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# **Consumer perceptions of organic foods in Athens, Greece**

## **Master Thesis**

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## **Abstract**

Michopoulou, Stella. 2019. Consumer perceptions of organic foods in Athens, Greece. Master thesis at the University of Natural Resources and Life Sciences Vienna (Austria)

Greece is characterized by a considerably lower consumption of certified organic foods compared to the other Mediterranean as well as European countries. One of the main drives of consumption is customer perception which can influence the purchasing behavior either in a negative or in a positive way. The main aim of this study is to gain knowledge about the consumer perceptions towards organic agriculture and foods and the consumer corresponding purchasing behavior in Athens, Greece. The consumer perceptions, as well as their purchasing behavior, were measured through 260 structured questionnaires which were distributed to organic buyers in the center and the suburbs of Athens. It was found that the majority of the participants purchase organic products once per week mainly in organic farmers' markets and that the most regularly purchased products were vegetables and fruits. The most important purchasing criteria for the participants with a descending order were: price, regional production, nutritional value, discount or special offer, and availability. The respondents had expressed overall positive perceptions towards organic agriculture and products. Only 3,1% of the respondents indicated that they did not recognize any organic certification label at all. The frequency with which participants purchase organic products, as well as consumer perceptions and consumer purchasing criteria were also affected by demographic factors. Consumers of organic products are not characterized by complete homogeneity regarding their beliefs or demographics. The results of this study could be used as a tool for the improvement of the marketing strategy of organic products. The investigation of consumer purchasing behavior, as well as consumer perceptions, provide information that can be proven valuable for Greek authorities in order to be more responsive to the needs of the Greek organic consumers and thus improve the promotional activities of organic products.

## **Kurzfassung**

Michopoulou, Stella. 2019. Verbraucherwahrnehmung von Bio-Lebensmitteln in Athen, Griechenland. Masterarbeit an der Universität für Bodenkultur Wien

Griechenland zeichnet sich durch einen deutlich geringeren pro Kopf Verbrauch an Lebensmittel aus ökologischem Landbau im Vergleich zu den anderen Mittelmeerländern sowie den europäischen Ländern aus. Die Wahrnehmung der Verbraucher kann ihr Kaufverhalten negativ oder positiv beeinflussen. Hauptziel dieser Studie, Kenntnisse über die Wahrnehmung der Verbraucher in Bezug auf ökologischen Landbau und ökologische Lebensmittel und deren entsprechendes Kaufverhalten in Athen, Griechenland, zu erlangen. Die Wahrnehmung der Verbraucher sowie ihr Kaufverhalten wurden anhand von 260 strukturierten Fragebögen gemessen, die an Verbraucher von Bio Produkten im Zentrum und in den Vororten von Athen verteilt wurden. Es wurde festgestellt, dass die Mehrheit der Befragten Bioprodukte einmal pro Woche hauptsächlich auf den Märkten der Biobauern einkauft. Die am häufigsten gekauften Produkte waren Gemüse und Obst. Die wichtigsten Kaufkriterien für die Teilnehmer waren Preis, regionale Produktion, Nährwert, Rabatt oder Sonderangebot und Verfügbarkeit. Die Befragten äußerten sich insgesamt positiv zu ökologischem Landbau und Produkten. Nur 3,1% der Befragten gaben an, kein Bio-Zertifizierungszeichen anzuerkennen. Die Häufigkeit, mit der die Teilnehmer Bio-Produkte kaufen, sowie die Wahrnehmung der Verbraucher und die Kaufkriterien der Verbraucher wurden von demografischen Faktoren beeinflusst. Konsumenten von Bioprodukten zeichnen sich nicht durch völlige Homogenität in Bezug auf ihre Überzeugungen oder demografischen Merkmale aus. Die Ergebnisse dieser Studie könnten als Instrument zur Verbesserung der Vermarktungsstrategie von Bioprodukten verwendet werden. Die Untersuchung des Kaufverhaltens der Verbraucher sowie der Wahrnehmung der Verbraucher ergab Informationen, anhand derer die griechischen Behörden besser auf die Bedürfnisse der griechischen Bio-Verbraucher eingehen und die Verkaufsförderung für Bio-Produkte verbessern konnten

## **List of Abbreviations**

EU: European Union (Cambridge Dictionary, n.d.)

