Characteristics of Consumers of Organic Products and the Increase in the Supply of These Products in Metropolitan Lima, Peru

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Abstract

Healthy food trends have contributed to an increase in the number of organic and natural food stores in Lima. This study: (a) examines the characteristics of consumers of organic and natural products; and (b) analyzes the increase in organic and natural products stores in Lima as a consequence of eleven years of economic growth in the capital. Results show that organic stores in Metropolitan Lima are more successful in those areas of the city inhabited by residents with middle and high incomes as well as higher than average levels of education. This indicates that it should be possible to establish such stores in other regions of Peru where consumers with similar characteristics can be found.

Keywords: Peru, consumers, natural products, income

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Acronyms

APEGA	Peruvian Culinary Federation (Sociedad Peruana de Gastronomía)
ENAHO	National Household Survey (Encuesta Nacional de Hogares)
FES	Food Exchange System
GDP	Gross Domestic Product
IFOAM	International Federation of Organic Agriculture Movements
INEI	National Institute of Statistics and Informatics (Instituto Nacional de Estadística e Informática)
LOHAS	Lifestyles of Health and Sustainability
MAGRAMA	Ministry of the Environment and Rural and Marine Areas, Spain (Ministerio de Ambiente y Medio Rural y Marino)
NMI	Natural Marketing Institute
UNDP	United Nations Development Program

INTRODUCTION

In view of the steady growth of the international food market and the new trends in this market, Peru now has a major opportunity to position itself as an organic country. This opportunity is based largely on its geostrategic characteristics, namely the maritime, Andean, and Amazonian territories at its disposal, as well as trade routes connecting it to both the Atlantic and Pacific oceans (Proexpansión 2014). The country has experienced strong economic growth on the heels of two decades of economic stability (Evans and Tveteras 2011). Policies such as those focusing on liberalizing trade and attracting international capital have allowed Peru to achieve a certain degree of economic stability. On August 31, 2001, the Peruvian government legally recognized organic agriculture, thereby providing farmers in this sector with growth opportunities (RAAA 2008). The country's main certified organic products include coffee, cacao, bananas, quinoa, and Brazil nuts (FIBL and IFOAM 2014). In 2012, Peru ranked among the top ten countries in the world in terms of numbers of organic producers, and fifth in Latin America with regard to the area of farmland used for the production of these foods (Proexpansión 2014; Willer and Lernourd 2014). The total area under organic crops is approximately 305,000 hectares nationwide; it is cultivated by over 47,000 producers (FIBL and IFOAM 2014), whose main products are exported to markets in Europe and the United States.

On the Peruvian domestic market, the current culinary boom has contributed to stable growth in the demand for high-quality foods, including organic products. In 2008, the firm Ipsos Apoyo Perú conducted market research on a sample of 500 men and women between the ages of 18 and 70 residing in Lima, from all socioeconomic levels, in order to learn about their dietary habits and the commitment of companies to a healthy diet. The most important finding was that Peruvians normally consider two main factors when buying a food product: it must be natural and it must be fortified. The majority of such products are imported, however, and the supply is limited (*Gestión* 2012a).

Organic products are defined as those foods grown without the use of chemical fertilizers, herbicides, or pesticides during any production stages, or in the soils in which they are cultivated (Cisneros 2012). In Peru, there is a widespread misconception that the consumption of organic products is a phenomenon restricted to higher socioeconomic levels only (Jurado 2009). However, this perception has changed over time and these products are no longer seen as belonging to an "exclusive" category, and the majority of Peruvians now have access to them. Consumers are also showing increasing interest in learning about nutritional care at the places where they buy their food (Ipsos Apoyo 2008).

The purposes of this study are, first, to highlight the most important factors behind the choices made by different types of consumers about whether to purchase an organic or a conventional product; and, second, to chart the increase in organic stores in Metropolitan Lima. This article is divided into three sections: the first discusses the definitions of conventional, natural, functional, healthy, and organic products to provide a better understanding of these terms; the second details the most important factors behind the selection of an organic product by different types of consumers; and finally, the third section presents an in-depth explanation of the relationship between economic growth — as expressed by the real gross domestic product (GDP) — and the increase in organic stores and markets in Metropolitan Lima.

MATERIALS AND METHODS

Organic products currently occupy an important position on the global food market and in global consumption patterns. Furthermore, the amount of research aimed at determining consumer behavior regarding these products has increased significantly in recent years (Hughner *et al.* 2007). However, previous Peruvian studies, as well as what little empirical research has been done to date, have been descriptive in nature. Consequently, there is currently a need to improve our understanding of Peruvian consumers' buying decisions when it comes to organic products. In this study, Metropolitan Lima was chosen as the area of study. The city's inhabitants are Peru's principal consumers of organic foods; as of 2014, nearly 28% of Peru's total population (8,693,387) lived in Lima, Latin America's fifth most-populous city (*El Comercio* 2014; Del Carpio and Vila 2010). Moreover, Lima was the site of the country's first *bioferia*, or open-air natural foods market, which has operated in the district of Miraflores for the last fourteen years (Cisneros 2012).

This study was carried out using a variety of sources, including an intensive bibliographic review of different materials dealing with food and agricultural research. A personal interview was also conducted with Silvia Wu,[1] a professional with broad experience in the sale of organic products who was part of the group that founded the *bioferia* in Miraflores, as well as similar undertakings such as the *Mercado Saludable* in La Molina, and the *Ecoferia Lima Come Sano*. Secondary sources were also used, including data from the National Institute of Statistics and Informatics (INEI) on the real GDP of Metropolitan Lima between 2002 and 2014; data on the total income of Lima's residents, taken from the "Employment and Income" section of the National Household Survey (ENAHO) between 2005 and 2014.

1. Conducted on December 20, 2014, at the *Ecoferia Lima Come Sano*.

Finally, data on the human development index of Metropolitan Lima was also consulted, based on statistics from the United Nations Development Programme (PNUD-Peru 2013), in order to chart the increase in organic stores in Lima as a result of the economic growth of the metropolitan area over the last eleven years.

