

Changing competition patterns in a weak regulatory environment: the case of organic products in Brazil

Elizabeth M.M.Q.Farina¹ - emmqfari@usp.br

Christiane Leles Rezende² - leles@usp.br

Abstract

Concerned with food safety, consumers are willing to pay premium prices for “natural food” that is free from chemical products and other sources of contamination. However, recent research shows that organic products have a higher probability of contamination by E.coli and salmonella.

How to preserve reputation and premium prices in a this weakly regulated environment is challenging, especially for fresh products. The research intends to identify the governance structures retailers, industries, and farmers adopt to guarantee product authenticity, in order to receive premium prices and preserve reputation.

Key Words: Organic products, Food safety and Supply Chain management

1. Introduction

Brazilian agri-food firms and farms have entered a period of intense competition since market liberalization in the 1990s, provoking lower prices, larger number of products, increasing market segmentation, and differentiation. Market segmentation has rested upon the quality dimension, exploring consumer trends associated to health, nutritional concerns, convenience, and food safety. Organic, Non-GMO, Functional Products, and others support these strategies. “Organic food” can be analyzed as a particular food standard based on a specific production process.

Founded on production practices that dispense with agrochemicals and easily soluble fertilizers, organic agriculture aims to produce contamination-free food. But these characteristics cannot be directly observed by the consumer at low cost, creating the possibility of opportunistic behavior. Departing from the hypothesis that organic product consumers seek safety, the research intends to identify the governance structures retailers,

¹ Professor, Economics School, University of São Paulo, Vice Coordinator of the Agribusiness Program

industries, and farmers adopt to guarantee product authenticity and reliability, in order to receive premium prices and preserve reputation.

In the case of organics, this encompasses two dimensions: first, guaranteeing the food is really organic (authenticity) and, second, that it doesn't contain chemical or microbiological contamination, being a safe food (reliability).

The production of organic products in Brazil has been regulated since May 1999, by the Ministry of Agriculture. However, it is not yet clear who will be in charge of certification. Brazilian export products, such as soybean, are certified by internationally recognized institutions. However, in the internal market certification is less controlled. Some products have been "certified" by their own processors or producers, and governmental health authorities are ineffective in controlling different sources of contamination. Consequently, the growing organics market may suffer from loss of reputation if contamination spreads.

Managing to preserve reputation and premium prices in this weakly regulated environment is challenging, especially for fresh products. This research investigates whether organic product suppliers are aware of the threat and how they manage supply and distribution chains to guarantee their competitive advantage. It also investigates whether consumers know of the health risks and how they evaluate different guarantee seals.

The research focuses on organic fresh products, more sensitive to contamination problems.

The analysis of the governance structures adopted to guarantee the organic standard is based on Transaction Cost Economics. Consequently, transaction attributes throughout the agri-food system are discussed, especially those related to asset specificity, complexity, and difficulty of monitoring.

Data on consumer preferences were collected through questionnaires applied to 100 consumers in an organic products market, organized by the – AOA - Association of Organic Agriculture.

² Master Candidate in Applied Human Nutrition, University of São Paulo.

2. Organic agriculture and organic food safety.

In production, foods originating from organic agriculture are more susceptible to microbiological contamination than conventional, because they use large scale, animal origin organic fertilization. The humid environment associated with organic fertilization, comprised of feces from several animals, favors contamination of these foods, contrary to what occurs with chemical fertilization. Frequently present in animal feces are bacteria such as *Escherichia coli* and *Salmonella sp*, which can provoke food poisoning outbreaks when they reach high quantities in foods. It is well known that many enteric infirmities are transmitted through contaminated vegetables. (SILVA Jr. 1995). Further, microbiological pathogens are not easily detected in the productive process.

The growth of cities leads to an intersection of farmland with recently urbanized areas, which, added to the deficient sanitation infrastructure of peripheral areas, leads to contamination of rivers and creeks utilized to irrigate crops.

Food disinfection using chlorine solutions, prior to consumption, can be very effective in reducing bacterial contamination, but are not regularly employed by consumers.

