



# Impact of sustainability labeling in the perception of sensory quality and purchase intention of chocolate consumers



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## ABSTRACT

Currently, food market appeal for sustainable and/or organic agriculture have grown worldwide as a way of promoting sustainable development. Brazil has developed sustainability projects (certification as organic, sustainable farming certified by Rainforest Alliance, products with designation of origin, among others) in the cocoa and chocolate industry, once the country stands out as one of the largest producers of cocoa. Labeling is an important tool for consumer's perception of sustainability and quality of a product. In this context, this study aimed to investigate the impact of sustainability labeling (seal and/or indication of organic, origin and quality, and Sustainable Agriculture) on purchase intention and quality perception of products labeled by the quality and sustainability criteria. The study was conducted with Brazilian consumers. Six dark chocolate samples with quality seals containing different percentages of cocoa were investigated. A blind test was carried out in the first evaluation session, and in the second session, all judges were informed about the percentage of cocoa and the label of each sample. The results demonstrated an influence of quality and sustainability labeling on the sensory acceptance of the product. However, the sensory attributes such as flavor were very important to consumer behavior. These results can contribute to value-added approaches to the cocoa/chocolate chain. The sensory quality of the chocolates associated with environmental and quality labeling are important for this sector, provided that there is understanding of environmental labels by consumers and sensory consumer satisfaction. This study can support the development of cocoa and chocolate chain through information and knowledge on the influence of the quality and sustainability labeling in cocoa and chocolate to assist the actions of producers and companies.

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## 1. Introduction

Cacao tree is a plant native to the rainforests of the Americas, where it grows in the shade of other trees in an environment with high temperatures and high rainfall. It belongs to the *Malvaceae* family, genus *Theobroma*, species *Theobroma cacao* (Cheesman, 1944; Motamayor et al., 2008).

Cacao cultivation is an agricultural activity of great economic and social importance in tropical, hot and humid regions. According to the latest data from the International Cocoa Organization (ICCO),

for the years 2012/2013, the production of cocoa beans in the world is distributed between Africa, which produced 2.836 million tons of cocoa beans (71.9%), America, with 622,000 tons (15.8%), and Asia and Oceania which produced 487,000 tons (12.3%). Brazil is currently the seventh largest producer and a major cocoa-producing in America, also ranking fifth in cocoa processing mills for obtaining the main derivatives used by the chocolate industry (liquor/cocoa mass and cocoa butter) (ICCO, 2015).

Worldwide, cocoa production is concentrated in developing countries. Recently, scandals have emerged in the media relating to cocoa production with exploitation of child labor and environmental impacts (BBC, 2012; Cocoa Market, 2014). In response to media reports on environmental scandals, labor issues, among others, companies have been forced to incorporate environmental

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auditing or obtain third party certification, and may or may not apply to environmental labeling on their products (Castka and Corbett, 2015).

ISO 14001 is an example of environmental certification. However, the ISO logo on products from companies cannot be used, since the ISO standard certifies the environmental management practices, which affect operations and management processes, which can also be associated with the improvement of product quality. The ISO 14024 defines environmental labeling programs as third party volunteer programs that grant labels based on independent audits (Castka and Corbett, 2015; Delmas and Grant, 2014).

Currently there are over 435 environmental labeling programs in 197 countries and 25 sectors according to Ecolabel Index directory of certification. These programs establish voluntary standards, provision of verification services, certification of companies and supply chains (Castka and Corbett, 2015; Delmas et al., 2013).

In response to these social and environmental issues, there is an increase in the production of certified cocoa, with 275 tons produced in 2010. The total production volume of certified cocoa in 2010 comprised the cocoa sectors Rainforest Alliance (20%), Organic (15%), Fairtrade (39%) and UTZ certified (25%). In 2011, cocoa production with Rainforest certification was 98.4 thousand tons, Fairtrade with 150 thousand tons, and UTZ with 214 thousand tons, with no data available for the Organic sector (ICCO, 2015).

One of the goals of the environmental label is to provide interpretable information to consumers and thus increase demand for products that are understood as environmentally friendly, in addition to assessing the suppliers (Castka and Corbett, 2015).

There is a growing influence of environmental labels in the global market economy for different products. For coffee, in 2012, the influence was 40% when compared to the world production. Other examples, also in 2012, include cocoa (22%), palm oil (15%) and tea (12%) (Castka and Corbett, 2015).

