at the origin, I like to know the region it comes from, it's a detail that catches my attention a lot, and I also check if there's any traceability information, a QR code, I always look for that too. - Interviewee 25.*

> *To live up to that product. To do justice to that product. Because we are so often deceived, so harmed as consumers. In fact, it's a term we've been using a lot for coffee. Coffee doesn't have to be specialty. It can be a simple, everyday coffee, it can be a humble coffee, but it must be an honest coffee. It should be real coffee... pure, clean. - Interviewee 13.*

Another concrete attribute of specialty coffees that can be considered a formal mechanism is the 'origin' of the product. This attribute is frequently mentioned among coffee consumers. The product's origin complements the information found on the packaging and is associated with the informal mechanism of 'direct trade.' Buying directly from producers is a relevant practice among respondents in this survey, as 35% of consumers practice this modality. Purchasing directly from the producer aligns with the traceability attributes of the product, meaning the information about who produced the coffee and how it was produced can be validated in person by the consumer. This allows the consumer to directly get to know the responsible for the coffee's production or availability, especially in cases of professionals in the field or cafeterias and specialty stores.

Regarding the importance of food safety, respondents stated that:

> *For sure. So, it is very informal, because I have direct access to coffee producers, this is easy for me, but for consumers in general who buy coffee in coffee shops or in large markets, the consumer will be limited to the information on the label. Consumers in general do not have access to this information. – Respondent 31.*

> *That's important. When you pick up a coffee brand that you don't know, you don't know what kind of coffee it is or where it comes from. For those of us who are more curious about coffee, more selective, and appreciate a good coffee, we pick up the package and check the information. We take our phones and use the code, and it tells us where it comes from, the place, who the producer is – it provides all the information. And that helps a lot in food safety because you know where it comes from and you have the assurance that the producer really cared about it. - Interviewee 29.*

Still on the attribute of 'origin,' the Brazilian Specialty Coffee Association (BSCA) has cataloged 33 regions as a designation of origin for specialty coffees in Brazil. These designations of origin labels usually come with traceability seals to validate the origin and responsible producer. The practice of direct trade within these regions stimulates consumption in a way that enhances other activities such as tourism in the producing farms and strengthens another characteristic mentioned by the interviewees, which is getting to know the producer and the story behind the specialty coffee.

Guimarães (2019) highlights the importance of the 'origin' attribute of specialty coffees, as it goes beyond identifying the producing region and the beverage's sensory notes. According to the author, traceability extends from the origin of the beans, from rural producers to the final consumer, and the method of direct trade plays a significant role in this process. In this circumstance, consumers of specialty coffees can check the quality of the beans, particularly in terms of purity, and obtain information about the processing method and sensory notes. This enables them to establish a sense of trust and connection with the producer or coffee shop, which can generate a feeling of security when purchasing and consuming the beverage.

Evidence was also found involving the perception of guaranteed quality and the belief attribute, especially in relationships related to the purchase of specialty coffees on websites, specialized coffee shops, or gourmet stores. This situation involves feelings associated with trust in the relationship between the seller and the consumer. Attributes related to food safety and traceability are based on information provided by the seller. The consumer, in turn, believes in the explanations given and does not necessarily seek or feel the need to independently validate the characteristics of the acquired specialty coffees, as shown in the following statement.

> *"I trust much more in testing the quality of what the girls from Casa do Frade do. They go straight to the farm, they see how it works, they work together with the coffee producer to achieve quality. They bring information from the market, where they have greater contact, and manage to convey this information to the coffee producer in a way that he understands to adjust the production process." – Interviewee 01.*

The belief attributes are associated with the reputation of a reputable brand or a specific type of food, such as organic food, for example. It is assumed that trust and credibility in these situations are at higher levels. Consumers choose to continue buying and consuming these foods without worrying about safety and traceability aspects (Lee and Hwang, 2016). Belief attributes can also be linked to the goals individuals have throughout life, as well as transformations in consumption habits (Lassoued and Hobbs, 2015).

When it comes to dietary habits, factors such as the pursuit of healthy eating, the feeling of improving health, and lifestyle changes can influence an individual's behavior as a food consumer (Griffith, Jackson, and Lues, 2017). Well-known food brands can create a sense of superior quality, which is associated with trust and credibility for consumers and becomes a motivating factor for consumption. In the case of specialty coffees, the belief that it is a distinct food compared to commodity coffee instills in the interviewees trust, loyalty and credibility in towards the agents who sell the beverage.

Among the food safety characteristics mentioned in Table 2, the findings of this study corroborate the importance of packaging and label information, which facilitate direct communication between the producer or brand and the consumer (Sadilek, 2019). Certifications or seals can stimulate a sense of safety and trust in the consumer, especially specific seals related to food safety issues, such as ISO 22000, which is associated with major food companies (Bouranta, Psomas, and Vouzas, 2019). In the case of specialty coffees, the BSCA seals guarantee traceability requirements, while the Organic seal validates the production as free from pesticides and sustainable.