Thus, potential sources of contamination in the field are: water, incorrect manipulation of organic fertilizers, contact with other animals, and inadequate hygiene habits of the worker. To control the risk of contamination, it is necessary to identify and control points of possible contamination. Once these points are identified, it is possible to prevent, reduce, or eliminate risks. Microbiological testing would identify signs of contamination during production.

3. International Panorama and the Brazilian Market

The organics market moves US\$20 billion worldwide, with an 8% growth rate annually. Thus it is considered one of the branches of agribusiness with highest growth of demand in the international market. Europe represents 7% of the market for these foods.

Though concepts on the production and certification processes are internationalized, each country has its norms, adapted to the different conditions of production. Most countries importing organics, mainly European, demand certification in conformity with ISO 65 standards, whose norms are specific for the international certifiers, or the seal of the International Federation of Organic Agriculture Movements - IFOAM.

Brazil is 7th among countries supplying raw material to the European Common Market. Production has grown 10% yearly, since 1990, moving US\$150 million, of which US\$130 million was exported (Gazeta Mercantil, 2000).

In Brazil, though organic agriculture is still restricted to certain regional niches, lately it has been gaining momentum and attracting the interest of major supermarket chains, especially in neighborhoods of greater purchasing power. There are firms providing home delivery and the AOA organizes a weekly market for its members.

Brazil relies on several national certification institutions and, at the moment, several international ones are setting up shop. Some examples of national certifiers are the BDI - Biodynamic Institute of Rural Development and the AOA - Association of Organic Agriculture. As an example of international certifiers, we have ECOCERT, a French certifier beginning operations in southern Brazil.

4.1. Institutional Environment

To orient the issue of organics in Brazil, the Ministry of Agriculture prepared a Decree. It establishes norms of production, typification, processing, distribution, identification, and certification of quality for organic products of vegetable and animal origin (Normative Instruction 7, Diário Oficial 94, May 19, 1999, section 1, page 11).

This decree contains objectives beyond the definition of what an organic product is in the strictest sense, following the same procedure adopted by IFOAM (Brazilian legislation mentions explicitly that products must be free of any type of contaminant, whereas IFOAM mentions only generically the high quality of the foods).

According to the norms adopted by Brazilian certifiers, the organics seal guarantees that the certifier do a follow-up of the production system whether vegetable or animal, by means of a specialized technician, routine visits to the production site, technical inspections, and residual analyses to verify the level of agrochemical contamination. The seal guarantees product origin, type of processing, or the processing firm.

Checking for microbiological contaminants is the responsibility of the firm that processes and commercializes the products. The Sanitation Defense Agency is responsible for inspecting processing locations, while the Municipal Supply Secretary is responsible for distribution and the Ministry of Agriculture for rural production in terms of hygiene of the products.

Brazilian certifiers follow international norms for organics production, where, *a priori*, all food for sale must be safe for consumption, not only organics. Hence, most of them do not include in their monitoring process the microbiological analysis for identification of pathogens.

According to the Normative Instruction, certifiers must be accredited by a National Collegiate Organ and State and Federal District Collegiate Organs. This Organ was only created on February 05 2001, to inspect certifiers accredited by the Ministry of Agriculture. The lack of monitoring in this market has led to the appearance of products sold as organic, but without the due certification.

5. Food safety associated to management of the Agroindustrial Chain

Baker, 1998, conducted a study on consumers, analyzing several attributes, using the statistical technique of Conjoint Analysis³. The choices reflected price, level of defects in

³ The same procedure will be used to analyse the consumption of organics in São Paulo.

the product, different levels of pesticides utilized (associated to the risk of cancer), and certification programs. The results indicated that consumers wish to consume safe foods and are willing to pay a price differential for this. Organic products, identified as safe products, benefit from this price premium.

Based on the hypothesis that Brazilian organic product consumers are willing to pay a premium for the safety of organic food, as suggested by Baker (1998), 100 consumers were randomly selected from among shoppers at the market organized by the AOA in Sao Paulo, where most of the consumption of organics is concentrated. This market is held Saturdays and exclusively sells AOA-certified products .

Most consumers interviewed believe organic food is free from any type of harmful contaminant (78%). Some commented that they only buy organic because they believe it is totally safe.