UAA: Utilized Agricultural Area (Eurostat, 2019a)

IBM SPSS: International Business Machines Corporation Statistical Package for Social Sciences (IBM Corp., 2017)

GMOs: Genetically Modified Organisms (Environmental Protection Agency, n.d.)

USDA: United States Department of Agriculture (USDA, n.d.)

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## **Glossary**

**Credence quality:** The quality that it is hard to be evaluated by consumers after the process of purchasing or consumption of a product or service (Halton, 2019).

**Organic area:** Includes land that is fully converted as well as under conversion to organic farming (Eurostat, 2014).

**Utilized Agricultural Area (UAA):** Includes areas such as permanent crops and grasslands, arable land as well as kitchen gardens (Eurostat, 2019a).

# **1. Introduction**

The trends of food consumption have been changed due to environmental, health and nutritional concerns (Laroche, Bergeron, & Barbaro-Forleo, 2001). Consumers want a diet which is healthier and at the same time respects and protects the natural environment (Smith-Spangler, et al., 2012). Food quality and safety issues increase consumer interest as well as influence consumer purchasing behavior for organic products (Laroche, Bergeron, & Barbaro-Forleo, 2001).

The increased interest of consumers towards organic products is correlated to the production methods of organic agriculture (Smith-Spangler, et al., 2012) since these methods satisfy the consumer demand for products that have been produced by using “processes” and “substances” which are characterized as “natural” (Council Regulation (EC) No 834/2007).

Consumer perceptions for organic products can also affect to a certain extent the growth of the organic food market (Gracia & Magistris, 2008). They are being utilized as a marketing concept that includes the consumer impressions as well as the consumer awareness about a product (Business Dictionary, n.d.) which can affect either negatively or positively the consumers purchasing behavior (Kazmi, 2012; Hanna & Wozniak, 2012).

All of the above leads us to question why the per capita consumption of certified organic foods in Greece lags considerably below the EU average. By investigating the perceptions that shape the purchasing behavior of the Greek organic food consumers we can bring to the surface an up to date view of the situation and evaluate the findings and how they can assist those involved with the marketing and sales aspects of organic food products.

## **2. Literature review**

### **2.1 Historical background of Organic Agriculture in Greece**

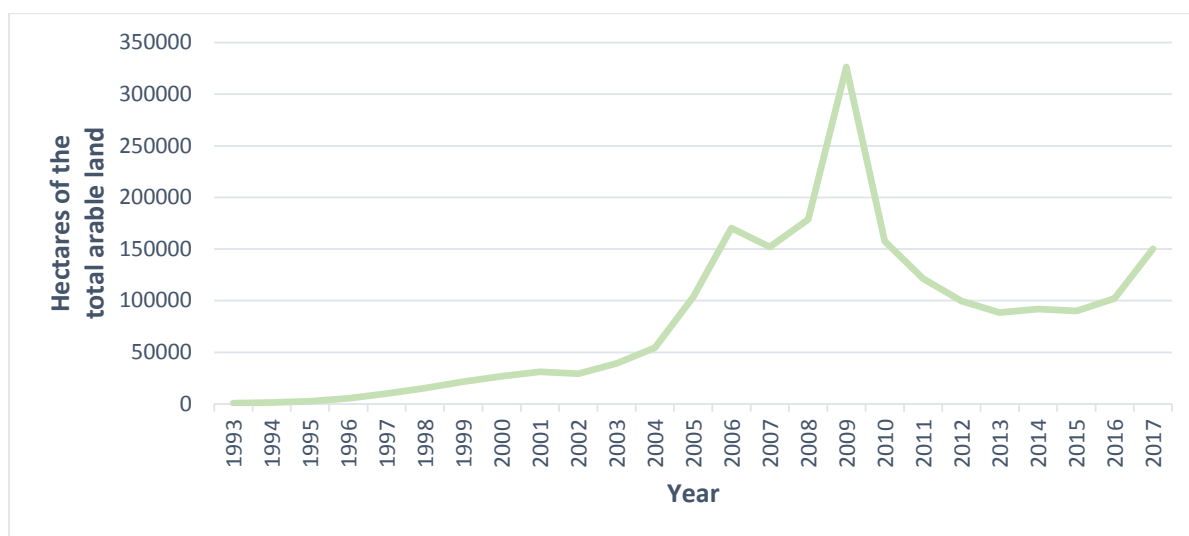
At the beginning of the 80s, organic agriculture was introduced in Greece by a group of people with high ecological concerns and noble motives. These people were not professional farmers but they were inspired by the alternative cultivation methods such as the biodynamic and natural cultivation of Steiner and Masanobu Fukuoka respectively (Van der Smissen, 2001). Organic agriculture was advertised through the mass media as the only way to change the existed and unreliable industrialized system of food production (Louloudis, 2001).

