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Products with organic certification: do Brazilian consumers perceive their attributes?

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Abstract

Paper Aims: This work aims to identify the socio-environmental attributes related to the label 'Brazilian Organic Product – BOP- perceived by consumers of organic foods.

Originality: This paper is pioneering in the understanding of the attributes of BOP label in Brazil by consumers. Also, is unique in exploring the dimensions "organic", "environmental" and "social" based on Brazilian law regarding organic food and the Guidelines of the Certifiers of Organic Products in Brazil.

Research method: A survey was conducted with 106 consumers of organic foods and an exploratory factor analysis (EFA) was carried out.

Main findings: Results showed that eight dimensions of attributes (Labor Laws and Social Incentive; Social and Environmental Practices; Environmental Management; Social and Environmental Protection; Environmental Preservation; Natural Products; Animal and Social Welfare; Non-renewable resources) influence consumer's perception about the BOP label.

Implications for theory and practice: For theory this study shows how consumers perceive socio environmental attributes through labels and how this perception can motivate the purchase. For practice, intended to provide insights for marketing managers to better improve information on the labels Also, provide information to public policy managers to improve policies that can reach out more consumers.

Keywords

Certification. Socio-environmental. Exploratory factor analysis. Organic.

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1. Introduction

Demand for organic food is a result of consumers concerns about health, the environment and the animal's welfare also their willingness to pay for sustainably produced food (Parga Dans et al., 2019; Reynaldo et al., 2019; Willer & Lernoud; 2019; Yormirzoev et al., 2020; Lima et al., 2021). Thøgersen et al. (2019) notes that although North America and Europe represent 90 percent of the global market, there is a substantial growth of the sector in emerging economies. In this scenario, the Brazilian market generated around four billion reais (BRL) in 2018, 20% more than the previous year, becoming the 25th largest world organic market (Organic Trade Association, 2018; Brasil, 2019b).

Organic production models focus on the quality of soil, population life and the ecosystem Grunert (2011). Though the production methods in organic foods are differentiated, Gutiérrez et al. (2012) and Thøgersen et al. (2019) explains that the consumers cannot verify it before or after the purchase, so through inspections, organizations are certified and get the right to display the label that testify the organic production.



The organic certification is one of the attributes considered most important in the purchase of this type of product, as they are tools for signaling compliance for consumers (Schleenbecker & Hamm, 2013; Thøgersen et al., 2019). Also, the labels constitute compliance, signaling certain mechanisms for consumers as it works as a link to reduce information asymmetry between buyer and producer, helping to create traceable agri-food systems, ensuring reliability in the origin and quality of the product (Bond et al., 2008; Zepeda et al., 2013; Parga Dans et al., 2019; Bazaluk et al.; 2020).

Regarding consumers perception through labels, Janssen & Hamm, (2014) denotes that the mix of certifications might confuse the consumer at the time of purchase. Uysal et al. (2013) emphasizes that confusion regarding the understanding of the meaning of labels and the origin of products can negatively influence the acceptability of a product by consumers. Bryła (2017) denotes that the proliferation of labels, quality certificates and certification bodies create a risk of consumer's indifference to the characteristics of the product, which results in confusion rather than leading to purchase.

Also, there are several uncertainties about the attributes of organic food, which results in a lack of confidence in the certification process and in the information that the label conveys to consumers (Hoefkens et al., 2009; McFadden & Huffman, 2017; Yormirzoev et al., 2020). Silva & Câmara (2005); César et al., (2008) indicates that despite the label being used as a strategic factor, its presence on the product has little influence on the final decision of the consumer. In addition, Thøgersen et al. (2019) assume that labels will only influence consumers' purchase decisions if they are reliable and Molinillo et al. (2020) adding that its information must be objective and valuable.

Even with the dense literature on the market and organic agriculture, characteristics as behavior, perception and motivation from consumers need to be more discussed (Zhang et al., 2008; Gerrard et al., 2013; Feil et al., 2020). Rodríguez-Bermúdez et al. (2020) points out that consumers behavior and perception tend to vary according to the region they are in. Despite there being a significant quantity of studies in developing countries such as China, India, Indonesia, Thailand and Vietnam, studies in emerging economies still are in early stages (Yormirzoev et al., 2020).

In Brazil, previous studies have shown that consumers purchase intention toward organic foods are uncertain because of the high price of the organic food in comparison with conventional food, lack of availability of organic food and the consumers perception about the attributes of organic food (Feil et al., 2020; Dorce et al., 2021; Tavares et al., 2021) Curvelo et al. (2019) aimed to evaluate aspects of organic food, consumer trust in organic food and its perceived value on consumers' purchase intention. The study of Farias et al. (2019) denoted those determinants as healthy and environmental are motives to consumers' intention of repurchasing organic food.

Given this background, the aim of the present study is to identify the socio-environmental attributes related to the BOP label - that are perceived by organic food consumers. This study contributes to the literature in several ways, although many studies focused on the consumers' willingness to pay for organic food that are related towards health, environment and animal welfare, there is a lack of bibliography focused on the effects on consumers behavior and the influence of their actions based on certification and the presence of the label (Botonaki et al., 2006; Schleenbecker & Hamm, 2013; Spers et al., 2013; Grunert et al., 2014; Thøgersen et al., 2019; Molinillo et al., 2020; Feil et al., 2020). Yormirzoev et al. (2020) and Britwum et al. (2021) explain that evidence regarding strong trust in organic requirements have a positive correlation with acceptance, so exploring how they perceive socio environmental attributes through labels is fundamental to bring more value information and increase organic food consumption.

