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The meaning of the organic certification label for the consumer: a cluster analysis

O significado dos selos de certificação orgânica para o consumidor: uma análise de cluster

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Abstract

Academia has been analyzing organic certification labels for at least 10 years, with emphasis on their importance and level of knowledge. However, little has been written about the associations and meanings they have for consumers. This article aims to study this meaning through a quantitative research, *survey* type, with 388 respondents. The data were analyzed through a *cluster analysis* which revealed the existence of three customer groups, according to the meaning assigned to the labels. The three segments were called "Greeners", "GMO-Freers" and "Don't Carers". The first group, the "Greeners", is the largest (46.6%), and brings greater association with the meanings "sustainable agriculture" and "environmentally friendly" and is associated with older people. The second, the "GMO-Freers", presents closer association with the meaning "It does not make use of genetically modified/transgenic seeds" and is related to people who have already done post-graduation courses (24.7% of respondents). Finally, the third, "Don't Carers", (28.7%), shows lower association to the label's meanings in general, and is also more concentrated in an elite group of consumers. The research comes to the conclusion that the label's meanings may change according to different consumer profiles. On theoretical grounds the present study fills a gap in the literature in a way that it deepens a first analysis of the label's meaning, by reaching a second level of consumer attributions, and revealing the need for understanding this meaning among different groups. Based on the consumer behavior model presented by Kotler and Keller (2012), it is possible to show how consumers' psychological aspects can be influenced by social characteristics in the way the groups perceive organic labels. The practical contributions to manufacturers and certifying agencies of organic products are also discussed.

Keywords: Consumer behavior; Organic certification; Organic labels; Conscious consumption; Cluster analysis

Resumo

A academia tem analisado os selos de certificação orgânica nos últimos 10 anos, com ênfase em sua importância e seu nível de conhecimento. No entanto, pouco tem sido escrito sobre as associações e os significados que eles têm para os consumidores. Este artigo tem como objetivo estudar esse significado por meio de uma pesquisa quantitativa, tipo *survey*, com 388 pesquisados. Os dados foram analisados por meio de uma *cluster analysis* que revelou a existência de três grupos de consumidor, de acordo com o significado atribuído aos selos. Os três segmentos foram chamados de "Sustentável/ambiental", "Sem transgênicos" e "Baixo significado". O primeiro grupo, "Sustentável/ambiental", o de maior tamanho na pesquisa (46,6%), traz maior associação com os significados "agricultura sustentável" e "respeita o meio ambiente" e está associado a pessoas mais velhas. O segundo, "Sem transgênicos", apresenta maior associação com o significado "Não faz uso de sementes geneticamente modificadas/transgênicas" e está relacionado a pessoas de renda mais alta, que já fizeram cursos de pós-graduação *lato sensu* (24,7% dos pesquisados). Por fim, o terceiro, "Baixo significado" (28,7%), mostra menor associação com os significados dos selos, de forma geral, e também está mais concentrado em um

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grupo elitizado de consumidores. A conclusão da pesquisa é que o significado dos selos pode ser diferente para consumidores de perfis diversos. Em termos teóricos, o presente estudo preenche um *gap* na literatura no sentido de que aprofunda uma primeira análise do significado, atinge um segundo nível de atribuição do consumidor e revela a necessidade do entendimento do significado para diferentes grupos. Com base se no modelo de comportamento do consumidor apresentado por Kotler e Keller (2012), é possível mostrar como aspectos psicológicos dos consumidores podem ser influenciados por características sociais no modo como o grupo percebe os selos orgânicos. As contribuições práticas para os produtores e os certificadores de produtos orgânicos também são discutidas.

Palavras-chave: Comportamento do consumidor; Certificação orgânica; Selos orgânicos; Consumo consciente; Cluster analysis

Introduction

Consumerism is a cultural pattern that causes people to find meaning, satisfaction and acknowledgment mainly through the consumption of goods and services. But its expansion also causes a transformation, by the human activity, of the Earth natural functions in such a way that the ability of the ecosystems to sustain future generations can no longer be taken for granted (Worldwatch Institute, 2015). In this context, rapid and profound changes need to be made in order to avoid potential and negative social and environmental consequences. For Instituto Akatu (2013), the logic of the company's relationship with the market depends on the way market players – and most particularly the consumers – will value the companies. Despite all the debate concerning more sustainable products, several studies show that many people are unaware on how their buying attitude impacts the environment and society, but who would be willing to contribute to build a more sustainable society. When it comes to changing the buying habits, these consumers still appear to not realize the influence they have with their choice power (Fontenelle, 2006; Instituto Akatu, 2013).