The commercialization of organic agriculture was established in 1982 when a Dutch firm under the name *Fertilia* asked for Greek organic currants so that it could cope with the high request from foreign countries (Bitsaki, Vassiliou, & Kabourakis, 2003). Products such as organic edible olives and olive oil were exported with the aid of the German firm *Blauel* in 1986. The *Blauel* company supported the production procedures of the aforementioned products (Bitsaki, Vassiliou, & Kabourakis, 2003; Van der Smissen, 2001).

In the following years, farmers started to convert their conventional farms to organic with the supervision of foreign inspection bodies such as *Naturland*, *Skal*, and *Soil Association*. Greek certification or inspection bodies for organic agriculture did not exist at that time (Van der Smissen, 2001). Later in 1993, the first Greek certification body known as *DIO* was established and joined the relevant sessions of planning the schemes of European Union (EU) regulations. These sessions were supported by the Greek Ministry of Rural Development and Food (Louloudis, 2001). Due to the increasing number of organic farmers, a variety of educational programs for organic agriculture were created in order to inform and educate new farmers as well as agronomists. These programs were organized by universities and local self-government (Pisimisi, 2012).

### **2.2 Statistics throughout the years**

Statistical data are not available between 1982 and 1992 so as to measure the growth of Greek organic agriculture in that period (Van der Smissen, 2001). Statistical data for organic agriculture became available through the Ministry of Rural Development and Food after 1992 (*Figure 1*).



**Figure 1:** Total Organic Arable Land in conversion and fully converted in Greece (source: Ministry of Rural Development and Food, 2018; Eurostat, 2019)

Between 2004 and 2006 (*Figure 1*) the hectares of the total organic arable land presented an increasing trend since the European subsidies were available for the farmers (Pisimisi, 2012). As a result the number of organic producers increased. Also, in 2009 the total organic arable land reached a peak of 326.253 ha because the request for organic products had been raised (Pisimisi, 2012). The annual turnover of organic products reached 25 million euros in 2009 (Karadima & Karadimas, 2014). This trend led the supermarket chains to raise the availability of organic products or even to develop a separate section in the supermarkets for them (Karadima & Karadimas, 2014).

In 2010 a decreasing trend in the area of total organic arable land was observed because the subsidy programs of 2005 and 2006 were over and no financial support could be given to producers but also because the Greek financial crisis began to emerge (Pisimisi, 2012).

Since then, Greek organic agriculture has presented a considerable decrease in its growth (Willer, Schaack, Lernoud, & Meredith, 2016). Between 2012 and 2017 the total Greek organic area has been decreased by 11.3% (Eurostat, 2019b).