This paper is organized as follows. Beyond this introduction, section 2 describes the market for organic products, the label BOP, and consumer perception of organic certifications. Section 3 deals with the methods used in the research, while Section 4 discusses the results. Finally, Section 5 presents the final remarks, followed by the references used in the research.

2. Literature review

2.1. Market and organic certification

Despite the differences of each nation, commonly, the consolidation of the organic market occurred in four stages: (i) formation of "ecological awareness" in centuries 18-20; (ii) formation of the concept of organic farming, interested farmers, growing demand and formation of infrastructure between 1920 -1946; (iii) three: first food certification, formation of major advocate for organic food, International Federation of Organic Agriculture Movements (IFOAM), in 1972, and the Research Institute of Organic Agriculture (FiBL) in 1973,

all this events happened between 1946 and 1990 and; (iv) the consolidation of world market of organic food (Bazaluk et al., 2020; Lima et al., 2021)

Moreover, one of the main differences of the organic market between developed and developing countries are the social issues that developing countries face mostly due to the lack of subsidization policies. Also at least 150 emerging economies produce organic food primarily for exportation (Lima et al., 2021). Adding, Thøgersen et al. (2019) notes that despite North America and Europe represent 90 percent of the global market, the significant growth of the sector happens in emerging economies, especially in China.

In Brazil, the beginning of organic farming it was in the 1990s through groups as farmers associations, nonprofits organizations, consumer cooperatives and agricultural technical assistance, which created standards similar to those in high-income countries and to the IFOAM norms (Medaets & Fonseca, 2005; Scalco et al., 2017).

Due to the absence of a recognized certifying body, organic farmers found it difficult to reach international markets (Medaets & Fonseca, 2005). So, those groups pressured government officials to establish production rules and to create a label to identify products by consumers (Muñoz et al., 2016).

In 2003, Organic Law No. 10,831 was approved, regulating the entire production and sale of organic products in Brazil (Brasil, 2003). The Brazilian Ministry of Agriculture, Livestock and Supply (MAPA) is the body responsible for the accreditation and certification of organic products (Brasil, 2019a). The Brazilian Ministry of Development, Industry and Foreign Trade (MDIC), which is now defunct, as well as the Brazilian System of Conformity Assessment are responsible for standardization and conformity assessment in the industrial sector (Medaets & Fonseca, 2005).

Muñoz et al. (2016) point out that a production unit, after being certified and accredited, shows that the products generated on site are able to receive Brazilian Organic Quality Label. With the label, it is attested the fulfillment of the requirements regarding quality, traceability, sustainability, and ensured quality of life of production workers.

The bodies that formalize the norms and procedures that make up the compliance standard and make up the Brazilian Certification System (SBC) are made up of public or private Accredited Certification Bodies (OOC). According to Muñoz et al. (2016), there are three certification mechanisms in place for the Brazilian producer to be recognized as organic (Figure 1).

Audit certification is carried out by third-party companies, private or public, responsible for the safety and quality of a product based on a certain set of standards and compliance methods (Hatanaka et al., 2005; Lima et al. 2021). The second modality is that of participatory systems, in which the certification of producers is based on the participation of the actors involved and on the relationship of trust (Muñoz et al., 2016).

The third modality, which is the certification by social control, does not receive the organic label (Lima et al., 2021). It was created to serve small farmers who sell their (organic) products through direct sales. It is necessary for the property to be registered in the Brazilian Ministry of Agriculture, Livestock and Supply, through the creation of a Social Control Organization (OCS), which can be formed by a group, association, cooperative or consortium of family farmers, with or without legal personality (Muñoz et al., 2016). When the producers comply with the established standards, they receive a declaration of registration for the commercialization of organic products.

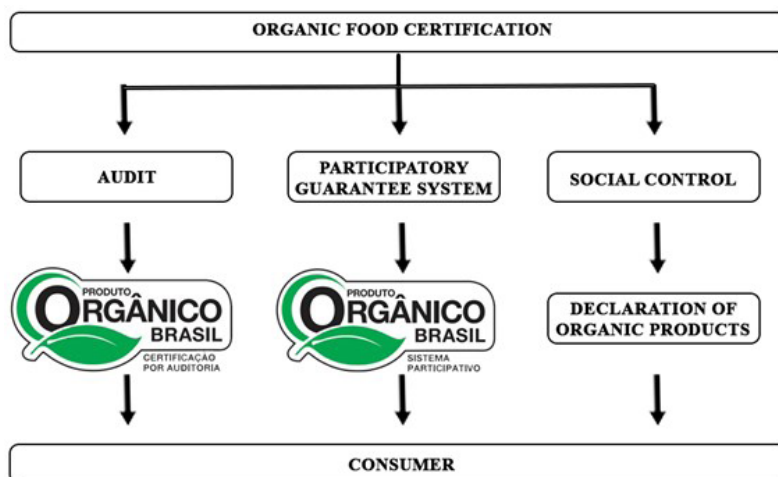


Figure 1. Types of organic certification in Brazil.

Source: Based on information from the Brazilian Ministry of Agriculture, Livestock and Supply (Brasil, 2019a).