In view of this debate, how to make the choice for sustainable products become easier? If the consumer has clear information at the point of sale, could they make more conscious choices? What is the role of the products sustainable certifications as an additional source of information which influences the buying decision? Hamza and Dalmarco (2012) found that even among respondents with attitudes more targeted on sustainability, i.e. more conscious consumers (save water and electric power, separate garbage for recycling, use returnable bags in supermarkets etc.), the level of knowledge and the certification labels use, in general, are quite low.

To contribute to the theoretical expansion of this theme, this article intends to make a reflection on sustainable certifications and their relevance for the conscious consumption and for the businesses. For this, the specific theme of organic products was chosen in order to assess the certification issue in a well-defined market and, in some ways, better known by the general public, as pointed out by the research of Hamza and Dalmarco (2011), which showed that 70% of respondents claimed to have already heard about organic products labels, being these, along with the label of the Abrinq Foundation,[1] the certifications that obtained the highest percentage of knowledge from among all the surveyed certifications.

Thus, the research question-problem was established as "What is the meaning of the organic certification label to the consumer?" with the following specific objectives: (i) define the labels main meanings for consumers; and (ii) segment the consumers according to the meaning of the labels assigned by them.

The three main organic certification labels of Brazil will be used, being two of them (Ecocert and IBD) managed by companies with the same name, which were identified by Voltolini (2010). The "Orgânico Brasil" label, in turn, is an official instrument for identification of organic products, managed by the Brazilian Government (Portal Brasil, 2012).

Finally, in this article, "consumer" will be considered as the agent that besides the act of consuming products and services will make judgments and simple and/or complex choices about these products and services. It will be considered consumer every person who does shopping for the house in person at least once a month, on channels like supermarkets, hypermarkets, grocery stores, street markets, organic products markets and stores that only sell on the wholesale.

Related theory and literature

Sustainable certifications

Environmental certifications were created as a market self-regulation mechanism, and their expected impact in organizations is to encourage systematic and constant occupation of management with process management systems which are sustainable, of environmental audit and related with the life cycles of their products (Magrini, 1999 as cited in Bufoni, Muniz, & Ferreira, 2009).

The ISO Norm 14024 ("environmental labels and declarations") was launched in 1999 as a complement to the ISO Norm 14000, aiming at standardizing the principles, practices and the key features related to the environmental labels, according to the Global Ecolabelling Network (GEN, 2004). This Norm distinguishes the green labels in three different

[1] Nonprofit organization whose mission is to promote the defense of rights and the citizenship exercising of children and teenagers.

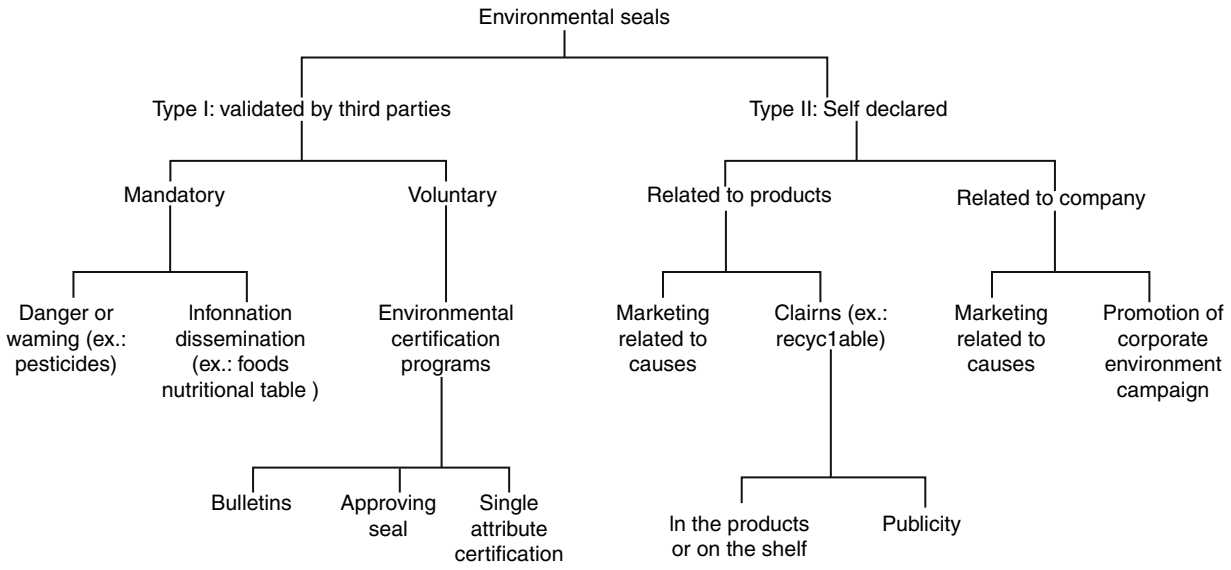

Fig. 1. Classification ways of environmental labels. *Source*: EPA (1998); translated and adapted by the authors.

categories, namely: (a) type I: sustainable labels obtained from an assessment based on multiple criteria, carried out by a third party; (b) Type II: self-declared environmental appeal; (c) Type III: labels in which it is required studies of life cycle assessment (LCA), still being drawn up by ISO (Compromisso Empresarial para Reciclagem – CEMPRE, n.d.; GEN, 2004).