RESULTS AND DISCUSSION

1. Definitions of natural, healthy, functional, and organic products

Billions of consumers around the world spend trillions of dollars buying organic products at premium prices based on false claims or misguided perceptions about food safety, nutrition and/or health propagated through food industry marketing (Chassy 2014). At present, there is a general tendency among consumers to confuse terms, messages, symbols, and brands when making decisions on what to eat or drink (whether products are organic or natural, etc.) or where to buy products (Hartman Group 2010). This ultimately results in erroneous perceptions with regard to what is healthy or safe (Chassy 2014). In 2010, the Natural Marketing Institute (NMI) conducted a study that clearly showed that consumers confuse the terms "organic" and "natural." The results indicate that consumers associate the fact that a food "contains no artificial flavors or preservatives" with the term "natural" (Rogers 2011b). Indeed, over half of all organic consumers worldwide believe that natural products do not contain pesticides (Molyneaux 2014). On the other hand, consumers are said to believe, conceptually speaking, that "organic" refers to a "more natural" product, and that these terms essentially overlap and complement one another (Hartman Group 2010). Perhaps the most alarming issue, as noted by Rogers (2011b), is that consumers are unable to differentiate between the benefits of organic products and those of natural products; for example, that the former are proven to provide benefits for the health of families and children, the environment, and improved flavor or nutrition. In other words, consumers' general perception of natural and organic products is that both offer identical benefits. With this in mind, it is important to define such concepts in order to contextualize the study in Peru, considering that — like other consumers of organic products around the world — the majority of Peruvian consumers are unable to distinguish an ecological or organic product from a natural one when it comes time to choose their foods.

Natural products are those that have been extracted from nature, whether they come from a living organism, the soil, or any other element of the earth. They may have undergone chemical or biogenetic transformations, and pesticides or other substances may have been used in in their production (NCCIH 2013). As such, natural products can be considered conventional products, given that conventional agriculture — in order to ensure the

durability of its products — uses processes and inputs that negatively affect the foods, in turn affecting both human health and the environment (Alvarado 2004). These types of products enjoy high market penetration and may be found in a range of establishments, from market stalls to supermarkets and specialty stores.

The second type of product is **healthy foods**, which are those that foster a healthy life. As such, they have a lower solid fat content, low simple carbohydrate content, and a higher amount of fiber, vitamins, and minerals, among other characteristics. This, of course, is directly related to a balanced diet (Muñoz 2005). It thus follows that there are natural products that may not be healthy. Honey from bees is natural, for example, but contains high amounts of sugar. There are also people who are allergic to honey, and are unable to consume it due to its pollen content (Cisneros 2012). Another example is that of jams (made from natural fruits), which are sweetened with white sugar and contain preservatives and colorants and thus are not healthy products.[2]

The third type of products are referred to as **functional foods** (which also may be called healthy). Such foods have proven benefits for one or more of the body's functions, aside from their nutritional contributions, in such a way as to improve health and wellbeing (Diplock *et al.* 1999). Functional products, according to Goetzke *et al.* (2014), are those that positively affect health, making them a kind of conventional product. Typical functional products include probiotics, prebiotics, and those containing omega 3. Poulsen (1999) offers a definition of functional products based on the following characteristics: (a) enrichment of the product through the addition of a substance already present in it; (b) substitution of a component with a similar but healthier substance; (c) enrichment of the product through the addition of a substance not already present in it; and finally, (d) elimination or removal of an unhealthy component.

The fourth and final type of product is **organic foods**, which are also known as **ecological** or **biological** foods. These are primarily healthy, high-quality foods subject to control during all stages of the production process, starting at origin (CAAE 2013; Hartman Group 2010). Their production chain includes everything from the selection of the soil and plant matter (seeds), to the method of irrigation, and to pest and disease control, all of which must be managed using organic methods. The raising of animals is normally subject to requirements with regard to feed, reproduction, living conditions, transport, and procedures for their slaughter (FAO 2003). In order for a product to be certified as organic, it must

2. Interview with Silvia Wu.

meet specific requirements, which are derived from a farming system that avoids the use of synthetic chemicals such as fertilizers and pesticides (Shafie and Rennie 2012), as well as hormones, antibiotics, and/or transgenics (Chassy 2014).

Organic farming activity is also known as ecological or biological agriculture, according to Peru's "Organic or Ecological Production Promotion Act (Law N°29196) (Congreso de la República 2008). However, it should be noted that many products of organic origin are not certified in Peru, although they are known to be ecological, based on the care taken to avoid affecting the environment through the use of chemical fertilizers, herbicides, and/or pesticides in each production stage. Such organic farming procedures ultimately affect the price of the end products, since environmentally responsible production processes and other aspects of organic farming are more costly (Proexpansión 2014; Hartman Group 2010; Gielissen 2011; FAO 2008).

Another related issue that requires a detailed explanation is that even if a product has the word "natural" on its label, there is no absolute guarantee that this is genuinely the case. Although all organic foods are natural, the reverse does not always hold true (Ecología Verde 2014). Natural products need only meet the condition of having initially come from nature, regardless of whether the result has been chemically modified (i.e., conventional products). In the case of organic products, on the other hand, production methods must be chemical-free, and organic certification must be obtained. The term "organic" is typically understood to refer to the process undergone by the food at origin (for example, in the earth, on the plant, or in/on the animal), while the term "natural" describes what happens after the food leaves its place of origin, during the subsequent production process (Chassy 2014; Hartman Group 2010). This, then, is the key distinction between the terms "natural" and "organic" (Hartman Group 2010), given that pesticides are not used during the production of organic products.

Finally, the Hartman Group (2010) discusses the term "clean," which goes beyond "organic" and "natural." A **clean product** implies two types of associations: on the one hand, an association of a symbolic nature (fresh, safe, locally produced, and healthy); and on the other, an objective association, in that a clean product is less processed and does not involve the use of chemicals, pesticides, or any other artificial additives (Hartman Group 2010). In addition to the positive attributes suggested in consumers' minds by the terms "natural" and "organic," the term "clean" encompasses a series of distinctions that signify quality, above all to those with a strong preference for organic products. Thus, it is necessary for the organic industry to continue educating consumers and ensuring that it effectively communicates the benefits offered by the industry's products by using correct definitions,

taking into consideration that potential consumers are fundamentally interested in health, sustainability (Rogers 2011b; Hartman Group 2010), and safety, attributes that can be directly verified by means of product's labeling (Hartman Group 2010).

Lastly, it should be emphasized that organic, biological, or ecological products may also be natural, healthy, and/or functional, in addition to being produced without the use of synthetic chemicals. Table 1 outlines the definitions of conventional and organic products.

Table 1
Definitions of conventional, natural, healthy, functional, organic, and clean products

Classification	Product type	Definition
Conventional: end product has been modified using chemicals	Natural	Includes synthetic chemicals introduced during production or at a later point.
	Healthy	Contains a lower quantity of solid fats, low levels of simple carbohydrates, a high quantity of fiber, vitamins, and minerals, etc.
	Functional	Satisfactorily proven to benefit one or more of the body's functions and is thus conducive to improving health and wellbeing.
Organic, ecological, or biological: end product produced without synthetic chemicals used or introduced in the production chain	Organic	Ecological or biological in origin. Possesses certification that no chemicals were used at any point in the production process.
	Clean	Brings together a series of attributes that communicate "quality," especially to consumers who strongly prefer organic products.