The most recent data from 2017 shows that the share of the total organic area in total Utilized Agricultural Area (UAA) for the EU of 28 was 7% while in Greece it was 8%. Other European countries such as Germany, Spain, and Italy, had a share of 6,8%, 8,7% and 14,9%, respectively (Eurostat, 2019b). On the other hand, the share of the total organic area (not in total UAA) of the aforementioned European countries at the same year was very different. In Spain the share of the total organic area was 16,6%, in Italy 15,2%, in Germany 9,1%, while in Greece it was 3,3% (Eurostat, 2019b).

### **2.3 Consumer purchasing behavior and perceptions**

Consumer behavior is the way that consumers end up with the decision to purchase a product. The way that each consumer decides to shape and live his life mainly depends on economic factors (Vasiliadis, 2007). In the field of marketing, consumer behavior investigates the manner in which people make decisions in order to allocate their available resources such as time and money to products that are available for consumption. This includes the study of what, why, when, where, and how often consumers buy something (Bennett, 1995; Blackwell, Miniard, & Engel, 2001).

The study of consumer purchasing behavior does not only investigate the consumer processes which are relevant to make decisions in order to acquire a product but it also investigates further activities of consumers after the process of purchasing such as the evaluation, the use, and the dispose of products or services (Blackwell, Miniard, & Engel, 2001). The study of consumer purchasing behavior combines different disciplines such as psychology and sociology. For that reason, consumer purchasing behavior is significantly affected by five key factors which are economic, cultural, social, personal, and psychological (Al-Gahaifi & Svetlik, 2011).

The purchasing, as well as the use of a product, can be significantly affected by the perceptions of consumers about the product. Consumer perceptions are very important for marketers since positive perceptions of a product might guarantee the successful launching of a product in the marketplace (Kazmi, 2012; Hanna & Wozniak, 2012 ). Perception is *“the process of selecting, organizing, and interpreting sensations into a meaningful whole”* (Hanna & Wozniak, 2012). The senses such as vision, hearing, smell, taste, and touch are very important elements in order to interpret the environment or an event. The interpretation of the sensations might differ between individuals since each of them can perceive the same event in a different way. The perceptions of individuals about an event can change throughout the time since they can be under new situations in their lives. As a result, the perceptions of each person are not considered objective but subjective which means that they can be easily misinterpreted (Hanna & Wozniak, 2012).

### **2.4 Consumer purchasing behavior and perceptions towards organic foods**

Nowadays people have become more conscious about their food choices. Food safety is an important element for them since the industrialization of agriculture which is characterized by the use of “synthetic pesticides and fertilizers” has brought environmental problems as well as problems in the food chain (Fotopoulos, 1999; Smith-Spangler, et al., 2012; Theodoropoulou, Barda, & Apostolopoulos, 2002). People become more favorable to demand and purchase organic products that do not contain “GMOs (Genetically Modified Organisms), hormones and synthetic



fertilizers as well as pesticides” (Fotopoulos, 1999; Smith-Spangler, et al., 2012; Theodoropoulou, Barda, & Apostolopoulos, 2002).

Several studies have been performed for the consumer perceptions and consumer purchasing behavior regarding organic foods around the world since consumer perceptions could influence the potential purchasing behavior of consumers towards organic products (Wee, Ariff, Zakuan, & Tajudin, 2014).

Organic consumers perceive that organic products have better organoleptic characteristics such as flavor (Vermeir & Verbeke, 2006) but sensory evaluations regarding the flavor of organic foods have presented inconsistent results (Fillion & Arazi, 2002; McEachern & McClean, 2002; Zhao, Chambers, Matta, Loughin, & Carey, 2007). For example, significant differences were not found in the perceived flavor of consumers towards organic and conventional vegetables (Zhao, Chambers, Matta, Loughin, & Carey, 2007). Quality characteristics such as freshness are also considered to be important when purchasing fruits and vegetables (Penau, Hoehn, Roth, Escher, & Nuessli, 2006). A study that was conducted in Thailand showed that organic vegetables and fruits which fulfill the criterion of freshness are more likely to be bought (Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2007). Also, the appearance of organic products can influence consumers in order to buy them (Aryal, Chaudhary, Pandit, & Sharma, 2009).