The empirical study suggests that Brazilian consumers of organic products belong to the parcel of population with greater level of education and per capita income over the country's average. Thus, this is a differentiated consumer, more demanding and more informed. Nevertheless, the consumers do not distinguish contamination by agrochemicals from microbiological contamination, assuming that organic food is safe food.

Spers (1999) states that the search for safe products creates ever more demanding markets, and competition causes the systems to react rapidly and efficiently. The greater the need to increase product quality, the greater the incentive for the firm or agri-food system to coordinate vertically, allowing greater control over the stages the food passes through before reaching the final consumer. Consumers transmit their demand for safety attributes, through their choices.

This reasoning would be correct if the consumer could monitor quality at low cost, which is not the case of processed or *in natura* foods, including organic products. The imperfect and asymmetric information on the products, besides being a source of market failure, stimulates opportunistic behavior by suppliers, especially when acting in a deficient regulatory environment, such as Brazil's. In the absence of an effective system of quality

monitoring, the profit opportunity offered by the price premiums can stimulate the proliferation of quality guarantee seals and certificates not deserving accreditation.

The guarantee of safe foods depends on practices to be adopted by each agent participating in the food agroindustrial system, making the guarantee of quality a problem of systemic coordination.

5.1 Governance Structures and Management of the productive system of organics

The agroindustrial system of foods and fibers can be treated as the *set* of formal or informal contracts whose objective is to guarantee the process of transmission of information, stimuli, and controls throughout the productive chain, so as to respond to changes in the competitive environment or to make entrepreneurial strategies viable. (Zylbersztajn & Farina, 1999).

Insofar as Agroindustrial System is defined under a contractual prism, Transaction Cost Economics (TCE) offers us an appropriate analytical framework, following the orientation of Williamson (1985). However, insofar as we are facing a problem that involves a specific competition pattern based on quality attributes, Industrial Organization Theory is combined with TCE in order to allow its inclusion in the analytical framework of the agents' strategic decisions.

The production and commercialization of organics presents high asset specificity in that receipt of the price premium depends on the realization of transactions among several vertically related agents. Should these transactions not occur, redirection of the organic product to the conventional product market will involve a loss of asset value, since this market does not value the procedures adopted in organic production and the costs are, in general, greater. Moreover, if there is agrochemical contamination in any stage of product commercialization or processing, it is very difficult to identify and attribute responsibility. It is even more difficult to obtain reimbursement of the loss of asset value from whoever provoked the damage.

Thus, investment in production and commercialization of organics could only be made through vertical integration or adoption of idiosyncratic relational contracts due to the elevated transaction costs involved.

The adoption of certificates issued by third parties is a transaction cost reducing tool that makes feasible the operation of the market of organic products, by guaranteeing conformity to the pre-defined standard. However, a reliable certifier accreditation system must exist. Inasmuch as the value of the certifiers depends fundamentally on their reputation, the system tends to function based on private controls. Should the public systems of food quality guarantee be discredited, private standards can replace them, creating investment and return opportunities.

In the case under discussion, two elements are fundamental: definition and guarantee of the standard of organic products. As this is a standard associated to process rather than product, standard guarantee depends on characteristics of the processes in the agri-food chain, which cannot be verified by physical and observable attributes of the product (Farina & Reardon, 2000).

Standardization and classification allow payment of premiums or discounts stemming from divergences in relation to the standard, and allow long distance trade without physical inspection of the merchandise. They further facilitate coordination between the consumer and supplier, because they reduce the costs of acquiring product information.

In the case of organics, where buyers themselves cannot verify the fulfillment of the quality standards desired, certification by an independent body becomes necessary. In its broad concept, certification is the definition of attributes of a product, process, or service and the guarantee that they fit into pre-defined norms. Certification is a step ahead of standardization from the viewpoint of Agroindustrial System coordination.

Where there is information asymmetry, there is greater space for exercising opportunistic behavior, elevating transaction costs (Williamson, 1985). Agents can reveal information

selectively, utilizing information asymmetry to their own benefit, thus able to act opportunistically after definition of the contract text.

Information asymmetry occurs in transactions when one party has private information, not acquirable without costs by the other party or parties.