2. Factors that determine the selection of organic or conventional products by types of organic consumer

At the most basic level, the analysis of consumer behavior deals with preferences and the ways such preferences are formed in people's minds (Ozguven 2012). Many studies have shown that attitude exerts a significant influence on buying decisions (Stolz *et al.* 2011). In addition, various studies have been conducted on factors that determine the selection of an organic product. For example, Hughner *et al.* (2007) identified nine factors that stimulate the purchase of organic products: concern for health and nutrition; better

flavor; care for the environment; food safety; interest in animal wellbeing; support for the local economy; health standards; nostalgia; and curiosity or trendiness. According to Stolz *et al.* (2011), the most important attitudes in relation to buying organic products are those pertaining to concern for health, the environment, flavor, and the origin of the product. Mohamad *et al.* (2014), for their part, observed that the consumption of such foods is on the rise due to consumers' increased awareness about issues such as food safety, quality, concern for health, and responsibility toward nature, etc. Lee and Yun (2015), on the other hand, found that consumers' perception of five factors regarding organic products (nutritional content, natural content, ecological wellbeing, sensory attraction, and price attributes) influence utilitarian and hedonistic attitudes relating to the purchase of these products. Finally, the International Federation of Organic Agriculture Movements (IFOAM 2014) states that basic organic agricultural principles are rooted in issues such as health, ecology, equality, and safety. We can conclude, therefore, that research studies have found that health is the primary motive for buying organic foods and products (Lee and Yun 2015). In addition, care for the environment is mentioned in all of the studies of consumers of organic products, and is listed among the principal factors behind their buying decisions.

Over time, consumers of organic products have been categorized based on their degree of involvement and their level of interest in products that promote health and environmental safety (Proexpansión 2014; Chassy *et al.* 2014; Hartman Group 2010; NMI 2013). In 1999, the Hartman Group conducted a survey of 26,000 representative U.S. families, of which one-third consumed organic foods, and classified them into core, mid-level, and peripheral consumers (Hartman Group 2008). The NMI, on the other hand, classified consumers as LOHAS, *naturalites*, drifters, *conventionals*, and unconcerned. Lastly, a study by the Spanish Ministry of the Environment and Rural and Marine Areas (MAGRAMA 2011) entitled "Estudio del perfil del consumidor de alimentos ecológicos," surveyed 455 consumers of ecological products in Spain between the ages of 18 and 69 who were able to recognize ecological products and the labels that identify them as such. Below, we will provide a detailed explanation of these different classification systems.

As mentioned, the Hartman Group (2008) divided organic consumers into core, mid-level, and periphery groups. The consumers classified as core level are those who frequently buy organic products, i.e., individuals who are very passionate about these foods. Periphery consumers are those with minimal connections to the organic world, leading to infrequent consumption of such products and a very low level of involvement (Hartman Group 2008). Between these two extremes are the mid-level consumers, who are in turn divided into two subcategories: the inner mid-level, characterized by a more in-depth, integrated relationship

with organic products that situates them closer to core consumers; and outer mid-level consumers, who are positioned closer to the periphery.

Like the Hartman Group, the NMI (2013) classified consumers by their level of interest in products that promote health and environmental safety, dividing these individuals into five subgroups: LOHAS, *naturalites*, drifters, *conventionals*, and unconcerned, describing them as follows:

A. **LOHAS:** The term LOHAS stands for "lifestyles of health and sustainability." LOHAS are those consumers who buy organic products based on their firm beliefs regarding the healthiness, quality, better flavor, sustainability, and natural and nutritional benefits of these products (Hsu and Chen 2014; Vega-Zamora *et al.* 2013; Shafie and Rennie 2012; Falguera *et al.* 2012). LOHAS also view such products as "environmentally friendly" and typically seek to engage in "ethical" or "sustainable consumption" (Aschemann-Witzel *et al.* 2013). Additionally, LOHAS seek to ensure that producers use good agricultural practices and that the packaging used for products is "green" and not harmful to the environment (Rogers 2011a).

B. ***Naturalites*:** *Naturalites* are frequent users of organic products who prioritize personal health first and foremost, even above the environment. If they are unable to find organic products, their second purchase option is natural or healthy products.

C. **Drifters:** Drifters are swayed by trends, meaning that their loyalty to sustainability is not always consistent. Their buying decisions tend toward certain brands of products or those with a "premium" reputation. They are generally unconcerned with the environmental aspect, but like to give the impression that "they are doing their part" with regard to social responsibility (NMI 2013). When reading labels, many consumers in this category express skepticism as to whether the product is truly organic (Janssen and Hamm 2014). Even so, they consume such products, given that their buying habits are motivated by social pressure.

D. ***Conventionals*:** *Conventionals* are practical and rational, concerned with how they use their money and opting for the most economical option when it comes to food (NMI 2013). These consumers are highly price-sensitive, a factor that can directly influence their purchases. Because of their limited income, these consumers embrace the organic trend when such products are affordably priced, but they generally view the ecological benefits as secondary (NMI 2013). It has been irrefutably demonstrated that organic products tend to be more expensive than their conventional counterparts, and the

price difference may be too great to convince consumers in this group to change their buying habits (Falguera *et al.* 2012; Hartman Group 2010).

E. ***Unconcerned*:** Unconcerned consumers are those who are disengaged from current concerns regarding the environment and society. This type of consumer faces daily challenges and hardships in their lives (NMI 2013) and believes that the shelf life of organic products is too short (Hjelmar 2011). Unconcerned consumers place their lifestyle first in order of importance, and seek to prevent that lifestyle from being threatened or altered.

Finally, the Spanish study conducted by MAGRAMA (2011) offers its own system for classifying the typology and sociodemographic profile of Spanish consumers of ecological foods, thereby making its own distinct contribution to the present analysis. This study classifies ecological consumers into four groups:

A. **The Convinced:** These are the champions of the "ecological cause," who display a combative, militant attitude when it comes to defending their preferences, and basing their arguments on health issues. As such, they are highly knowledgeable about ecological products, in terms of both their correct identification and the range of options available.

B. **Ecologists:** This type of buyer shows concern for the environment, which translates into responsible habits of consumption. Ecologists are better informed than the average consumer about which companies make an effort to contribute to sustainability, and they have clearly defined criteria for the correct identification of ecological products, informing themselves and reading the ingredients before deciding on their purchases. At the same time, they display a more open, proactive attitude towards trying new products.

C. **Concerned about Health:** These consumers' health-consciousness is the key to their interest in ecological products: consuming this type of product is guaranteed to help them "take better care of themselves." Their level of involvement with environmental issues is lower than that of the first two groups.

D. **The Uninvolved:** This group of consumers is the least concerned with maintaining a healthy lifestyle. Their consumption of ecological products is based primarily on trends, rather than deeply held convictions. For example, they tend to see climate change as an inevitable process about which they can do little or nothing.