2.2. Consumer perception of organic products

Perception of food products differs according to the type of product being purchased. The products (here called goods) can be classified into: (1) **Demand goods** are those that have all the relevant attributes before the consumption of the product. (2) **Experience goods** provide some data about their attributes only after consumption; (3) **Belief goods** are those whose attributes are not identified at first sight by the consumer, and, in some cases, some information cannot be obtained even after consuming the product. Organic products are part of the market of belief goods (Caldas et al., 2012; Caldas & Anjos, 2013).

Another approach suggests that the purchase decision process of a customer comes from the perception of extrinsic (price, appearance, color, size, shape) and intrinsic (environmental damage caused during production, presence or absence of additives, chemical residues) characteristics, as well as nutritional value and reliability of foods (Vecchio & Annunziata, 2011; Tavares et al., 2021). Regarding consumers perception of organic foods, a several studies suggested that the extrinsic attribute, price, limit their purchase (Lea & Worsley, 2005; Diaz et al., 2011; Kesse-Guyot et al., 2013; Aguiar et al., 2016; Bryła, 2016; Organics & Market Analysis, 2017; Martins et al., 2020; Tavares et al., 2021)

Adding, Spers (2011) emphasizes the difficulty of consumers in evaluating intrinsic attributes leads to the need for mechanisms that can prove the absence or presence of it. In this sense, the role of organic food certifications is evident. Yiridoe et al. (2005) highlight those aspects related to external factors (certification, packaging, and labeling) come into contact with the consumer's prior knowledge about organic food and can influence their purchase decision.

Sloan (2003) corroborates by stating that packaging affects the perception of quality of the consumer, modifying their purchase intention. In the case of organic products, the label represents a guarantee to the consumer that the product has been certified and meets specific production standards. Labels are the source of information when it comes to quality and safety of the product, acting as a certificate of guarantee (Sonderskov & Daugbjerg, 2011).

Furthermore, the certification and labels stamped plays a crucial role in providing information to interested parties, allowing them to differentiate agri-food products by the attributes they have, such as animal welfare, environmental sustainability, and the well-being of production workers (Hatanaka et al., 2005; Sacchi et al., 2015; Lima et al., 2021).

Although several studies state the preference for organic foods, Janssen & Hamm (2012, 2014) observed that European consumers are more willing to pay a high price for products whose labels they are familiar with. Vittersø & Tangeland (2015) observed in Norway that although organic food sales increased between the years 2000 and 2013, consumers' perception and trust regarding labels became more negative.

In Brazil, a survey by Organics (Conselho Brasileiro da Produção Orgânica e Sustentável, 2019a) addressed the perception of Brazilian consumers about the organic label in Brazil. When respondents were asked if they remembered having seen the image of the label on the last organic products they bought, 55% said they did not remember the image of the label, while 45% said they did.

In another question that asked how the consumer learned that a particular product was organic, 71% indicated the packaging as the main factor. The second most frequent response was that the consumer found the product to be organic by appearance (size, color, and scent). The label occupied only the ninth place, pointed out by 3% of consumers in the sample. The fact that the label is not the main factor in the identification of the product by the consumer indicates the underuse of the label as a means of information and communication (Conselho Brasileiro da Produção Orgânica e Sustentável, 2019b).

However, the label aroused great confidence among the consumers who participated in the survey. Compared to other ways of identifying whether a product is or is not organic, the label is the most reliable way. Out of the total consumers interviewed, 50% considered this label very trustworthy, 37% somewhat trustworthy, while only 9% did not trust the BOP label. In addition, they said how important this label was for the decision to purchase that product, being: very important for 71% of respondents, somewhat important for 24%, and with little or no importance for 5% of respondents.

3. Methodological procedures

Exploratory research was carried out (Cervo et al., 2007). The method was a survey-type questionnaire, with a sample of 106 respondents in Brazil. For Malhotra & Grover (1998), the survey is a very versatile research instrument that is based on the questioning of participants, evaluating their beliefs, perceptions, and behaviors in different situations.

For the elaboration of the questionnaire, the attributes that the organic label carries and seeks to transmit to its consumers were identified, based on secondary data, arising from: 1) Law No. 10,831, of December 23,

2003, regulated by Decree No. 6,323, of December 27, 2007, which provides for Organic Agriculture; and 2) The Guidelines of the Certifiers of Organic Products in Brazil.

From the aforementioned law and decree, 26 statements were generated about the identified attributes. They were sent to specialists in the development of scales and, subsequently, sent to ten specialists in the areas of marketing and the environment for validation, following the recommendations of DeVellis (2003). In order to measure consumer perception, a five-point Likert scale was adopted, in which 1 (one) meant total disagreement, and 5 (five) meant total agreement. The five-point scale was chosen due to the existence of a neutral point (due to the fact that the odd scales have a more adequate level of reliability and adjust to respondents with different levels of ability) (Dalmoro & Vieira, 2013).

To identify the level of efficiency of the questionnaire and possible errors, a pre-test was carried out with ten consumers from different social backgrounds in relation to gender, age, and income levels.

For this exploratory study (Forza, 2002), a non-probabilistic sampling was chosen. In non-probabilistic sampling, the selection of each sampling unit depends on the intuition and knowledge of the researcher (Cooper & Schindler, 2011). Data collection was performed by an e-survey platform, disseminated through social networks - Facebook and LinkedIn. To facilitate access to consumers, the snowball sampling was used, which is a useful networking technique for reaching hard-to-reach respondents, or when there is no precision on the quantity of respondents (Tharenou et al., 2007).