It is important to highlight that the sustainable aspects of a product only "exist" for the consumer if their presence is reported (Hartlieb & Jones, 2009). In practice, a product certification is essentially a tool to provide the consumer with simple, useful and reliable information on complex issues that are present along the production chain.

A number of authors, as Kroetz (2000 as cited in Bufoni et al., 2009) and Hartlieb and Jones (2009) state that the green labels are tools that help in the consumer raising awareness process, one of the great challenges of sustainability today. In this sense, Dharni and Gupta (2015) emphasize that works toward promoting a greater knowledge on the labels certification can help consumers to carry out better choices when buying.

Many companies see this context as an opportunity to differentiate themselves through the ecological appeal and being responsible for their products, point out Maimon (1994), and Daroit, Lima and Nascimento (1999 as cited in Polizelli, Petroni, & Kruglianskas, 2005). In the search for the advantages offered by the certification to consumers, however, these companies end up by developing their own communications on their products differentials – that is, they use the ecological appeal without the endorsement of a third institution (Type II certification, according to ISO classification).

According to Hartlieb and Jones (2009), the self-regulation fails in the accountability to the external public and these initiatives are often criticized. The GEN, non-governmental institution created with the aim to improve, promote and develop the use of green labels on products and services, advocates the certification of ISO type I, stating that a "green label" is awarded by an impartial third party to products that meet the environmental criteria established in the market (Global Ecolabelling Network – GEN, 2004). For easier viewing of the several certification possibilities, the US Environmental Protection Agency (US Environmental Protection Agency – EPA, 1998) developed the scheme presented in Fig. 1.

Organic certifications

In January 2011, a law was approved in Brazil, specific to the organic products market, in which it was established, among many other issues, a way to facilitate the recognition of organic products by the consumers: from then on, all the organic products sold in supermarkets and grocery stores should present the national label, called "Orgânico Brasil" in their labels. According to the Ministry, an organic product manufacturing process must comply with the manufacturing standards to prevent any contamination of the product with undesired substances, and its ingredients must be harmless to the consumers' health. In order to be considered organic, the product must be composed of at least 95% of organic ingredients, and those with lower proportion can only be called of "product with organic ingredients" and this portion must be at least of 70%. The products with less than 70% of organic ingredients cannot be sold as such and cannot have the Brazilian official label.

The organic labels certify that the products contain, among others, the following attributes: pesticide free, free of genetically modified/transgenic seeds, environmentally friendly, respects the workers safety, small-scale production, local production system, sustainable agriculture without use of chemical fertilizers (Associação Brasileira de Orgânicos [ABI], n.d.; Conner & Christy, 2004), foods that are good for the health (ABI, n.d.; Linder et al., 2010).

The Brazilian label can be obtained only through a Certification per Auditing or a Participatory Guarantee System (PSG). In the case of auditing, the Ministry of Agriculture (MAPA) has

currently eight accredited certifiers' agencies and it is important to point out that some certifying agencies have their own labels, which may also appear on the labels. The PSG in turn, are groups made up of producers, consumers, technicians and researchers who self-certify themselves. Both (certifying agencies and PSG) need to be registered and are inspected by the Ministry of Agriculture (Ministério da Agricultura Pecuária e Abastecimento, n.d.).

Francisco, Moura, Zanon, and Marinho (2009) in their research on consumer behavior when buying organic products conducted in a street market of organic products in São Paulo have pointed out that the certification is among the attributes considered most important when buying this type of product. According to the authors, certification is a marketing communication tool that reduces the gap between rural producers and the consumer, conveying credibility and enabling greater awareness on the processes involved in food production. However, they note that the increase in the number of labels can lead to confusion and distrust among consumers.