The classifications used by the Hartman Group, NMI, and MAGRAMA have been reorganized in Table 2 below to aid in the identification and understanding of each one of the consumer profiles. The first level corresponds to core consumers, those who go beyond the merely organic, even prioritizing traceability through personal relationships with farmers in order to determine whether producers' social, environmental, and health standards are truly consistent with the term "organic" (Hartman Group 2010). As shown in Table 2, the core sector (Hartman Group) is equivalent to the LOHAS (NMI) and the convinced (MAGRAMA). At the mid-level (Hartman Group) are the *naturalites* and the drifters, as classified by the NMI, with the *naturalites* (NMI) equivalent to the ecologists and those concerned about health (MAGRAMA); while the drifters (NMI) are equivalent to the uninvolved (MAGRAMA). Finally, the third level corresponds to periphery consumers (Hartman Group), who are equivalent to conventional and unconcerned consumers (NMI); while the Spanish study by MAGRAMA provides no comparable classification for this level (Proexpansión 2014; Chassy *et al.* 2014; MAGRAMA 2011; Hartman Group 2010; NMI 2008).

Table 2
Description of organic and non-organic consumer categories in the different classification systems

Hartman Group	NMI	MAGRAMA	Consumer Category Description
Core consumers	LOHAS consumers	Convinced consumers	Involved with and influential in the organic industry. Concerned about health and the planet.
Mid-Level consumers	*Naturalite* consumers	Ecologist consumers	Concerned about the environment and responsible consumption habits.
		Consumers concerned with health	Frequent users of natural and organic products concerned with their personal health and, to a lesser degree, the environment.
	Drifter consumers	Uninvolved consumers	Follow the latest trends. Their involvement in the environmental movement is inconsistent.
Periphery consumers	Conventional consumers	-	More focused on themselves. They are practical, rational, and conscious of waste, but place a higher priority on savings.
	Unconcerned consumers	-	Do not feel responsible for the environment unless it threatens their lifestyle.

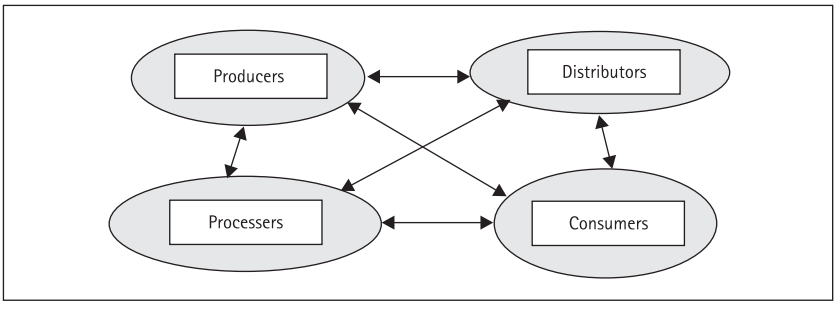
Sources: Proexpansión (2014); Chassy *et al.* (2014); MAGRAMA (2011); Hartman Group (2010); NMI (2008).

These studies point to the tremendous potential of ecological products, with consumers around the world now displaying an increasing familiarity with sustainable consumption trends and showing a greater willingness to increase their consumption of such products (Asaja 2012). Core customers continue to be the "star" buyers of these products, given their many reasons for continuing to do so. According to Silvia Wu, there are three characteristics that define organic consumers in Peru: their income has been sufficient to buy these products over the last fifteen years or so (which, chronologically speaking, coincides with the boom in Peru's economy); they are knowledgeable about what defines an ecological or organic product; and lastly, they are aware of or interested in what makes a product ecological.[3] The number of consumers becoming involved in the organic world is on the rise and includes those situated on the periphery or at the mid-level, who are now consuming more types of organic products than in the past (Hartman Group 2010). Consequently, there seems to be a growing opportunity to sell ecological goods and services. If this opportunity is used to full effect, it may ultimately prove to be most attractive for periphery or mid-level consumers, whose lifestyle has gradually incorporated the concept of eco-intelligence: the result of a symbiotic process centered on the consumption of products compatible with sustainable development, ecological and social justice, and health (Estévez 2010).

3. The emergence of organic markets and stores in Peru

In order to understand organic markets, it is first necessary to define the food exchange system (FES). The stakeholders involved in ecological agriculture are situated within FESs, which comprise all those agents who take part, directly or indirectly, in the ecological agro-food chain by facilitating, allowing for, and/or contributing to the development of the ecological agro-food sector. An FES includes producers, processers, distributors, and consumers (Graph 1).

Graph 1
Food exchange system (FES)



3. Interview with Silvia Wu.

In the case of supermarkets, Ecológica Perú (a group of producers who organize *bioferias* in Lima) initially took charge of supplying ecological products — primarily vegetables grown in the department of Lima — to three chains in the city of Lima. This group was responsible for inspecting and packaging the products in order to meet quality standards, as well as facilitating delivery and taking care of administrative and accounting tasks. As such, Ecológica Perú took on the role of a "solidary middleman," constituting an important link between producers and supermarkets, in an attempt to supplement the conventional products sold in these establishments with an agro-food supply. Subsequently, the increase in the consumption of organic products led supermarket chains such as Wong to expand their product lists (after beginning with organic eggs) to promote healthy eating to their customers (*Apuntes Empresariales* 2014). The demand for organic products rose by as much as 150% during the first eight months of 2014 over the same period the previous year, according to figures released by the Wong supermarket chain (*Publimetro* 2014). Thus, we can conclude that organic products are increasingly in demand as part of the food basket of Lima's residents. This has led to their increased – and now widespread – availability in supermarkets in the city of Lima.

In this study, we focus on organic markets and organic or natural stores, which are discussed in more detail below.

3.1 Organic markets: the *Bioferias*

Organic open-air markets are part of the FES, since they interchange materials, goods, services, experience, and knowledge among themselves and with the other stakeholders involved in this system. As such, their interactions allow for positive feedback processes among the stakeholders involved (Garrido 2005). *Bioferias* are physical spaces for the sale and promotion of biological diversity, offering exclusively ecological products backed by a guarantee. They also work to promote, educate, and disseminate practices of respect for natural resources and the environmental conservation, as well as healthy living. Finally, they foster a lifestyle of responsible consumption based on fair trade (Gómez and Morales 2012). These markets feature food vendors, as well as presenters who seek to raise awareness of recycling practices and offer talks on alternative health and nutrition, agro-ecotourism, etc. (Alvarado 2004). Through these *bioferias*, the population is exposed to and educated on the benefits of consuming ecological products (Jurado 2009). All of these experiences in the city of Lima continue to serve as replicable models for similar initiatives in other cities throughout the country (Wu 2008). In Peru, there are approximately twenty *bioferias* — also variously known as *ecoferias, ferias ecológicas, ferias verdes,* or *mercados saludables* — located in different cities including Lima, Piura, Lambayeque, Cajamarca, Ancash, Huanuco, Junin, Ayacucho, Apurimac, Arequipa, and

Cusco (Cisneros 2012). For proof of the importance of these Peruvian organic spaces, we need only look to the case of the region of Andalusia in Spain, where an ecological food market, i.e., *bioferia*, was founded as a direct result of the Peruvian experience in Lima (De la Cruz 2008).