The questionnaire had a decisive question for the person to participate or not in the research. This filter questioned whether the respondent recognized the organic label, presenting the logo of the BOP label. The non-recognition of the label meant that the respondent did not have the desired profile, and the questionnaire showed a message of thanks for participating so far in the survey. The questionnaire for data collection was divided into two parts. The first consisted of the characterization of the respondents' socio demographic profile. The second part explored the 26 assertions with the identified attributes of the label, described in Table 1.

A total of 286 respondents were reached, of which 146 (48.95%) were discarded for not recognizing the logo that referred to the label. Next, it performed a cleanup of the database, identifying, and excluding missing values (blank values) and outliers, so as not to compromise the statistical analysis.

The final sample consisted of 106 participants, following the recommendations of Hair et al. (2009), which advised at least 100 cases to perform a multivariate analysis. Then, the multivariate data analysis was carried out using the Statistical Package for the Social Sciences (SPSS) software, version 23.0, and Microsoft Excel 2016.

Exploratory Factor Analysis (EFA) seeks to discover latent dimensions (called factors) in a data set (Fávero & Belfiore, 2017). Initially, the internal consistency of the data was analyzed through the Cronbach's Alpha indicator, which obtained a value of 0.91. The authors Hair et al. (2009) suggest values greater than 0.70 for performing this technique.

To assess the validity of the EFA, adequacy tests were used. For the sample, a Kaiser-Meyer-Olkin (KMO) measure of 0.765 was obtained, reaching a level considered satisfactory for the factor analysis (Hair et al., 2009). Likewise, Bartlett's test of sphericity indicates adequate values, with 66 degrees of freedom and a significance level of 1% ($p < 0.01$). Next, the anti-image matrix and the commonalities that presented values greater than 0.5 were analyzed, which indicates that the EFA would be viable to be performed.

As for the extraction method, the analysis of the principal components was selected, which considers the total variance of the data (Malhotra & Grover, 1998). To define the number of factors, the eigenvalue criterion was chosen, which considers a factor, results above 1 (one) (Hair et al., 2009).

Afterwards, adjustments were made to the model and, finally, the analysis using the Varimax orthogonal rotation method obtained the best fit. This rotation method seeks to reduce the probability of a variable having high factor loadings for different factors, in order to facilitate its identification (Corrar et al., 2012). Still, it is important to note that the variable S3 (*'Prohibition of the use of insecticides, fungicides, and bactericides'*) was removed, because the result of its factor loading did not fit the model.

4. Results

Of the total respondents with valid questionnaires, 68 (64%) were women and 40 (36%) were men. The predominant profile of respondents is consumers between 31 and 40 years old, married, with a postgraduate degree, and with income ranging from 2 to 10 Brazilian minimum wages. The results corroborate with studies that indicate that organic food consumers tend to be woman, highly educated, aware of the beneficials that organic food can improve to the environment, their healthy and their willingness to pay for it (Hoeftkens et al., 2009; Pozzo, 2012; Annunziata & Vecchio, 2016; Kapuge 2016; Martins et al., 2020).

Table 1. Theoretical conceptual model of the research.

Construct	Variables	Acronym	Reference
Organic specifics	Rural properties that produce goods with an organic label preserve the structure and fertility of the soil.	S1	Art 3.º §1.º, XIV
	The fertilizer used in the production of goods with an organic label is composed of the manure of animals bred on the production site.	S2	Certifiers Guidelines
	The production of goods with an organic label does not allow the use of insecticides, fungicides, and bactericides.	S3	Art 3.º §1.º, IX
	Rural properties that produce goods with an organic label cannot use fertilizers and synthetic fertilizers in their production.	S4	Art 2.º §1.º, XVII
	Products with organic label cannot contain genetically modified organisms.	S5	Art 2.º §1.º, XVII
Environmental	Products with organic production label do not waste water during their production process.	A1	Art 3absence.º §1.º, XI
	Rural properties that produce goods with an organic label seek to not pollute the air in the production process.	A2	Art 3.º §1.º, XI
	Products with an organic label promote the recycling of materials resulting from their production (paper, plastic, glass, etc.).	A3	Art 3.º §1.º, XV
	Rural properties that produce organic goods seek to not use non-renewable resources (oil, coal, natural gas, plastic, etc.).	A4	Art 3.º §1.º, III
	Rural properties that produce goods with an organic label seek to promote the proper treatment of liquid waste related to production (sewage, industrial waste, etc.).	A5	Art 3.º §1.º, XV
	In the production of goods with an organic label, there is the correct disposal of waste generated on the property.	A6	Art 3.º §1.º, V
	Properties that produce goods with an organic label need to maintain permanent preservation areas (PPAs).	A7	Certifiers Guidelines
	By purchasing goods with an organic label, the consumer is contributing to the preservation of forest areas and native environments.	A8	Art 3.º §1.º, VI
	Companies that produce goods with organic labels need to comply with environmental laws in Brazil.	A9	Art 3.º §1.º, XI
	The health and well-being of the animals on the production site is a condition for the production of organic goods.	A10	Art 3.º §1.º, XII
Social	Products with an organic label encourage local and regional production.	S1	Art 3.º §1.º, I
	Workers on properties that produce organically labelled goods are respected regardless of color, race, or religion.	S2	Art 3.º §1.º, VII
	The production of goods with an organic label promotes human and social development for everyone involved in the work.	S3	Art 3.º §1.º, I
	Children and young people are allowed to participate in field tasks on rural properties that produce goods with the organic label.	S4	Art 2.º §1.º, XIV
	Products with an organic label strengthen the role of social groups such as cooperatives and associations.	S5	Art 38.º §1.º, II
	Products with an organic label strengthen the role of rural workers and their unions.	S6	Certifiers Guidelines
	The social interaction of workers is encouraged by rural properties that produce and distribute goods with the organic label.	S7	Art 3.º §1.º, IV
	Goods with an organic label indicate that workers have properly paid wages and overtime.	S8	Art 3.º §1.º, VII
	Goods with an organic label promote equal benefits to permanent and temporary workers.	S9	Art 3.º §1.º, VII
	Rural properties that produce goods with an organic label have an obligation to provide safe housing and basic sanitation conditions for their workers.	S10	Certifiers Guidelines
	Rural workers involved in the production of goods with an organic label are not exposed to contamination through the use of pesticides.	S11	Art 3.º §1.º, IX