Consumer behavior and conscious consumption

The discussion on organic certification labels in the scope of this research falls within the theoretical framework of consumer behavior, which, according to Blackwell, Miniard, and Engel (2000), can be defined as "the physical and mental activities involved in buying, consuming and using products and services, including the decision making processes preceding and following such actions". The authors point out that the dominant perspective on consumer behavior research is the one of logical positivism, in which the objectives are: (i) understand and predict the consumer behavior and (ii) find out the cause and effect relations which govern the persuasion and/or the education, and the main contributions of these studies for the marketing practices issues are (i) facilitating the new products development, (ii) discovering and responding to the multiple sources of influence on the consumer choice, (iii) creating more effective communication campaigns, and (iv) developing brand loyalty.

In this sense, it was used in this research the consumer behavior model presented by Kotler and Keller (2012), which shows the various nuances to be studied in this regard. Among them are the stimuli to consumption (marketing stimuli, economic stimuli, technological stimuli etc.), whose interpretation may be influenced not only by the consumer cultural characteristics but also by his personal and social characteristics. It is also included in this list the consumers' psychological aspects, involving the motivation theories and the issues related to individual perception, learning and memory. These issues impact their entire buying decision process, since the problem recognition, the search for information and the alternatives evaluation, considering also the effective buying decisions (choice of product, brand, point of sale and payment terms etc.) up to the post-buying behavior.

It is noticed that it is possible to study the consumer behavior issue in relation to the organic certifications under several aspects of this model. As an example, it would be possible to assess how the consumer characteristics impact upon the perception (or not) of the labels on the products or how they are used in the buying decision process, particularly in relation to the information search, the assessment of alternatives and on the decision itself.

In Brazil, since the industrialized organic products must obligatorily to present at least the government label "Orgânico Brasil" on their labels, it becomes more difficult to analyze the certification issue as a decisive factor for the buying. For this reason, it was chosen in this article to study how the psychological factors and the personal, cultural and social characteristics impact upon the assimilation of the labels meaning for the consumers.

Several authors have been studying how these characteristics influence the buying behavior of people toward a more conscious consumption regarding environmental and social aspects. Some of them converge toward that demographic and socio economic variables only exert a tenuous influence on the consumer ecological behavior, suggesting that the variables related to personality would be more effective to determine the behavior (Lages & Neto, 2002; Schlegelmilch, Bohlen, & Diamantopoulos, 1996; Straughan & Roberts, 1999; Webster, 1975).

In a complementary vision, De-Magistris and Gracia (2014) postulate that consumers perceive superior value of products that possess an organic certification label. On the other hand, Bi, Gao, House, and Hausmann (2015) conducted a consumers' segmentation through cluster analysis, which revealed the existence of a group that could be willing to exchange sensorial benefits like taste for the organic certification. Also in this regard, Chen, Lobo, and Rajendran (2014) show the labels influence in the consumers attitudes and consumption intention in relation to the organic products.

Many researchers then started doing a mix between the socio demographic variables (social class, age, gender) with the variables related to lifestyle and personality. Wells, Ponting, and Peattie (2011) showed that characteristics such as age, educational level and gender impacted the degree of the consumers environmental responsibility; Hamza and Dalmarco (2011) found that knowledge of actions related to conscious consumption will decrease in the same extent as the social class and the educational level decrease; Zabkar and Hosta (2013) reported that consumers in general want first satisfy their personal needs through the more conscious consumption process, which may also include the need for status.

The concept of sustainable consumption or conscious consumption is complex and sometimes distinct among different authors. However, the United Nations Environmental Programme – UNEP (2011) points out that it is possible to notice that most of the definitions deal with common characteristics: (i) meet the needs of the human being; (ii) promote good quality of life; (iii) share resources between rich and poor; (iv) act keeping in mind the future generations; (v) pay attention to the consumption impact from "cradle-to-grave"; (vi) minimize resource use, waste and pollution.

Among other psychological factors that impact in the conscious consumption are: (i) perception of the environmental problems seriousness or the individual environmental

responsibility (Cherian & Jacob, 2012; Wells et al., 2011); (ii) perception about the justice issue in relation to the individual consumption and in relation to justice received by the others, for example, when buying products with fair trade certification label (White, MacDonnell, & Ellard, 2012); (iii) motivation for buying green products generated by the perception of social status increase (Ordabayeva & Chandon, 2011; Zabkar & Hosta, 2013); (iv) comparison between individual appeals effectiveness (which bring own benefits) versus normative appeals (which emphasize social standards or attitudes that other people believe should be done) to bring about changes in attitudes (White & Simpson, 2013).

Specifically on organic products, a study carried out by Ngobo (2011) in supermarkets in France showed that the purchase of these products is higher among individuals with higher levels of income, education, position held in the company and in older families – the higher the income, the higher the preference for organic products. Larger families in turn, (with more members) do not present strong preference for organic products. Kavaliauske and Ubartaite (2014), in turn, show that only age showed a significant influence on the buying behavior of organic products – being the younger audience between 26 and 35 years old who prefer buying organic products.