The Miraflores *Bioferia* — the first and most important *bioferia* in all of Peru — got its start in Metropolitan Lima in 1999 and is still going strong today. Visitors to this *bioferia* have the opportunity to buy and consume ecological products each week, thanks to Ecológica Perú. The *bioferia* takes place one day a week for six hours and sells certified organic products. The array of goods on offer includes vegetables, tubers, fruits, grains, legumes, and dairy products (Jurado 2009). In the beginning, the Miraflores *Bioferia* featured 20 producers and approximately 80 products. By mid-2002, the range of products had grown to more than 200, with over 300 talks and presentations (Alvarado 2004). This *bioferia* offers a space for interaction between consumers and producers, providing an approachable way to learn about agro-ecological concepts and proposals (Wu 2008). Consumers state that they prefer to do their shopping there because it gives them a chance to interact directly with producers in a pleasant environment (Gómez and Morales 2012).

Although there are few ecological markets in the city of Lima, they have gradually increased in number over time (see Table 2). These markets include the Surquillo *Bioferia*, the Cieneguilla *Ecoferia*, the *Mercado Saludable* in La Molina, and the *Ecoferia Lima Come Sano*, which was inaugurated in 2014. All of these markets are open Saturdays and Sundays only. One of the most important strategies behind them is the constant advice they offer producers on how to develop and improve their sales experiences in these organic spaces, as well as emphasizing the need for the producers to simultaneously transmit appropriate information on the health benefits of consuming ecological products, stressing to consumers the difference between these products and their conventional counterparts.[4] On the negative side, however, it has proven difficult to sustain *bioferias* in Lima over time, since not all of them operate on a regular basis due to difficulties with the municipalities of the various districts of the city or management problems among the organizers. In order to achieve consistently successful results, all of the actors involved (the municipalities in which the *bioferias* are located, the promoters, the producers, and the consumers) need to collectively focus on good will, organization, and active participation.[5]

4. Interview with Silvia Wu.
5. Interview with Silvia Wu.

3.2 *Biotiendas* or ecological stores and home delivery stores

In addition to the weekly organic markets, Lima also has other establishments that are open to the public daily: stores specialized in ecological, organic, and healthy products. The number of stores that exclusively offer ecological or organic products is small, but has risen over time due to the growth in the popularity of organics in recent years. Lima's *biotiendas* (ecological stores) offer a range of ecological products, such as food and clothing, in addition to services such as restaurants. The stores' main objective is to foster responsible consumption for the benefit of personal health and the environment (Economía Solidaria 2011). One example is K'antu, La Casa del Comercio Justo, which opened in Lima in 2007, based on an alliance of the handicrafts sector and the agro-ecological movement. K'antu combines a cultural space, a café, a responsible tourism agency, and a store, all in a single location in Barranco, a busy district in Peru's capital (Wu 2008).

On the other hand, stores operating exclusively through home delivery services employ a sales strategy created to meet consumers' desire to acquire organic products without having to leave home. The first important business experience in this category was Biocanasta, which opened in 2002 but permanently suspended its activities in 2004 due to high operating costs (Wu 2008). Currently, there are various stores in Lima that offer home delivery services and sell a wide range of organic products. Examples include Mi Parcelita Bio Entrega, Establo Huampaní (which began its activities in 1994), and Bio Agricultura Casa Blanca (Economía Solidaria 2011).

Ecological stores — also known as *biotiendas* — and stores offering home delivery services have proliferated over time (see Table 3). The table illustrates the gradual increase in *bioferias* and organic and natural stores following the establishment of the Miraflores *Bioferia* in 1999, in response to the growing demand for their specialized products.

Table 3
Timeline: opening of organic and natural markets, fairs, and stores in Metropolitan Lima, 1990–2014

Business Type	Year Opened														
	1990	1995	1999	2002	2003	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Markets and Fairs			Miraflores Bioferia				Cieneguilla Ecoferia			Surco Bioferia[1]		Mercado saludable de La Molina	Pachacamac Ecoferia Bioferia de Surquillo	Apega Producers' Market	Ecoferia Lima Come Sano Piensa Verde Ecomarket
Producers/Suppliers		Bioagricultura Casa Blanca[2]		Campos de Vida		Biotienda La Huertita			Agro Vista del Valle						
Store	Universidad Agraria La Molina store			Biocanasta[1]	Lacto-ovo Vegetariano[3] Govinda[3] Tai-I[3] El Paraíso de la Salud[3] Bircher Benner (1972)[3]	Avantari[4]		K'antu Madre Natura Eco Tienda Natural	Kasa Kambalache	El AlmaZen	Eco Zona Árbol de la Vida La Calandria Punto Orgánico La Panadera	Salvia Bio Deli BioZenda La Bodega Verde[6] Natural Store[5] El Pan de la Chola	Biotienda La Floresta Generación Abeja Enkanto Manufoods Las Vecinas[6]	Las Vacas Felices The Natural Shop[5] Ecotidiana Quinoa[6] Raw Cafe Club[6] Shanti	La Biotienda Miraflores Mara Biomarket Fresh Bite[6] Tika Foods La Colorada La Sanahoria
Home Delivery Services												Mi Parcelita Bio Entrega	A tu Casa Orgánico	Bio-Organic La Cruz	Arte Sano[7] Danka[7]
Supermarkets												Wong Vivienda			

Notes:
[1] The Surco Bioferia closed in 2011; Biocanasta closed in 2004.
[2] Bioagricultura is a farm that sells organic products and develops sustainable technologies, among other activities.
[3] Not included in this analysis.
[4] Center specialized in natural medicine.
[5] Has online store.
[6] In addition to offering dishes prepared from organic ingredients, this business also sells organic products.
[7] In addition to selling its products via home delivery, this business also offers them through other organic stores.