Source: Prepared by the authors based from Law n. 10831 (Brasil, 2003); Ecocert (2018); IBD (2018).

Despite the results, this sample does not represent Brazilian reality towards education. The Instituto Brasileiro de Geografia e Estatística (2016) points out that 52% of the population with more than 25 years in Brazil, have completed only the primary education. The approach of Feil et al. (2020) denotes that although education level is usually associated with motivational behavior towards organic foods in developing economies such as Brazil, in their study, higher education is not related with consumers' perception towards organic food.

The profile with the lowest number of respondents was male consumers, over 61 years old, divorced, having completed High School and with an income of up to 2 minimum wages. The location of the sample was predominantly in the Southeast region (80%), followed by the South region (12%), Northeast (6%) and Midwest (2%) of the country. There were no respondents from the North region. According to Organics (2019) the southern region is the biggest market regarding organic food in Brazil.

Table 2 presents the data collected with regard to the respondents' perception of the variables of the survey. According to the sample, the variables that consumers have greater agreement with are: '*Compliance with*

Table 2. Descriptive statistics.

	Variables	Median	Mode	Standard deviation	Frequency (%)				
					1	2	3	4	5
S1	Rural properties that produce goods with an organic label preserve the structure and fertility of the soil.	4	5	0.91	1%	3%	18%	38%	40%
S2	The fertilizer used in the production of goods with an organic label is composed of the manure of animals bred on the production site.	3.5	3	1.13	4%	12%	38%	21%	24%
S3	The production of goods with an organic label does not allow the use of insecticides, fungicides, and bactericides.	5	5	1.12	3%	5%	15%	9%	67%
S4	Rural properties that produce goods with an organic label cannot use fertilizers and synthetic fertilizers in their production.	5	5	1.12	3%	7%	20%	11%	59%
S5	Products with organic labels cannot contain genetically modified organisms.	5	5	1.20	5%	8%	15%	10%	62%
A1	Products with organic production labels do not waste water during their production process.	4	5	0.97	1%	4%	22%	26%	46%
A2	Rural properties that produce goods with an organic label seek to not pollute the air in the production process.	5	5	1.38	8%	11%	18%	10%	54%
A3	Products with an organic label promote the recycling of materials resulting from their production (paper, plastic, glass, etc.).	4	5	1.08	3%	3%	22%	26%	45%
A4	Rural properties that produce organic goods seek to not use non-renewable resources (oil, coal, natural gas, plastic, etc.).	4	5	1.23	2%	10%	32%	14%	42%
A5	Rural properties that produce goods with an organic label seek to promote the proper treatment of liquid waste related to production (sewage, industrial waste, etc.).	5	5	1.11	0%	7%	21%	14%	58%
A6	In the production of goods with an organic label, there is the correct disposal of waste generated on the property.	4	5	1.02	0%	4%	24%	33%	38%
A7	Properties that produce goods with an organic label need to maintain permanent preservation areas (PPAs).	5	5	1.17	4%	2%	16%	13%	64%
A8	By purchasing goods with an organic label, the consumer is contributing to the preservation of forest areas and native environments.	4	5	1.15	3%	8%	25%	23%	41%
A9	Companies that produce goods with organic labels need to comply with environmental laws in Brazil.	5	5	0.86	0%	1%	5%	7%	87%
A10	The health and well-being of the animals on the production site is a condition for the production of organic goods.	5	5	1.17	3%	5%	20%	12%	59%
S1	Products with an organic label encourage local and regional production.	5	5	0.89	0%	4%	15%	20%	60%
S2	Workers on properties that produce organically labeled goods are respected regardless of color, race, or religion.	3	5	1.30	10%	11%	33%	15%	31%
S3	The production of goods with an organic label promotes human and social development for everyone involved in the work.	4	5	1.04	3%	5%	23%	29%	40%
S4	Children and young people are allowed to participate in field tasks on rural properties that produce goods with the organic label.	2	1	1.32	40%	25%	22%	7%	7%
S5	Products with an organic label strengthen the role of social groups such as cooperatives and associations.	5	5	0.78	0%	1%	16%	29%	54%
S6	Products with an organic label strengthen the role of rural workers and their unions.	5	5	0.92	1%	2%	20%	21%	56%
S7	The social interaction of workers is encouraged by rural properties that produce and distribute goods with the organic label.	3	3	1.12	4%	10%	43%	21%	22%
S8	Goods with an organic label indicate that workers have properly paid wages and overtime.	3	3	1.21	14%	11%	53%	10%	12%
S9	Goods with an organic label promote equal benefits to permanent and temporary workers.	3	3	1.13	11%	8%	55%	11%	15%
S10	Rural properties that produce goods with an organic label have an obligation to provide safe housing and basic sanitation conditions for their workers.	4	5	1.25	8%	5%	26%	15%	45%
S11	Rural workers involved in the production of goods with an organic label are not exposed to contamination through the use of pesticides.	5	5	0.82	0%	1%	12%	14%	73%