Consumer health concerns, as well as environmental concerns, are considered crucial reasons for buying organic foods (Padel & Foster, 2005; Sivathanu, 2015; Squires, Juric, & Cornwell, 2001; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008; Wee, Ariff, Zakuan, & Tajudin, 2014). Health issues are considered the first reason for buying organic foods since consumers believe that organic products positively contribute to their health compared to conventional products (Grankvist & Biel, 2001; Sharma, Dewan, & Bali, 2014). 91% and 87% of the respondents in Turkey purchase organic products because such products are healthier and nutritious respectively (Ergönül & Ergönül, 2015). Similar results have been observed in India in which 96% of the respondents answered that health issues are considered important factors for consuming organic products (Justin & Jyoti, 2012).

There are no clear pieces of evidence that indicate that organic products are healthier than conventional products (Smith-Spangler, et al., 2012). Some studies reported a somewhat better level of micronutrients in organic products, but this level is not considered so important in order to have positive health impacts on consumers (Williams, 2002).

Environmental concerns positively contribute to the consumer purchasing behavior towards organic foods since organic products contribute to the local economy to such a degree that does not cause undesirable and negative impacts on the environment (Vermeir & Verbeke, 2006). Consumers who care and want to maintain a sustainable environment tend to purchase organic products (Chrysosoidis & Krystallis, 2005). This kind of consumer is well known as green consumers. Green consumers want to purchase products that have a minimum environmental impact in order to reduce environmental damages (Soonthonsmai, 2007). Ethical reasons such as animal welfare contribute to the purchase of organic products (Harper & Makatouni, 2002; Wee, Ariff, Zakuan, & Tajudin, 2014)

Demographics such as educational level, presence of children in the household, sex, income, and age, significantly contribute to consumer purchasing behavior (Lockie, Lyons, Lawrence, & Grice, 2004; Zepeda & Li, 2007). Women are considered to be regular buyers of organic products compared to men since women present a higher interest in organic products as they are the main food shoppers in the family (Lea & Worsley, 2005; Wandel & Bugge, 1997; Wee, Ariff, Zakuan, & Tajudin, 2014). Older people tend to be frequent shoppers of organic products in comparison to younger consumers (Wee, Ariff, Zakuan, & Tajudin, 2014). The purchasing power towards organic products is higher in older people compared to younger consumers. Older consumers are more interested in the positive and beneficial attributes of organic products towards their health and they have the ability to pay premium prices for them. On the other hand, younger consumers are characterized by environmental concerns but their willingness to buy organic products at higher prices is low (Wandel & Bugge, 1997; Thompson & Kidwell, 1998; Fotopoulos & Krystallis, 2002).

Consumers with high educational level tend to purchase organic products more frequently since they have the critical thinking to evaluate the environmental and social benefits which are related to organic products (Bosona & Gebresenbet, 2018; Padel & Foster, 2005). Consumer income, as well as the existence of children in the household, could influence the purchasing behavior towards organic products. Consumers with a high income have a higher probability to purchase organic products but it does not necessarily mean that this is the rule (Grunert & Kristensen, 1991; Magnusson, Arvola, Koivisto, Aberg, & Sjoden, 2000; Fotopoulos & Krystallis, 2002). The consumers' income influences more the number of organic products that are purchased rather than the willingness to purchase organic products (Fotopoulos & Krystallis, 2002). The presence of children in the family affects the purchasing behavior towards organic products in a positive way (Davis, Titterington, & Cochrane, 1995; Thompson & Kidwell, 1998; Fotopoulos & Krystallis,

2002). The age of the children in the family could contribute to the purchasing behavior of parents towards organic products. The younger the age, the higher the tendency to purchase organic products (Wier, Andersen, & Millock, 2004).

In Southern Italy the socio-demographics did not considerably influence the purchasing behavior of consumers with the only exception being the income variable. People with lower revenue tend to purchase less organic products (Gracia & de Magistris, 2007).