4. Growth of Lima's GDP, rising income, and their relationship to the increase in organic and natural spaces in Peru

There is a close association between two variables: (a) economic growth; and (b) changes in dietary habits. The so-called "health-focused stage" is correlated with higher income and an increased awareness of the direct positive effects of dietary habits on human health (Park *et al.* 2007; Nam *et al.* 2010). Additionally, the globalization of markets has modified traditional channels of information, production, and marketing. As a result, this trend has become even more widespread, fostering an increase in purchases of healthier and higher-quality foods. Furthermore, cities have grown hand-in-hand with the development of the global food industry, which has adopted intensive agricultural production measures to meet this rising demand (Falguera *et al.* 2012). In the case of Peru, the country experienced robust growth following decades of political and economic vulnerability (Evans and Tveteras 2011). The Peruvian economy grew at a sustained average rate of 5.7% annually between 2005 and 2011 (PNUD 2012). Consequently, per capita GDP rose by 50% in the same period (United Nations 2014). Additionally, the national poverty rate dropped from 48.5% in 2004 to 23.9% in 2013 (World Bank 2014). All of these advances and developments are due in part to policies focused on liberalizing trade, attracting foreign capital, implementing a prudent macroeconomic policy, and promoting a favorable external environment (World Bank 2014).

If per capita GDP is any indication of a city's level of productivity, it is noteworthy that Lima's per capita GDP has reached US$ 3,503. The fertility rate in the city has fallen due to improvements in health conditions, education, women's access to employment, and urbanization, as well as a reduction in the migration rate from other provinces to the capital and the impact of demographic control policies. Lastly, nearly 60% of families in Lima now have a refrigerator and 86% have a gas stove (Del Carpio and Vila 2010).

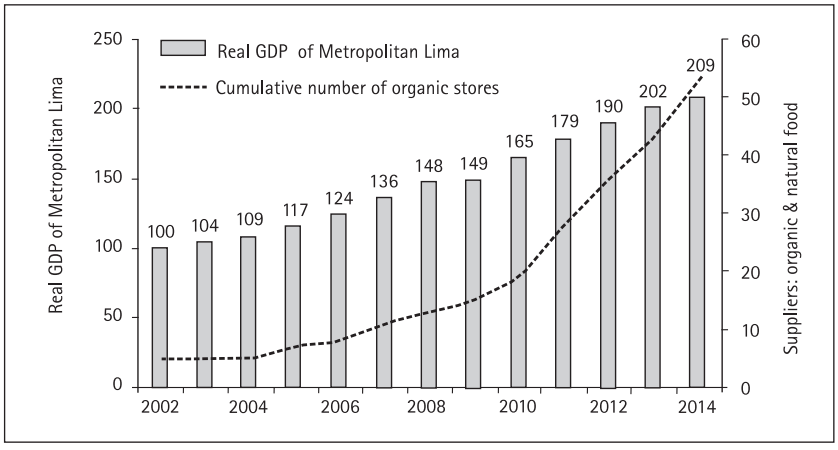
Organic activity drives sustainable production systems that minimize the effects of global warming, thus fostering the conservation and preservation of native biodiversity and forests, in addition to creating jobs and income for farmers (MINAGRI 2013). However, it has been discovered that there are barriers to the growth of the organic market, most notably: lack of product availability and supply; low confidence in and knowledge of products; and price differences between conventional and organic products (Stolz *et al.* 2011). Fortunately, Law N° 29196 (Organic or Ecological Production Promotion Act) provided a platform for policy coordination and development, which has helped increase the production of the organic sector and provided it with additional assistance, with a special focus on domestic markets (FIBL and IFOAM 2014). Although these products continue to be positioned almost

exclusively in market niches situated in Metropolitan Lima, the market continues to grow at a rapid pace in other cities as well (Mohamad *et al.* 2014).

Research on Peruvian consumers, and especially those in Metropolitan Lima, has found that they are willing to pay up to 123% more to buy healthy products rather than other, unhealthy options (*Gestión* 2012a). Figures indicate that sales of organic products total US$ 3 million on the domestic market, which is equal to 0.8% of the value of organic products exported abroad (Gómez and Morales 2012). Thus, domestic sales are still low compared to international sale, though they continue to grow.

In this section, we seek to demonstrate that the increase in spaces where organic products are sold in Metropolitan Lima is related to the growth of Lima's GDP or family income. For this analysis, we used the GDP of Metropolitan Lima (INEI 2015b) and data on the total income of Lima's residents as reported in the ENAHO, specifically in the "Employment and Income" section. The growth of Metropolitan Lima's GDP versus the increase in organic and natural spaces are presented in Graph 2.[7]

Graph 2
Real GDP[(1)] vs. establishment of organic and natural suppliers in Metropolitan Lima, 2002–2014 (in billions of nuevos soles)

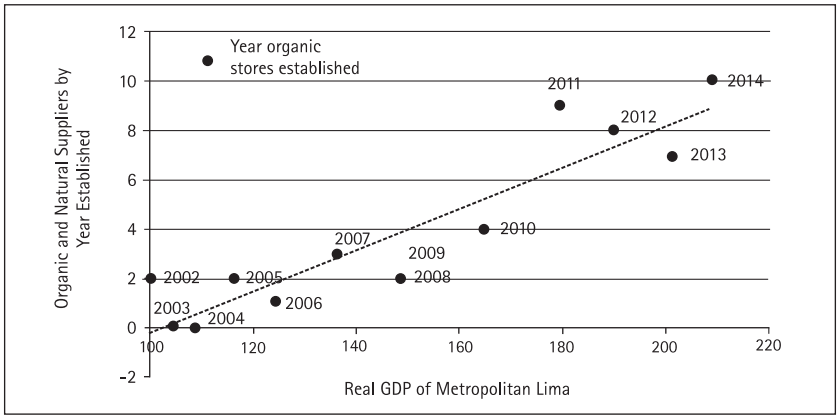


Note:
[(1)] At 2007 constant prices, making it possible to evaluate economic growth without the distortion caused by inflation.
Source: INEI (2015b); prepared by author.

7. See Appendix 1, which provides a list of ecological and natural businesses in Lima and the sources of information about these.

This study analyzes the correlation between Metropolitan Lima's real GDP in each year between 2002 and 2014, and the total income of Lima's residents (as provided in the ENAHO surveys, from 2005 to 2014), on the one hand, and the establishment of new organic stores for each year during the same period. Given that both variables are not taken from the same sample set, it was necessary to perform a nonparametric correlation using Spearman's correlation (Croux and Dehon 2010). A positive relationship was found between both variables (Graph 3), which was confirmed by Spearman's nonparametric correlation coefficient (considering the number of organic stores opened since 2002), which gave us a value of 0.862 ($p < 0.001$) (see Appendix 2).

Graph 3
Relationship between economic growth and the number of organic and natural suppliers in Metropolitan Lima, 2002–2014 (in billions of nuevos soles)



Source: INEI (2015b); prepared by author.