Source: Prepared by the authors.

environmental legislation (A9), *Workers not exposed to pesticides* (S11), *Incentive to local production* (S1), *Strengthening of associations and cooperatives* (S5), *Strengthening of unions* (S6) and *Absence of chemicals* (S3). The component absence of chemicals was also identified in previous studies (Gottschalk & Leistner, 2013; Denver & Christensen, 2015; Martins et al., 2020).

On the other hand, the variable considered with lesser perception was *Participation of children in the countryside* (S4), obtaining a mode of 1. This factor can be explained by the linking of the practice with the crime of child labor, and not as an incentive to permanence and training of young people in the countryside. In addition, the variables *Salaries duly paid* (S8), *Equal benefits among workers* (S9), *Respect for workers* (S2), and *Use of animal manure* (S2) were highly dispersed in the sample, inferring that recognition by the consumers, regarding these practices, is not unanimous.

The EFA results identified eight factors that explain 69.60% of the total variance, a good fit according to Hair et al. (2009). The authors also point out that values above 0.40 for a factor loading are considered significant, and values above 0.70 are considered a great fit.

Thus, the first factor explains 29.2% of the model, being the most important factor. After obtaining the factors, their labeling was performed, which, for Field (2009), is a stage that arises from the scope review with subjective characteristics. The factors, variables, and factor loadings are shown in Table 3.

Therefore, consumer perceptions across the attributes of the BOP label were arranged in the following order of importance of the factors:

1. Factor 1 – *Labor Laws and Social Incentive*. It consists of variables associated with compliance with the laws in force in Brazil on production and incentives for workers to socialize. The factor is composed of the variables: *Social interaction of workers* (S7), *Wages duly paid* (S8), and *Equal benefits* (S9), accounting for 29.2% of the total variance;
2. Factor 2 – *Socio and Environmental Practices*. It consists of variables that indicate the concern with the appropriate place for waste disposal, soil fertility, and native environment preservation, as well as aspects related to human, social, and regional development. This factor is composed of the variables: *Soil Conservation* (S1), *Conservation of Native Environments* (A8), *Human Development* (S3), *Respect for the worker* (S2), *Correct waste disposal* (A6), and *Local and regional production* (S1). It accounts for approximately 10.1% of the total variance;
3. Factor 3 – *Environmental Management*. It is composed of assertions referring to waste and materials from organic production. This factor is composed of the variables: *Material recycling* (A3), *Waste treatment* (A5), *Water waste* (A1), and *Air pollution* (A2). This factor accounts for 7.1% of the total variance;
4. Factor 4 – *Social and Environmental Protection*. It comprises the variables that concern the social involvement of workers in associations, cooperatives, and unions, as well as the compliance of producers with environmental laws. This factor is composed of the variables: *Role of work in unions* (S6), *Protection of workers against pesticides* (S11), *Strengthening of associations and cooperatives* (S5), and *Agreement with environmental laws* (A9), accounting for 5.5% of the variance total;
5. Factor 5 – *Environmental Preservation*. This factor consists of assertions aimed at maintaining permanent preservation areas and the use of animal manure on properties. This factor is composed of the variables: *Maintenance of preservation areas* (A7) and *Use of animal manure* (S2). It accounts for 5.1% of the total variance;
6. Factor 6 – *Natural Products*. This factor consists of the variables that address the absence of genetically modified chemicals and products. This factor is composed of the variables: *Absence of synthetics* (S4) and *Absence of GMOs* (S5), accounting for 4.5% of the total variance;
7. Factor 7 – *Animal and Social Welfare*. It is part of the assertions that address the welfare of animals, workers, and children/young people in production sites. This factor is composed of the variables: *Animal welfare* (A10), *Housing for workers* (S10), and *Participation of children and young people* (S4). This factor accounts for 4.2% of the total variance;
8. Factor 8 – *Non-renewable Resources*. It consists of the statement that recommends not using non-renewable resources. This factor is composed of the variable *Non-use of non-renewable resources* (A4) and accounts for 4% of the total variance.

It is noted that most of the variables that were consistent among consumers in the descriptive analysis were significant in EFA. Despite having been removed from the EFA, the variable *Use of insecticides, fungicides and bactericides* (S3) was considered in the descriptive analysis as a variable with high perception in the label and

Table 3. AFE Results.