In the commodities market the merchandise attributes are reasonably known by buyers and sellers, but with organics access to information is differentiated. A product with intrinsic attributes of quality must transmit this information to the consumer somehow, otherwise the consumer would be unwilling to pay a price differential. And as the characteristics that differentiate the organic are not easily perceived by the consumer, a seal from some recognized institution is essential, providing the consumer with information about the food's origin.

A certified product is, from the viewpoint of processing and industrial alteration, identical to its non-certified counterpart, that is, it can transform a commodity in a specialty, as long as the certificate is not the dominant standard. But the success of certification is conditioned to the efficiency of monitoring and the power of exclusion exercised by the institutional apparatus.

At present consumers have no way of verifying if the food contains microbiological contaminants. The lack of data on food poisoning outbreaks in Brazil, as well as on the quality of the food, mainly salads, makes it necessary to obtain information on the quality control effected by the firms.

If consumers have no way of easily distinguishing a safe product from a contaminated one, the tendency will be to not pay more for the products. It is recommendable that those involved in the agroindustrial system of organic foods take the initiative in reducing or eliminating points of risk, since this is a lucrative market, awarding those involved with price differentials.

5.2 The Brazilian Agroindustrial System (BAS) of organic tomato.

The BAS of organic tomato offers an excellent example of the importance of system coordination for the successful adoption of a standard of competition based on quality attributes. It is a product whose conventional version utilizes high quantities of agrochemicals and is consumed practically *in natura*. Hence, the tomato is highly sensitive to contamination by both agrochemicals and microorganisms. Because it is eaten raw, there is a great likelihood of negative effects on the health of the consumer.

Figure I illustrates the BAS of Organic Tomato. Institutions such as IFOAM or the National Collegiate Organ accredit certifiers who, in turn, monitor and guarantee the attributes demanded by the standard of organic production. Only in 2001 did Brazil regulate certifier accreditation. The absence of regulation allowed several products to be sold as organic, without any type of certification.

The Sanitary Defense Agency and the Ministry of Agriculture are public organs responsible for guaranteeing food safety. Should a complaint occur about products contaminated by agrochemicals or microorganisms, those responsible can be penalized by the Judiciary System.

Certifiers guarantee that the inputs utilized by farmers as well as the agronomic and industrial practices adopted conform to the norms for organic production,.

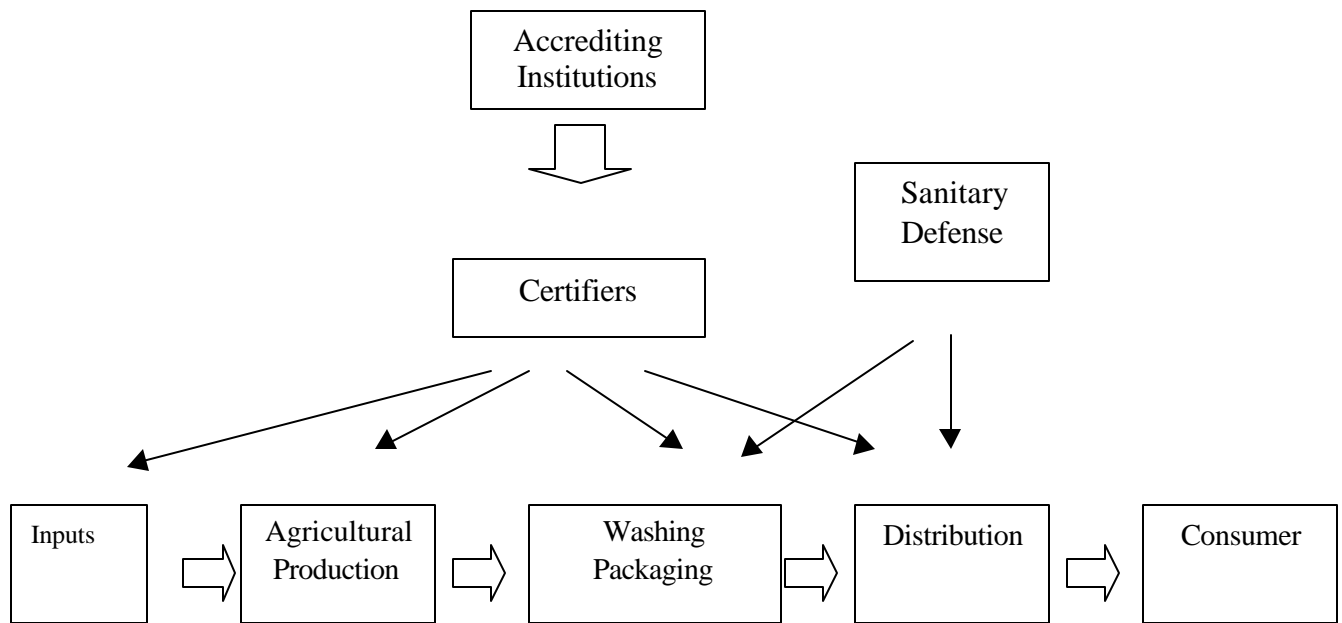
In Brazil, most organic farmers operate on a small scale. The production is generally sold and/or processed by farmer associations.. The horizontal coordination of farmers also involves transaction costs, since there are horizontal externalities and incentives to free-rider behavior.