Other studies sought to understand the behavior of organic products consumers. Overall, the main motivations for buying organic products are related to health, first of all, followed by the belief of better quality and food taste, up to the ecological concern to preserve the environment, related mainly to the non-use of pesticides (Archanjo, Brito, & Sauerbeck, 2001; Francisco et al., 2009; Kohlrausch, Campos, & Selig, 2004; Silva, Camara, & Dalmas, 2005). Conversely, for Lombardi, Moori, and Sato (2004), environmental improvement is the aspect that most influences consumers when making the buying decision for organic products, mainly by the substitution of the pesticides use.

For Torjusen et al. (2004 as cited in Hamzaoui-Essoussi, Sirieix, & Zahaf, 2013), organic labels are perceived as regulatory symbols and, as a result, they are an important symbol of trust to the consumer who sees in this type of communication a source of information about the quality and about the product safety. Bezawada and Pauwels (2013) say that organic certifications play an important role in stimulating the consumption of this type of product and conclude that the label regulated by the government has wider appeal of confidence among consumers. The same is reported by Hamzaoui-Essoussi et al. (2013) and Sønderskov and Daugbjerg (2011).

In Brazil, few studies have been found dealing specifically on the meaning of organic labels for the consumers. Focusing on the Florianopolis market (Santa Catarina state), Kohlrausch et al. (2004) show that most consumers say that they know what an environmental label is (in this case, the organic label), but when asked specifically, only 44% respond correctly. Most of them (73.5%) were not able to identify the environmental label on the product, but a similar percentage of respondents report that the label is a differentiating factor at the moment of buying, due to the credibility, guarantee, confidence and safety conveyed by the label. The authors also asked about the difference between the certification awarded by a third party or by the producers themselves: 61% said they considered better when certification is granted by a third party, as it conveys more confidence, and 39% were indifferent as to the fact of who is granting the certification.

The study of Lombardi et al. (2004) in turn, found that the certification is considered a guarantee that the consumer has, when choosing a product of superior quality than the conventional products, and that 94.2% of the sample believed it should have been some kind of official certification for organic products. Wander, Lacerda, Freitas, Didonet, and Didonet (2007) developed a study on market opportunities and challenges for organic food and concluded that among the regular consumers (20% of the sample), only 5.7% stated that they knew some certification, and only one person remembered spontaneously of the name of a specific label of that region, and that 98% have no preference for particular brand or producer of organic foods.

Methods and data

Upon completion of the bibliographical research, it was identified the need for carrying out a field research. The chosen collection method was the *survey* method, of the type single transversal, which involves collecting data only once (Hair, Babin, Money, & Samouel, 2005; Malhotra, 2006). The research instrument was a structured questionnaire filled out by the own respondent, divided into five parts: Meaning of the labels; Familiarity with the labels; General opinion about the labels; Motivations for buying organic products; Consciousness in the consumption.

The meanings were measured through a scale of 12 attributes collected in the literature (Brasil – Ministério da Agricultura; Pecuária e Abastecimento, 2007; Conner & Christy, 2004). For each respondent it was shown 12 possible meanings and they were asked to indicate which one, or which ones they attribute to the organic certification labels. Thus, each meaning resulted in a binary *dummy* variable with two response options: assigned (1) or did not assign (0).

It has been interviewed men and women, 18 years old or older, who usually shop personally at grocery stores, supermarkets or street markets. The sampling technique used was for convenience. Data collection was conducted by the sending of around 300 e-mail messages. Besides, around 1.000 invitations were also carried out over social networks. Initially it was obtained 463 responses, of which, 75 were excluded in the *data cleaning* process. Thus, the final database included 388 responses.

The analysis carried out used a quantitative approach. A descriptive analysis was performed first, followed by a cluster analysis in order to segment the consumers according to the meaning attributed to the labels. The SPSS software, version 20, was used for data processing.

Results

Sample qualification

The sample presents a predominant female profile (70%), which meets the Brazilian characteristics of whom usually goes shopping for the household (Jablonski, 2010) and concentrates