Trust issues such as trust in organic labels or certification bodies are considered important reasons which influence the purchasing behavior of consumers towards organic products (Aarset, et al., 2004; Krystallis & Chrysosoidis, 2005; Lea & Worsley, 2005; Padel & Foster, 2005). Consumer perceptions for organic labels prove to be subjective and most of the time are not stand on objective knowledge (Janssen & Hamm, 2012). The ability of a person to recognize a label as well as to comprehend its meaning can be described as labeling knowledge. The comprehension and the recognition of an eco-label can frequently affect the purchasing decision (Thøgersen, 2000).

The organic products in the European Union should have the mandatory EU logo which verifies that organic products have produced according to the standards which are written in the Regulation (EC) No. 843/2007. Other logos that are related to certification bodies can be optionally used on the packages. The certification bodies can have additional standards that are not included in the EU regulations such as Demeter for biodynamic agriculture (Janssen & Hamm, 2012).

Consumers have doubts regarding the authenticity of organic products (Siderer, Maquet, & Anklamb, 2007) since they do not have the technical knowledge or other means in order to test or measure some aspects of organic products. Consumers cannot measure the lack of chemical substances in organic products (Jahn, Schramm, & Spiller, 2005). For that reason, organic products are products of credence quality and the trust in the authenticity of such products is very important in order for them to be purchased (Daugbjerg, Smed, Andersen, & Schwartzman, 2014).

In order for consumers to purchase organic products, they should believe that this kind of products have beneficial attributes for them as well as to trust that the purchased product is a real organic product (Daugbjerg, Smed, Andersen, & Schwartzman, 2014; Vieira, De Barcellos, Hoppe, & da Silva, 2013; Yin, Wu, Du, & Chen, 2010). When the organic products are not purchased directly by a farmer but by a retailer, consumers should be confident that the required control processes have been followed in order for a product to be certified as organic. They have to trust the organic labels

as well as the other information that is written on the packages which verify that the products are organic (Nuttavuthisit & Thøgersen, 2017).

The consumer willingness to pay for organic products differed among six European countries. This variation was depended on the reputation of organic labels as well as on the consumer perceptions regarding the strictness of the standards that each certification body follows (Jansen and Hamm, 2012). The willingness of American consumers to pay premium prices for organic products was higher for products with the USDA (United States Department of Agriculture) organic label rather than for other labels (Van Loo, Caputo, Nayga, Meullenet, & Ricke, 2011). The knowledge of organic labeling can undoubtedly increase the willingness of consumers to pay higher prices for organic products (Batte, Hooker, Haab, & Beaverson, 2007). The awareness in organic labels can be increased by the trust of consumers to certification bodies as well as by their educational level and their environmental concerns (Torgler & Garcia-Valinàs, 2007).

The higher prices, the availability, as well as the lack of advertisement of organic products, could act as barriers in the purchasing behavior of consumers (Fotopoulos & Krystallis, 2002a; Padel & Foster, 2005). Lower availability leads to lower demand. As a result, the prices of organic products still remain high (Krystallis, Fotopoulos, & Zotos, 2006).

### **3. Research problems, aims and questions**

#### **3.1 Research problems and aims**

The consumption of organic products in Greece is considerably lower compared to the other Mediterranean as well as European countries. The organic per capita consumption in Greece was 6€ in 2017 while the organic per capita consumption in Italy and Spain in 2017 was 52€ and 42€ respectively (Lernoud & Willer, 2019).

The main aim of this study is to gain knowledge about consumer perceptions of organic foods and consumer corresponding purchasing behavior in Athens, Greece since perceptions of consumers can negatively or positively influence their purchasing behavior (Kazmi, 2012; Hanna & Wozniak, 2012). The findings of this study could be useful for Greek authorities in order for them to create a new marketing strategy that would be based on the current consumer perceptions and purchasing behavior towards organic products and agriculture.