Firms with a commercial brand name such as Horta & Arte – the biggest producer of organic vegetables in Sao Paulo - also run microbiological tests on the products received from their members to guarantee the absence of agrochemicals and any other contamination. The tomato, however, is also sold in bulk, which facilitates the activity of

suppliers not in conformity with the organic standard and who cannot guarantee the innocuity of the product.

Today, the organic salad tomato can cost five times more than the conventional tomato. This high price premium depends heavily on the credibility of the productive system of organics, which in turn depends on adequate management of the system upstream. Though the price incentive has attracted a growing number of suppliers, deficiencies in the systems of monitoring and punishment can compromise the entire strategic effort.

FIGURE 1



- Certified Seeds
- Organic Fertilizer
- Agrochemicals and soluble fertilizers are not utilized
- Associations
- Markets
- Supermarkets
- Non-specialized food services

Figure 1 – Agroindustrial System of Organic Tomato

6. Conclusions

The Brazilian organics market is incipient, but shows a high growth rate. It represents a profit opportunity in food agribusiness in face of the consumer's willingness to pay price premiums. Organics production has been considered an investment alternative for small farmers because its technology is appropriate for smaller production scales.

Organic production is generally sold through associations or firms that gather the production of several producers, control its authenticity, and, in cases where there is brand name value, also control its hygiene. This type of organization requires managerial capabilities to coordinate participants horizontally and guarantee the standard demanded by legislation.

The organic product certificate is a tool that reduces transaction costs and improves market performance. However, this certificate does not include monitoring of food sanitation. In Brazil, where Sanitary Defense is precarious and ineffective, one cannot dismiss the possibility of microbiological contamination of organic products. As the consumer pays a price premium for food safety and not only for the absence of agrochemicals, cases of contamination that eventually come to light can compromise the value of brand names utilized by firms selling organic vegetables and, worse, can compromise the entire development of this market.

So far, research has not identified sufficient instruments for coordinating the agroindustrial system of organic tomato that guarantee the authenticity and sanitation of the product. Even worse, many businesspeople are not aware of this risk.

Until recently, Brazil had no institution to accredit and inspect the certifiers. Nowadays this role belongs to the National Collegiate Organ. For a long time, the only firms inspected were those accredited internationally, such as the Bio-dynamic Institute, which allowed products into the market without specific certification as organic, sold in the

internal market, as is the case of the organic salad tomato. Exporting firms are certified by the BDI as it is the only certifier accredited by IFOAM.

Coordination problems that compromise food safety can be particularly disastrous in Brazil, because it is still an incipient market, with heterogeneous consumers. Recurring news leading to uncertainties about the sanitation and seriousness in the management of the chain can lead to a reduction in the development rate of this market.

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ANNEX

Results of the study on 100 consumers from the AOA market in Sao Paulo, March 2001.

Table 1

Consumer Characteristics	%
college education	75
Monthly family income over 15 minimum salaries	47
Frequently buy organic food	63
Have consumed organic foods for over 2 years	65
Prior to consumption, use some hygiene practice to reduce or eliminate microorganisms	54

Source: authors' research

Table 2 -

Agree totally that they consume organics because products are:	%
Healthy	99
Flavorful	72
Don't pollute environment	85
Contain no agrochemicals	97
Contain no contaminants	78

Source: authors' research