Rotated Component Array	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
	Labor Laws and Social Incentive	Social and Environmental Practices	Environmental management	Social and Environmental Protection	Environmental Preservation	Natural Products	Animal and Social Welfare	Non-renewable Resources
Goods with organic labels promote equal benefits to permanent and temporary workers.	.882							
Goods with organic labels indicate that workers had properly paid wages and overtime.	.846							
The social interaction of workers is encouraged by rural producers who produce and distribute goods with the organic label.	.731							
Rural properties that produce goods with an organic label preserve the structure and fertility of the soil.		.784						
By purchasing goods with an organic label, the consumer is contributing to the preservation of forest areas and native environments.		.735						
The production of goods with the organic label promotes human and social development for everyone involved in the work.		.580						
Workers on properties that produce organically labeled goods are respected regardless of color, race, or religion.		.546						
In the production of goods with an organic label, there is the correct disposal of waste generated on the property.		.538						
Products with an organic label encourage local and regional production.		.428						
Products with an organic label promote the recycling of materials resulting from their production (paper, plastic, glass, etc.)			.747					
Rural properties that produce goods with an organic label seek to promote the proper treatment of liquid waste related to production (sewage, industrial waste, etc.).			.700					
Products with the organic label do not waste water during their production process.			.641					
Rural properties that produce goods with an organic label seek to not pollute the air during the production process.			.489					
Products with an organic label strengthen the role of rural workers and their unions.				.844				
Rural workers involved in the production of goods with an organic label are not exposed to contamination through the use of pesticides.				.667				
Products with an organic label strengthen the role of social groups such as cooperatives and associations.				.600				
Companies that produce goods with organic labels need to comply with environmental laws in Brazil.				.547				
Properties that produce goods with an organic label need to maintain permanent preservation areas (PPAs).					.810			
The fertilizer used in the production of goods with an organic label is composed of the manure of animals bred on the production site.					.663			
Products with the organic label cannot contain genetically modified organisms.						.812		
Rural properties that produce goods with an organic label cannot use fertilizers and synthetic fertilizers in their production.						.590		
The health and well-being of the animals on the property is a condition for the production of organic goods.							.686	
Rural properties that produce goods with an organic label have an obligation to provide safe housing and basic sanitation conditions for their workers.							.628	
Children and young people are allowed to participate in field tasks on rural properties that produce goods with the organic label.							.517	
Rural properties that produce organic goods seek to not use non-renewable resources (oil, coal, natural gas, plastic, etc.).								.828

Source: Prepared by the authors.

low dispersion in the sample. In other words, despite the sample of consumers recognizing its attributes, they were not related to any other variable, so they do not belong to any factor.

In this context, the results of this research demonstrate that the attributes present in the BOP label are partially recognized by the consumers in the sample. These findings corroborate other studies that point out that the organic label does not have a clear profile for consumers and that the lack of information continues to be a barrier for the purchase of organic products (Hughner et al., 2007; Roitner-schobesberger et al., 2008; Thøgersen et al., 2017).

The results of Factors 1 ('Labor Laws and Social Incentive') and 4 ('Social and Environmental Protection') are in line with studies in other countries that identified which consumer segments are concerned with the environmental and social context of organic food production. Seyfang (2006) showed that 65.2% of respondents to a UK survey cited a desire to support and strengthen the economy, producers, and the local community, including encouraging the independence of producers from global supermarkets. The mentioned study corroborates with the studies of (Bellante, 2017; Binder & Vogl, 2018; López Cifuentes et al., 2018) that denotes consumers' willingness to support small farmers and provide local development.

In their study, Martins et al. (2020) denote that most purchases of organic food occur in supermarkets, which state their importance over spreading organic food to the consumers but also, the need to improve more distribution channels. In addition, Sacchi et al. (2015) and Lima et al. (2021) explain that despite the crucial role of farmers, their sociocultural context is usually not considered and small-scale farmers tend to be neglected.

Factor 7 ('Animal and social welfare') demonstrated that consumers in the sample considered welfare a characteristic of the label. Giesler & Veresiu (2014) identified that this type of consumer, the ethical consumer, is growing in the 21st century. They are also known for carrying out 'moral boycotts' of products they considered unethical.

In their study over consumers' valuation of sustainability labels on meat van Loo et al. (2014) emphasizes that organic certifications are less appealing to consumers than animal welfare labels. Also, they assume the Belgium organic label is more appealing than the European label, which was recently changed at the time, which denotes the deficiency in the comprehension of this new label. This study might be a demonstration that ethics tends to increase even more.

Factors 3 ('Environmental Management'), 5 ('Environmental Preservation'), and 8 ('Non-renewable Resources') confirmed that the mandatory environmental regulations for the execution of the organic production system are considered by the sample of consumers. Several studies (Lockie et al., 2002; Schleenbecker & Hamm, 2013; Jolink & Niesten, 2015; Martins et al., 2020) point out that concerns about the environment are factors that influence the choice of an organic product when compared to a conventional one.

In the Brazilian context, only the work by Silva et al. (2016) was identified. The authors established that the placement of the label on the packaging is positively related to the evaluation, purchase intention, and willingness to pay a higher value on organic products for consumers. Thus, the importance of this work is highlighted, seeing that it contributes to the knowledge of the perception of the Brazilian consumer regarding BOP labels.

Consumer knowledge about the organic label is essential, not only for the recognition of an organic product, but also for the confidence in its credibility attributes (Schleenbecker & Hamm, 2013; Peschel et al., 2016; Rondoni & Grasso, 2021). Furthermore, previous studies emphasize that consumers that are more concerned with sustainability tend to spend more time looking for information regarding food production while choosing which food they will consume. Another approach suggested that when someone adds some new product to their routine the need to endorse the perception becomes unnecessary once they establish their favorite shopping and taste.