### **3.2 Research questions**

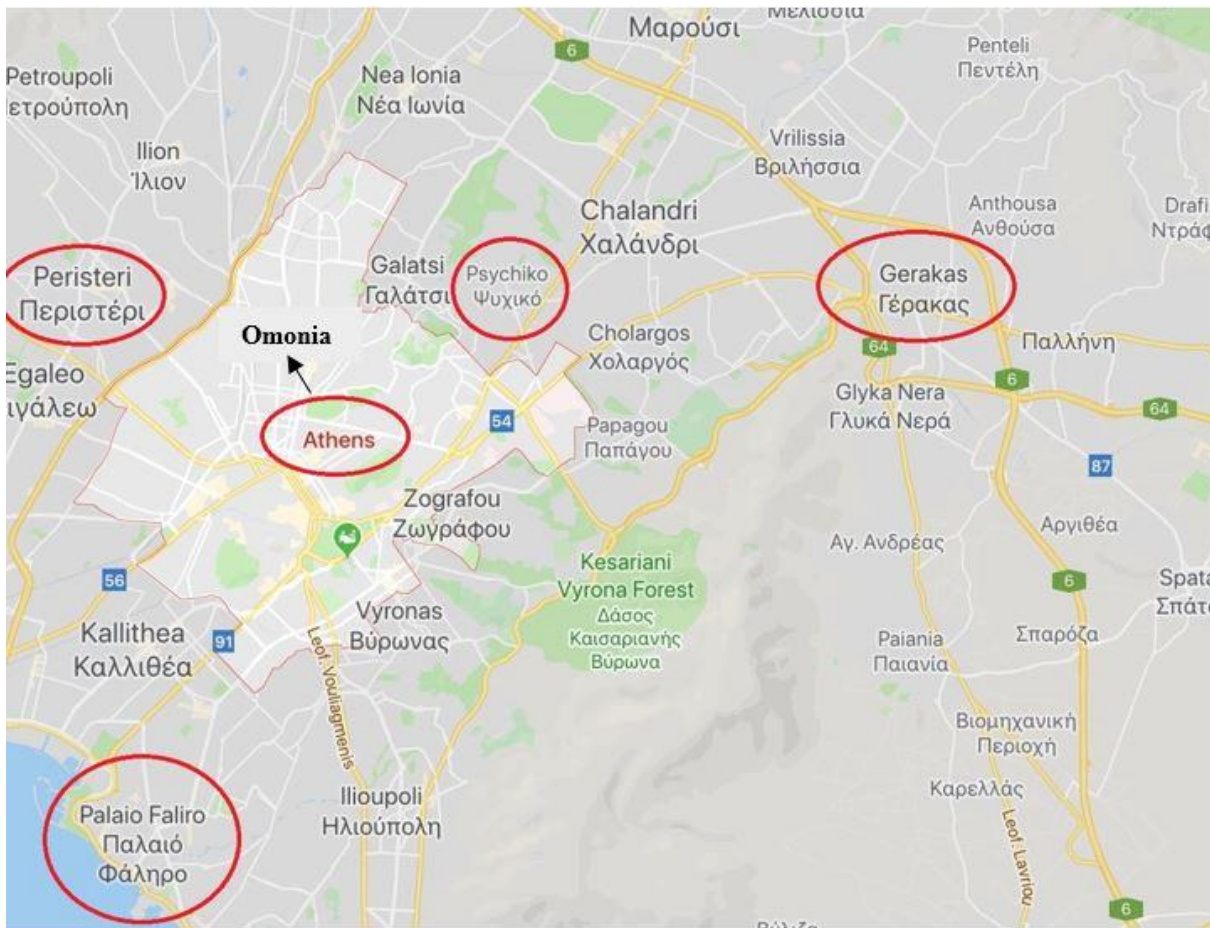
1. Which is the purchasing behavior of Greek consumers towards organic products?
2. How do demographic factors influence the frequency of purchasing organic products and consumer purchasing criteria for organic products?
3. Which is the knowledge of consumers towards organic certification labels?
4. Which are the perceptions of Greek consumers for organic agriculture and products and how are they affected by demographic factors?