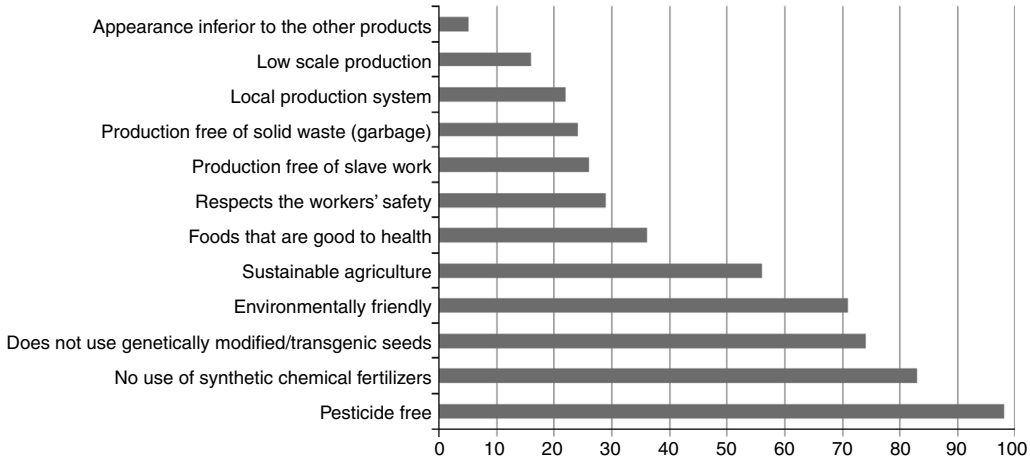

Fig. 2. The labels certification meaning.

on the range between 30 and 50 years old (67%). The monthly income of 77% of the respondents is above R$ 4846, and 59% hold a graduate degree, which indicates a sample with income and schooling levels higher than the population average (Aprile & Barone, 2008; Associação Brasileira de Empresas de Pesquisa, 2012). The majority, 89%, live in São Paulo State, comes from metropolitan areas (81%) and 30% had already lived abroad. The households have an average of 2–3 people and the most part has no children (66%).

With regard to the consumption habits in general, the respondents are used to doing their shopping in supermarkets (78%), with a frequency of once a week (74%). Considering the buying of organic products, most of them have already bought such a product (89%), but only 39% buy them regularly.

Data descriptive analysis

Most of the respondents declare to know what a certified organic label is (72%), which is in accordance with Kohlrausch et al. (2004) and Hamza and Dalmarco (2011). However, the study indicates that the respondents' familiarity with specific names of certification labels is low (19%). As shown below in Fig. 2, the most meanings attributed to the organic certification labels were: Pesticide free (98%); No use of synthetic chemical fertilizers (83%); Does not use genetically modified/transgenic seeds (74%); Environmentally friendly (71%). In contrast, the meaning of lower attribution was: Appearance inferior to the other products (5%).

With regard to the consumers' opinions referring to labels, most believe that the labels give more credibility to products (59.6%), that such labels should be better disseminated (66.2%), that few people know them (62.3%), and that the labels may be difficult to find (49.7%). Additionally, the labels are associated with more expensive products (49.7%) and with products that are compelled to undergo a certification (49.7%). Regarding the motivations for buying organic products, the main ones are consistent with the organic meanings: "Pesticide free" (82.9%); "It is good for health" (59.9%); "Without synthetic chemical fertilizers" (49.3%).

On the other hand, considering the attitudes related to the conscious consumption, the ones declared as most frequent (always perform) were: "Turn off the tap when brushing the teeth" (82.2%); and "Avoid letting lighted lamp in unoccupied rooms" (77, 5%). The attributes that were least cited were: "Buy products made of recycled material" (8%) and "Always buy organic products" (17.8%).

Cluster analysis

It was carried out a cluster analysis as a way to segment the consumers according to the meaning attributed to the organic certification labels. The reliability of the scales was measured

Table 1
Agglomeration schedule.

Stage	Cluster combined		Coefficients	Stage cluster first appears		Next stage
	Cluster 1	Cluster 2		Cluster 1	Cluster 2	
269	126	243	3887	266	268	272
270	248	383	4000	0	0	277
271	120	235	4222	264	235	275
272	126	152	4240	269	259	278
273	110	155	4402	267	239	274
274	110	237	4614	273	265	275
275	110	120	4719	274	271	276
276	110	216	4865	275	257	277
277	110	248	5100	276	270	278
278	110	126	5220	277	272	0

Table 2
ANOVA.

	Cluster			
	Mean square	df	*F*	Sig.
Sustainable agriculture	17.226	2	139.022	0.000
Environmentally friendly	13.601	2	123.968	0.000
Does not use genetically modified/transgenic seeds	11.161	2	97.557	0.000
Respects the workers' safety	9.259	2	66.301	0.000
Production free of slave work	6.954	2	47.991	0.000
Local production system	4.548	2	32.082	0.000
Foods that are good to health	4.772	2	24.118	0.000
No use of synthetic chemical fertilizers	2.250	2	17.623	0.000
Production free of solid waste (garbage)	1.905	2	11.166	0.000
Low scale production	0.980	2	7.708	0.001

ANOVA, analysis of variance; df, degrees of Freedom; F, F-statistic; Sig., significance (p-value)

through the Cronbach's alpha, which was of 0.736. This result can be considered acceptable, and shows good level of the variables internal consistency.