By considering the above information, it is required that the communication on the labels be effective to consumers, especially because the proliferation of information in labels might stimulate skepticism toward organic food and consumers perception about certification and organic labels tends to be subjective which may be harmful to organic market (Janssen & Hamm, 2012; Annunziata et al., 2019; Molinillo et al., 2020)

5. Final remarks

The present study aimed to investigate the perception of consumers in relation to the attributes present in the BOP label. Although there are many studies focusing on organic food, this work is pioneering research regarding the understanding of the attributes of the organic label in Brazil by consumers.

The belief that a mandatory label could help consumers to recognize organic products fostered the creation of labels in several consumer markets, including Brazil. However, it was noted that a large number of consumers (49%) do not recognize the mandatory organic label in force in their market, something that is corroborated by other studies as well (Karahan-Uysal et al., 2013; Janssen & Hamm, 2014; Thøgersen et al., 2017). In this regard, Annunziata et al. (2019) emphasizes that the lower consumption of organic food might be connected with the lower understanding of labels.

Furthermore, it needs to be considered that in Brazil, the lower consumption is also related to income, and a lack of public policies that will encourage farmers to produce organic food since standardization of this process is not cost free (Annunziata et al., 2019). Also, despite the growth of the sector, there is a lack of public policies that do not provide the availability of organic foods in alternative distribution channels (Martins et al., 2020).

The descriptive results point to the existence of a positive perception of the attributes of the BOP label, observed in 25 of the 26 variables. Nevertheless, as noted, many of the consumers do not recognize child labor as a permitted activity in rural production, not even as an element that develops the skills of children and adolescents. Given the levels of recognition of the label, it is understood that consumer perceptions about logos are largely subjective in nature, which leads to the conclusion that the image of the BOP label has the potential to be improved.

The EFA allowed, in addition, to consider the attributes perceived by consumers, to group them into factors due to the affinities between the attributes, as well as those that are not considered by the consumer. Eight factors were generated: 1. Labor laws and tax incentives, 2. Social and environmental practices, 3. Environmental management, 4. Social and Environmental Protection, 5. Environmental Preservation, 6. Natural Products, 7. Animal and Social Welfare, and 8. Non-renewable resources. The variable V24 (absence of chemicals), despite not having fit any factor, obtained agreement by the sample, in the descriptive analysis.

As theoretical implications, this paper agrees with previous studies, that the principal consumers of organic food tend to be females with sustainability awareness and health seekers and with the information that that high level education provide more information to consumers by increasing the consumption of organic foods (Annunziata & Vecchio, 2016; Kapuge 2016; Martins et al., 2020).

However, the consumers do not recognize the benefits of organic foods in a homogenous way. The complexity of variables that will shape specific behaviors and perceptions of consumers was approached by Feil et al. (2020) in their study about profiles of sustainable food consumption in southern Brazil and include income, education, age and gender. In face of this heterogeneity, the labels need to provide objective information that reaches all kinds of public.

Furthermore, although this study approached the socio environmental subject, it is clear that several organic food consumers are oriented for personal benefits which means their health, and giving less importance to sustainability (Feil et al., 2020). Thus, this study can provide some insights for marketing managers and public policy managers, as the label is mandatory. These agents may consider implementing consumer information and education campaigns to gain a better understanding of the characteristics of the BOP label on organic foods among consumers, allowing for a choice based on objective knowledge (Molinillo et al., 2020).

The results of this research have practical implications for cooperatives and associations of producers, as well for organizations that aim to encourage the consumption of organic foods, in order to develop effective instruments to improve communication with the consumer. Better communication can provide the ability for the consumer to identify more clearly the attributes that are not noticed. Consumer's knowledge about the attributes of the label can result in a greater appreciation of organic products, making the consumer more willing to purchase them.

Adding, as Brazilian's consumers are giving more value to health and green lifestyle, it is important the public policies be reoriented towards this lifestyle in order to strengthen the health impacts through organic food consumption, increasing access and consequently making organic food more affordable. Also, the agenda for public debate needs to encourage the transition of traditional to organic foods production model (Feil et al., 2020).

6. Limitation and future research directions

This paper presents some limitations that need to be considered in future studies. It is noticeable that the results are not subject to generalization, as the sample is non-probabilistic. Furthermore, due to the online application of the survey, the sample is not representative of the population. Internet access is not present in the homes of all consumers, leaving consumers with lower purchasing power out of the sample. However, it is known, as already pointed out in this article, that the representativeness in the acquisition of organic products with labels by low-income consumers is low (Scalco et al., 2017; Dorce et al., 2021).

Another limitation of this study, it was not measured the participants actual purchase of organic food, the places they used to realize their shopping of organic foods, how important are those places to increase organic food sales and consumption. Also, it was not considered the facility when it comes to access organic food, how easy is for them, at the place they are in to get available organic food.

For future research it is suggested that more robust measurements will be used in some specific context. Also, based on the factors generated, it is possible to identify, in new studies, which elements are motivating for the purchase of organic products. Furthermore, an application of the survey in other regions, which were not covered by this research, is also suggested, in addition to other forms of data collection (Dorce et al., 2021).

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