The perception of quality is a key factor in generating a sense of security in the stages of buying, preparing and consuming food (Grunert, 2005). In the case of specialty coffees, it is no different; the search for quality can be considered a motivational factor for consumption and is intrinsically associated with food safety. As for the traceability of specialty coffees, it has become an evident concrete attribute of the food, capable of motivating the consumer to

obtain more sensory experiences and more attention to packaging details, in addition to promoting new requirements associated with the quality and safety of specialty coffees.

Consumers reported attributes that were associated with formal and informal mechanisms related to safety for the consumption of specialty coffees. However, it was also found that consumers do not necessarily validate aspects of food safety, preferring to trust the commercial establishment where the coffee was purchased or in the practice of direct trade. This situation reinforces the belief that coffee is indeed special, leading consumers to believe that they have acquired a superior quality coffee that is safe for their health (Del Giudice et al., 2018). But it is important to report that, by acting in this way, commercial establishments or producers can omit important information regarding the safety of the food and its origin (traceability) and may deceive the consumer in relation to the quality of the special coffee.

It was also evident that consumers value personal perceptions arising from the moment of purchase and the experiences gained over time during consumption. They feel motivated to seek novelty as well as collective information and experiences from other consumers who have provided feedback on a particular specialty coffee.

Finally, the research was able to identify how aspects of food safety and traceability can influence the consumption of specialty coffees, showing that product attributes such as packaging, origin, certifications, and aroma must meet the minimum conditions desired by consumers, evoking sensations such as feeling that they are eating safely, promoting good health, and leaving consumers feeling secure and confident in consuming the food.

In summary, consumers are attentive to the feeling of safety in two ways. The first comes from those who have concerns about product information and like to verify and validate the information themselves. The second relates to the trust and credibility placed by consumers in specialized coffee shops, gourmet stores, or directly in rural producers, a situation that mainly occurs at the time of purchasing specialty coffees.

5   Final Considerations

The context of specialty coffees has proven to be relevant in understanding how consumer behavior, based on their perspectives, is associated with a local and global concern - food safety. This concern refers to ensuring that the food is safe for consumption, meeting both formal and informal requirements that consumers themselves can identify at the time of purchase and consumption.

This study sought to identify aspects of food safety considered by consumers regarding the consumption of specialty coffees. The research found attributes of specialty coffees that were classified in formal mechanisms such as packaging and specific information about the product; the presence of a certification that can validate the attributes of the specialty coffee; and the origin of the grains, especially among those with a designation of origin seal. As for informal mechanisms, beverage attributes were found, such as sensory notes; aroma; true or false information on the package; date and roasting level of the beans; and the practice of direct trade between consumer and producer.

It is important to highlight that this research is pioneering in the discussion about the relevance of food safety aspects in the consumption of specialty coffees. Building on the work of Spers (2003), it was possible to promote the categorization of attributes into formal and informal mechanisms, even though there might not be a direct government regulatory body specifically linked to the specialty coffee supply chain.

The managerial implications of the research extend to the importance of the relationship with consumers, for example, through marketing activities such as product advertising on social media platforms (Instagram and Facebook), with associated information about the attributes found. From another perspective, product producers and sellers must pay attention to packaging, including aroma valves, origin information, roasting date and level, processing method, sensory notes, and certification seal so that consumers can validate them and consequently make a purchase.

At this point, it becomes important to develop effective communication with consumers to strengthen the attributes that involve food safety, exploring the superior quality of specialty coffees, corroborating their specificities, and providing the option for feedback from consumers of the beverage. It is believed that these actions have the potential to reach individuals who continue consuming commodity coffee.

Regarding social and economic contributions, this work promotes a discussion about a product that is part of the consumption culture in Brazil and the world. Concerning the specialty coffee market niche, consumers are concerned about the relationships that occur among participants in the production chain. These relationships are crucial for sustaining the connection between the producer, coffee shop, and consumer, promoting social and financial sustainability, primarily through the emphasis on fair values for all involved parties. It is evident that the specialty coffee market still has significant potential to grow sustainably and provide access for commodity coffee consumers to a higher-quality product, thereby assisting in improving dietary habits.

As for the limitations of the research, it is highlighted that a sample involving a greater number of consumers, specifically from one or other states, would make the results more representative, in order to contribute to a better understanding of the phenomenon investigated in the Brazilian context. In addition, it is assumed that a quantitative approach would be able to further elucidate consumption characteristics or identify distinct attributes that may corroborate the cognitive structure of consumers to a greater extent. In this sense, it would also be valid to create and test hypotheses based on the discussion initiated by this work regarding aspects of food safety and traceability of specialty coffees.

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