Initially it was performed the hierarchical cluster as a way to seek the ideal number of groups. The agglomeration method used was the "*between groups linkage*", through the distance measure "*square euclidian distance*". Through the analysis of the agglomeration schedule shown in Table 1, it is noticed a considerable increase in the variance for the formation of the next conglomerate when it passes from 3 to 2 groups. Thus, it was decided by the number of 3 clusters, which is confirmed by the analysis of the dendrogram.

Then it was used the non-hierarchical method K-Means in order to refine the clusters calculation. It is noticed that two of the variables were not significant "free of pesticides" $p = 0.72$ and "inferior appearance" $p = 0.07$. Then it was withdrawn "free of pesticides" and the analysis was tested again. In this case, "inferior appearance" was still not significant with $p = 0.085$. Finally it was withdrawn both, "pesticide free" and "inferior appearance," so getting a solution in which all variables were significant, as shown in Table 2.

The *F* statistic, also in Table 2, shows the most important variables for discriminating the clusters: "Sustainable agriculture", "Environmentally friendly" and "Does not make use of transgenic seeds."

Clusters qualification

Table 3 shows that the cluster 1 consumers have highlighted the meaning "It does not make use of transgenic seeds". On the other hand, the cluster 2 has greater association to the meanings "Sustainable agriculture" and "Environmentally friendly". Finally, consumers of cluster 3 demonstrate a reduced association in most of the meanings.

Thus, each cluster was named according to the labels meaning, starting to refer to the cluster 1 consumers as "GMO-Freers", to cluster 2 consumers as "Greeners" and to cluster 3 consumers as "Don't Carers". In addition, it is worth noting that although the meaning "free of pesticides" is not relevant for discriminating the clusters, it is an associated meaning by most of the consumers in general. With regard to the clusters size, the largest is the "Greeners" which represents 46.6% of consumers, next it comes the "Don't Carers" with 28.7% and then the "GMO-Freers" with 24.7%.

Analyzing the clusters profile, four of the variables present statistical differences as shown in Table 4. The "Greeners" has prominence among the older people. On the other hand, the "GMO-Freers" is the one which presents highest agreement with the idea that "organic certification is mandatory", has higher income and MBA degree level. Finally, the "Don't Carers" stands out among people of higher social class.

Table 3
The labels meaning for the clusters.

	Cluster 1	Cluster 2	Cluster 3
Sustainable agriculture	26.1%$_a$	93.8%$_b$	21.2%$_a$
Environmentally friendly	21.7%$_a$	99.2%$_b$	67.5%$_c$
Does not use genetically modified/transgenic seeds	100.0%$_a$	86.9%$_b$	30.0%$_c$
Respects the workers' safety	1.4%$_a$	56.2%$_b$	7.5%$_a$
Production free of slave work	2.9%$_a$	50.0%$_b$	7.5%$_a$
Local production system	4.3%$_a$	41.5%$_b$	6.2%$_a$
Foods that are good to health	23.2%$_a$	55.4%$_b$	15.0%$_a$
No use of synthetic chemical fertilizers	84.1%$_a$	93.8%$_a$	63.7%$_b$
Production free of solid waste (garbage)	26.1%$_a$	33.8%$_a$	6.2%$_b$
Low scale production	10.1%$_a$	24.6%$_b$	6.2%$_a$
Free of pesticides	95.7%$_a$	99.2%$_a$	96.2%$_a$
Appearance inferior to the other products	4.3%$_a$	6.2%$_a$	2.5%$_a$

Each underwritten letter (a, b or c) shows a subgroup of clusters with proportions that have no statistical difference at the significance level of 0.05. For example, if two clusters have the letter "b", then there is no statistical difference between them at this level of significance.

Table 4
Cluster's profile.

	Greeners	GMO-freers	Don't carers	Chi-square statistics (x)	p-Value
Age					
<30	13	15	16	9.89	0.042
31–50	64	79	71		
51+	23	6	13		
Education					
High school/college incomplete	8.5	6	3.9		
High school	31	30	27	21.36	0.006
MBA	32	58	42		
Master's/PHD	28	6	27		
Income					
Until R$ 648	7	6	4		
R$ 2.814 to R$ 4.845	21	8	5	18.43	0.005
R$ 4.846 to R$ 12.988	40	36	39		
More than R$ 12.988	32	51	52		
Agreement (1–5 scale)					
Organic certification is mandatory	67	78	51	29.11	0.001

Finally, it is presented a brief description of each of the clusters:

Greeners: It is the largest cluster, representing 46.6% of the research' consumers. It presents larger association with the meanings "sustainable agriculture" and "environmentally friendly". It is prominent among older consumers, of 51 years old or older.
GMO-Freers: It is the lowest among the clusters representing 24.7% of the research' consumers. It presents larger association with the meaning "It does not make use of genetically modified/transgenic seeds". It is associated with higher income people, many of them holding an MBA degree and presented greater agreement with the idea that the organic farmer is required to go through a certification.
Don't carers: It is the second largest cluster with 28.7% of the research's consumers. They presented lower association to the labels meanings, in general. They also stood out among consumers of the highest income bracket.