It is noteworthy that certification processes, depending on traceability, have also contributed to the sensory quality of products, and some companies have partnered and invested in the professionalization of cocoa farmers to intensify good agricultural practices in cocoa cultivation with initiatives for more sustainable production through certifications. Because of the difficulty of a direct relationship with each cocoa producer, certifications appear as a more effective way to reach the largest number of farmers. The existence of standards and certifications such as Organic Production and Sustainable Agriculture Rainforest Alliance help establishing a monitoring system in cultivation, involving environmental, social and economic factors (Sustainable Cocoa Initiative, 2014), as well as providing greater credibility to these agricultural production systems.

Regarding the grape production, for example, wineries receiving certification have best practices in environmental management, improving agricultural practices. In addition to enabling environmental labeling, certification can provide image benefits through clubs or trade associations. (Delmas and Grant, 2014).

More sustainable products, in special cocoa and chocolate with sustainability labeling and/or indication are considered products that reduce, protect, or improve the environment by conserving energy and/or resources during the life cycle of these products. Thus, the consumer is the main target of companies seeking to understand and respond to external pressure to improve their environmental performance. In this context, the sustainability marketing is a tool used to communicate the commercial activities aimed to reduce the environmental and social impact caused by the products (Ritter et al., 2015; Tseng and Hung, 2013).

It is noteworthy that cocoa production in some regions of Brazil predominantly occurs in the shade of larger trees of the Atlantic Forest and Amazon. Thus, it has proven to be a production system

considered protective of those areas, concentrating high biodiversity important for the environment and society. In the cocoa supply chain, sustainability-related projects have been developed, where the main indicators are those related to Organic certifications, Rainforest sustainable agriculture, products with designation of origin, etc. (Queiroz, 2014).

Flavor is one of the most influencing parameters in the marketing of cocoa and chocolate, as demonstrated by Efraim et al. (2013), Liu et al. (2015), Luna et al. (2002) and Sukha et al. (2008), who assessed the physicochemical and sensory characteristics of cocoa beans and chocolate from different origins, and reported that the cocoa and chocolate flavor has great influence on their quality.

In this context, some studies have shown that the quality, price and other product costs, including those with sustainability claim, directly affect the purchase intent (Gleim et al., 2013; Tseng and Hung, 2013). Usually, the most sustainable products are considerably more expensive than traditional products, and consumers who do not care about sustainability are reluctant to search for information about the long-term earning potential for growers associated with more sustainable products. However, there are consumers willing to pay more for them (Gleim et al., 2013; Ritter et al., 2015; Tseng and Hung, 2013).

Delmas and Grant (2014) stated that certification confers benefits that enhance the quality of wine, which are not directly associated with the decision of consumers about the environmental practices.

Moreover, wine consumers do not associate quality with organic seal, since the concept that the organic wine has a lower quality than the conventional wine still predominates, thus some certified wineries prefer not to display the environmental certifications in label (Delmas and Grant, 2014; Rauber, 2006).

Magnusson et al. (2001) have reported that the purchase attributes are “better taste” and “extended shelf life”, which were related to the quality of organic products, rather than environmental attributes.

Loureiro and Lotade (2005) have shown that when comparing the labels of shade-grown coffee, organic coffee, and from fair trade coffee, consumers pay more for fair trade or shade-grown coffee rather than the organic coffee. It should be noted that organic coffee has a higher price than shade-grown or fair trade coffee. However, the authors state that the social and environmental benefits associated with fair trade coffee and shade-grown coffee are more perceived by consumers, when compared to the benefits associated with organic coffee.

Thus, chocolate labeling is an important tool for communication and perception of both the production sector and consumer market, once it is acknowledged that the sensory quality of the chocolate may interfere with consumer choice behavior.

Grunert et al. (2013) have reported that product attributes such as price, brand, quantity, validity, and nutritional information compete with environmental labels and influence on consumer choice behavior. At the same time, to offer consumers the opportunity to find sustainability information on labels does not necessarily mean that they really will use them, as this will depend on their motivation. Another factor influencing consumers is the proper understanding of these labels. As previously reported, the lack of understanding of some environmental labels can lead to consumer confusion or even negative reactions, although the purpose of these labels is to reduce the information gap between producers and consumers regarding environmental attributes of a product (Delmas, 2008; Delmas and Grant, 2014; Hamilton and Zimmerman, 2006). In order to contribute to the development of the cocoa chain, considering that some environmental labels can be confusing to the consumer and specific benefits may be relevant in

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