Additionally, a Spearman's correlation analysis was performed for the total income of Lima's residents (as provided by the ENAHO [INEI 2015a] for the abovementioned period) and the opening of new organic stores for each year in the same period. The positive relationship between both variables shows that continued economic growth coincides with an increase in the number of organic and natural stores (Spearman's correlation: 0.865 [$p < 0.001$]). According to the newspaper *Gestión*, the average income for Metropolitan Lima rose by 3.9% in the third rolling quarter of 2012 (August-October) (*Gestión* 2012b). Thus, we can demonstrate that, as a result of the economic growth the country is experiencing, there has been a progressive increase in the consumption of healthy and nutritional foods in Metropolitan Lima.

The location of organic and natural fairs and/or markets may be linked to the socioeconomic level of their customers, most of whom reside in the districts where these stores are located.

To confirm this hypothesis, we used data from the human development index for Metropolitan Lima. This index is based on statistics prepared by the UNDP and the Peruvian government (PNUD-Perú 2013), as well as the study "Una mirada a Lima Metropolitana," published in 2014 by the INEI, in which the Province of Lima was classified into five different zones, with "central Lima" classified as the area that groups together the highest-income districts. Average spending per person in "central Lima" was 1,082 nuevos soles per month in 2013. This amount is well above the average for Metropolitan Lima, which was 789 nuevos soles per month (INEI 2014). Likewise, average spending per person in "central Lima" on food was approximately 335 nuevos soles per month. Table 4 provides the socioeconomic indicators for the districts that make up "central Lima," according to the classification used by the INEI (INEI 2014), and "modern Lima," according to the classification used by Del Carpio and Vila (2010) for 2012. This table shows that for these two areas, the percentage of the population with a high school degree, total years of education, and per capita family income are above the mean for Metropolitan Lima. Therefore, we can conclude that organic and natural stores enjoy greater success in medium- and high-income areas, as well as areas with above average levels of education. In addition, we can affirm that these socioeconomic characteristics are key indicators when deciding on expanding organic and natural stores to other areas around the country where one can find potential customers with higher levels of purchasing power and education (Table 4).

Table 4
Socioeconomic indicators, districts of "central Lima," 2012

District	Population (Inhabitants)	Population with high school diploma (%)(%)	Average years of education (population Age 25 and Over)	Monthly per capita family income (nuevos soles)
"Central" and "modern" Lima (average)	8,481,415	79.09	10.93	1,049.20
Lima	286.849	80.16	11.54	1,186.80
Barranco	31,959	86.94	12.46	1,440.60
Breña	79,456	84.44	12.14	1,336.60
Jesús María	71,364	85.62	13.42	1,442.00
La Molina	157,638	86.20	13.76	1,557.50
La Victoria	182,552	75.97	11.16	1,080.80
Lince	52,961	85.74	12.85	1,534.40
Magdalena del Mar	54,386	84.52	12.98	1,433.00
Miraflores	84,473	89.50	14.25	1,589.10
Rímac	171,921	75.94	11.06	1,149.10
San Borja	111,568	87.06	13.97	1,396.60
San Isidro	56,570	88.89	14.02	1,418.70
San Miguel	135,086	85.29	13.01	1,446.30
Santiago de Surco	326,928	87.05	13.41	1,324.30
Surquillo	92,328	85.08	12.36	1,403.80

Source: PNUD-Perú (2013).

This article explains how the trend toward healthy living has penetrated Peru at the domestic level in recent years through stable growth in the supply of high-quality foodstuffs, such as organic products. Nevertheless, there are certain aspects of these organic and natural products that affect consumers' perceptions as a result of the food industry's marketing activities, which promote the purchase of natural products by presenting them as if they were organic. On the other hand, it has been found that the most important factors behind the decision to buy organic products are food safety and the health benefits offered by such products. The foregoing, together with the increase in *bioferias* and specialized organic or ecological stores driven by the economic growth experienced in Metropolitan Lima in recent years, has given consumers access to healthier and more nutritional foods. Additionally, we have seen how organic and natural stores enjoy greater success in medium- and high-income areas, as well as areas with above average levels of education. Thus, we can state that these socioeconomic characteristics are the key indicators when seeking to replicate the trend of establishing organic and natural stores in other areas with higher purchasing power and higher levels of education. Finally, we believe that it is necessary to compile the basic information needed in other parts of the country in order to compare the results with the data contributed by this study.

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APPENDICES

Appendix 1

Table 1a
Ecological or organic and natural suppliers, Metropolitan Lima, 2015

Name	Year established	Source	Type of products offered
Universidad Agraria La Molina Store	1990	http://www.lamolina.edu.pe/cventas/	Natural
Bioagricultura Casa Blanca[1]	1995	http://www.raeperu.org.pe/pdf/eventos/EXPERIENCIA_DE_BIOAGRICULTURA_CASA_BLANCA.pdf	Ecological and organic and healthy
Miraflores *Bioferia*	1999	https://www.facebook.com/BioFeria/info	Ecological and organic
Campos de Vida	2002	http://www.camposdevida.com/	Natural, healthy, ecological, and organic
Biocanasta[2]	2002	http://www.agriculturesnetwork.org/magazines/latin-america/agricultura-sostenible-y-comercio-justo-junio/el-desarrollo-del-mercado-ecologico-local-en	Ecological and organic, healthy
Vegetarian and vegan restaurants[3]	2003	Jenkins, Dilwyn (2003). *The Rough Guide to Peru*	Natural and somewhtat healthy; very few ecological and organic products
BioTienda La Huertita	2005	https://www.facebook.com/pages/La-Huertita/195890730510936?fref=ts	Ecological and organic, healthy
Avantari[4]	2005	http://issuu.com/ecodirectorio2104/docs/ecodirectorio_lima_-_cusco_2014_may	Healthy
Cieneguilla *Ecoferia*	2006	http://www.aecieneguilla.org/feria.htm	Ecological and organic
K'antu	2007	http://asociacion.ciap.org/rubrique.php?id_rubrique=116&tlang=es	Ecological and organic
Madre Natura	2007	http://www.madrenaturaperu.com/	Natural and somewhat healthy; very few ecological and organic products
Ecotienda Natural	2007	http://www.tiendaecomundo.com/web/secciones/index.php	Natural, healthy, ecological, and organic
Kasa Kambalache	2008	https://www.facebook.com/kasakambalache	Natural, healthy, ecological, and organic
Agro Vista del Valle	2008	http://agrovistadelvalle.com/	Ecological and organic, healthy
Surco *Bioferia*[2]	2009	https://es-es.facebook.com/pages/BioFeria-de-Surco/120603621634	Ecological and organic
El AlmaZen	2009	http://americaninlima.com/2009/08/04/almazen-organic-cafe-peru/	Natural, healthy, ecological, and organic