Discussions and conclusions

The main objective of this research was to study the meaning that the organic certification labels has to the consumer. The initial descriptive analysis pointed out the "pesticide free" aspect as the main meaning of the labels. However, when studying the different consumer segments through cluster analysis, it was found the need for deeper investigation in order to understand the different segments, given that the research pointed to a meaning that can vary depending on the consumer profile.

From a theoretical point of view, Academia has focused its studies on the knowledge in relation to labels and descriptive analysis of their meaning. As discussed previously, Kotler and Keller (2012) presented what they called a consumer behavior framework (p. 172). This model shows at first marketing stimuli (product, communication etc.) which would be influenced by a series of consumer characteristics, before impacting consumer decision. Among these characteristics, the authors point out psychological factors, as perception and motivation, and social factors, which include demographic characteristics as gender, age and income. Under this framework, the main topic of this article, "organic label meanings", can be interpreted as perceptions. As Kotler and Keller describe "perceptions are a process through which someone select, organize and interpret information received, as a means of creating a meaningful image of the world" (2012, p. 174). In the present research, the main goal was to understand what kind of meaningful image consumers create regarding organic labels, filling a gap in the literature in the way that it deepens a first analysis of the meaning, by reaching a second level of consumer attribution, and revealing the need to understand the meaning for the different segments.

At the same time, it was shown that different groups of consumers have different perceptions of organic labels. Still, social characteristics, which were mentioned by Kotler and Keller (2012) and other authors, as aspects that might influence behavior (Hamza & Dalmarco, 2011; Kavaliauske & Ubartaite, 2014; Wells et al., 2011), could also affect consumer psychology. The group called "Greeners", for example, which is older than average (social characteristic), seems to perceive organic labels as closely related to ecological aspects. In fact, this group stands out by interpreting labels as a sign of sustainability and environmental friendliness (psychological aspect). As it was found by Ngobo (2011), older families was one of the segments that had the greater probability of purchasing an organic product, but the author has not studied their motivations. The perception of sustainability and environmental friendliness of the older group found in the present research could be tested in future studies as one of the possible motivations.

On the other hand, the group "GMO-Freers" showed to be influenced mainly by having higher income and education (social characteristics). Besides, these aspects that qualify this group can also be linked to their perception of the labels, that is, the idea that a product which has an organic label would be free of genetically modified or transgenic seeds (psychological

aspect). Considering that the third group, "Don't carers", stands out for their high income and not for their education level, one could infer that the education level can be determinant for the way some person perceives the organic labels –an interesting theme for further researches. Again, it is possible to see how social characteristics not only can influence the decision process but also affects the way consumers perceive organic labels. Therefore, this research not only presents an example of how Kotler and Keller (2012) theory would work in the context of sustainability and consumer research, but also reveals how some phenomena which are part of the authors framework interact (social and psychological aspects).

This article also presents a practical contribution, pointing out aspects related to how these learnings can be used by different stakeholders. For example, producers of organic products could use the study's results in order to use labels as a way to integrate their marketing strategies and product positioning. Considering their target consumers profile, they could check the main meanings of the labels and integrate their meanings to the desired image for their products. Manufacturers focused on the older people segment could work more relevant themes to the "Greeners" such as sustainability and environmental responsibility in an integrated manner using the certification label.

With regard to the certifying agencies of organic products, they can deal with their customers in a segmented manner, depending on the target end consumers of each customer. For example, a certification agency which worked particularly with customers who deal with high income people can study the relevance of working more heavily together with the segment "GMO-Freers" highlighting the theme of products free of genetically modified seeds. This type of benefit can have special relevance for the public concerned.

Limitations and suggestions for new researches

The research used the method of collection for convenience, so the results should not be generalized to the population. Regarding new researches it is suggested controlled experiments in order to check some hypotheses put forward in this research. For example, to test the labels greater association to the sustainability issue among older people, or to verify the hypothesis that high-income people present greater concern with issues related to the use of transgenic seeds.

Conflicts of interest

The authors declare no conflicts of interest.

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