Name	Year established	Source	Types of products offered
Eco Zona	2010	http://www.economiasolidaria.org/noticias/alimentos_ecologicos_en_peru_al_alcance_de_su_mano	Natural, ecological and organic
Árbol de la Vida	2010	http://arboldelavida.com.pe/nosotros	Natural, ecological and organic
La Calandria	2010	https://www.facebook.com/lacalandriabarranco/info	Ecological and organic, healthy
Punto Orgánico	2010	http://puntoorganico.com/	Ecological and organic, healthy
La Panadera	2010	http://www.lapanadera.pe/	Ecological and organic, healthy
Mercado Saludable La Molina	2011	https://www.facebook.com/pages/Mercado-Saludable-de-La-Molina/223726337676297	Ecological and organic
Salvia	2011	http://www.salvia.com.pe/	Natural, healthy, ecological, and organic
Bio Deli	2011	https://www.facebook.com/pages/BIODELI/113758045398565	Not defined
Mi Parcelita Bio Entrega	2011	http://peru21.pe/noticia/740692/delivery-cosecha-al-éxito	Ecological and organic, healthy
BioZenda	2011	https://www.facebook.com/pages/BioZenda/199511900070710	Ecological and organic, healthy
La Bodega Verde	2011	https://es-es.facebook.com/labodegaverde	Ecological and organic, healthy
El Pan de la Chola	2011	http://publimetro.pe/vida-estilo/noticia-pan-chola-panaderia-que-todos-deberian-conocer-24845	Natural, healthy
Natural Store[5]	2012	http://naturalstore.pe/contact_us.php	Ecological and organic, healthy
Pachacamac *Ecoferia*	2012	https://www.facebook.com/ecoferiapachacamac	Ecological and organic
Surquillo *Bioferia*		https://www.facebook.com/BioFeriaDeSurquillo	Ecological and organic
Biotienda La Floresta	2012	https://www.facebook.com/biotiendalafloresta	Ecological and organic, healthy
Generación Abeja	2012	http://generacionabeja.blogspot.com/	Ecological and organic, healthy
A tu Casa Orgánico	2012	https://www.facebook.com/pages/A-Tu-Casa-Org%C3%A1nico/256356904429492	Ecological and organic
Enkanto	2012	https://www.facebook.com/pages/Enkanto-Ecotienda-CafC3%A9/336701969740335	Ecological and organic, healthy
Eco	2012	http://organicosmanufoods.blogspot.com/	Ecological and organic
Las Vecinas Eco-bar	2012	http://www.wapa.pe/sociales/2013-03-23-las-vecinas-eco-bar-un-grato-ambiente-en-el-corazon-de-barranco	Ecological and organic, healthy
Las Vacas Felices	2013	https://www.facebook.com/BIOBODEGA.LASVACAS	Ecological and organic, healthy
The Natural Shop[5]	2013	https://www.facebook.com/thenaturalshopperu	Not defined
Bio-Organic La Cruz	2013	http://www.economiasolidaria.org/noticias/alimentos_ecologicos_en_peru_al_alcance_de_su_mano	Ecological and organic

Name	Year established	Source	Types of products offered
Ecotidiana	2013	https://www.facebook.com/ecotidiana	Ecological and organic, healthy
Shanti	2013	https://www.facebook.com/ShantiLugarDePaz.Peru?fref=nf	Ecological and organic, healthy
Quinoa	2013	https://www.facebook.com/Quinoacafe	Ecological and organic, healthy
Ecoferia Lima Come Sano	2014	http://www.facebook.com/Ecoferialimafans	Ecological and organic
Piensa Verde EcoMarket	2014	http://www.munisanborja.gob.pe/index.php/historial-de-noticias/513-san-borja-anuncia-feria-ecologica-piensa-verde-en-el-marco-de-la-cop-20.html	Natura, ecological and organic
La Biotienda Miraflores	2014 2014	https://www.facebook.com/pages/La-Biotienda-Per%C3%BA/1431228947165845?sk=timeline	Natural, healthy, ecological, and organic
Mara Biomarket	2014	https://www.facebook.com/MaraBiomarket?fref=ts	Natural, healthy, ecological, and organic
Danka	2014	https://www.facebook.com/Dankanatural/photos_stream	Not defined
Tika Foods		https://www.facebook.com/tikafoods?fref=ts	Natural, healthy, ecological, and organic
La Colorada	2014 2014	https://www.facebook.com/pages/La-Colorada-Bodega-Org%C3%A1nica/294996993994351?fref=ts	Ecological and organic
Danka[6]	2014	https://www.facebook.com/Dankanatural/timeline?ref=page_internal	Natural, healthy, ecological, and organic
Arte Sano[6]	2014	http://artesano.pe/	Natural, healthy, ecological, and organic
Raw Café		https://www.facebook.com/RawCafeClub	Natural, healthy, ecological, and organic
Fresh Bite	2014	https://puntonutri.wordpress.com/2014/12/04/fresh-bite-una-alternativa-de-comida-rapida-fresca-y-saludable/	Natural, healthy, ecological, and organic
La Sanahoria	2014	http://limasocialdiary.com/salud-belleza/la-sanahoria-aterriza-en-la-ciudad/	Natural, healthy, ecological, and organic

Notes:

[1] Farm that sells organic products and develops sustainable technologies, among other activities.

[2] Stores that closed: Biocanasta in 2004; Surco Bioferia in 2011.

[3] Not included in this analysis.

[4] Center specialized in natural medicine.

[5] Has an online store.

[6] Suppliers offering home delivery and products for sale through organic stores.

Suppliers highlighted in gray indicate markets and fairs.

Appendix 2
Nonparametric correlation between real GDP, average annual family income, and establishment of organic and natural suppliers, Metropolitan Lima

Table 2a
Nonparametric correlation between real GDP and establishment of organic and natural suppliers, Metropolitan Lima (Spearman's correlation; in billions of nuevos soles)

			Real GDP	Establishment of organic and natural suppliers
Spearman's Rho	Real GDP	Correlation coefficient	1.000	0.862*
		Sig. (bilateral)		0.000
		N	13	13
	Establishment of organic and natural suppliers	Correlation coefficient	0.862*	1.000
		Sig. (bilateral)	0.000	
		N	13	13

Notes:
Test run with SPSS version 22.0.
* Correlation is significant at the 0.01 level (two-tailed).

Table 2b
Nonparametric correlation between average annual family Income and establishment of organic and natural suppliers, Metropolitan Lima (Spearman's correlation; in nuevos soles per year)

			Average total Income	Establishment of organic and natural suppliers
Spearman's Rho	Average family Income	Correlation coefficient	1.000	0.865*
		Sig. (bilateral)		0.001
		N	10	10
	Establishment of organic and natural suppliers	Correlation coefficient	0.865*	1.000
		Sig. (bilateral)	0.001	
		N	10	10

Notes:
Test run with SPSS version 22.0.
* Correlation is significant at the 0.01 level (two-tailed).

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