## **4. Methods**

### **4.1 Sampling region**

Athens is the capital and the biggest city of Greece with a population of 664.046 residents (ELSTAT, 2011). The survey was held in the center of Athens (in the region of Omonia) as well as in four different regions in the outskirts of Athens (Peristeri, Palaio Faliro, Psychiko, and Gerakas) in order to have a variety regarding the type of consumers (*Figure 2*).

In addition, these regions are characterized by different living standards and this provided the opportunity to examine if the different socioeconomic factors can affect the purchasing behavior of consumers as well as their perceptions regarding organic agriculture and products.



**Figure 2:** Locations for data collection (source: Google maps, 2019)

## 4.2 Sampling respondents

The sampling units of this survey were 260 adult organic buyers in organic farmers' markets, supermarket chains, and organic stores. The majority of the respondents were in the age group of 26-35. 65,4% of the respondents were female while 34,6% were male. 78,8% of the respondents were married or in partnership and 66,5% of them had a tertiary educational level. A high number of participants indicated that their monthly income is between 751 and 1.500€. 51,5 % of the respondents live in a household with 1-2 people while 58,5% of the respondents indicates that they do not have a person under 18 in the household (*Table 1*).

**Table 1:** Demographic data of the overall sample (in %; n=260)

<b>Demographics of respondents</b>				
<b>Sex</b>	<u>Female</u> 65,4	<u>Male</u> 34,6		
<b>Age groups</b>	<u>Under 25</u> 13,5	<u>26-35</u> 36,9	<u>36-45</u> 25,8	<u>46-55</u> 8,1
<b>Marital status</b>	<u>Single</u> 20,8	<u>Married/in partnership</u> 78,8		<u>Other</u> 0,4
<b>Number of people in the household</b>		<u>1-2</u> 51,5	<u>3-4</u> 43,8	<u>More than 5</u> 4,6
<b>Number of people under 18 living in the household</b>		<u>0</u> 58,5	<u>1-2</u> 37,7	<u>3-4</u> 3,8
<b>Education</b>	<u>Primary education</u> 2,3	<u>Secondary education</u> 20	<u>Vocational education and training</u> 11,2	<u>Tertiary education</u> 66,5
<b>Monthly income</b>	<u>≤750€</u> 32,3	<u>751-1.500€</u> 53,5	<u>1.501-2.500€</u> 14,2	<u>&gt;2.501€</u> -

In Greek organic farmers' markets, consumers can buy only certified organic products such as vegetables, fruits, eggs, bakery products, pulses, and mushrooms. The variety of products could differ among the organic farmers' markets. This kind of markets operates once per week and they are located in different regions around the suburbs of Athens. Organic stores also provide only certified organic products and they operate daily from Monday to Saturday. On the other hand, supermarket chains do not just sell certified organic products but certified organic products can be found in specific sections of the supermarket.

Five supermarket chains in the outskirts and the center of Athens, four organic farmers' markets in the outskirts of Athens and one organic store in the center of Athens were the places where the face-to-face survey took place (*Table 2*). An organic store was selected instead of an organic farmers' market in the center of Athens owing to the fact that organic farmers' markets are not available in the center of Athens.

The questionnaire was targeted to organic buyers. The customers in supermarket chains, organic farmers' markets and in one organic store were asked first if they buy organic products. People who had positively answered took part in the survey. This specific practice took place in the aforementioned places due to the fact that supermarket chains are places where organic and non-organic products are sold and organic farmers' markets are places that operate in public space and organic and non-organic buyers can pass through. In organic stores, non-organic buyers who visit the place by chance or curiosity can also be found.

The customers were approached during their shopping in the case of organic farmers' markets since they operate in outdoor space. On the other hand, in the case of supermarkets and in the case of the organic store, the customers were approached in the entrance/exit of the supermarket/organic store before shopping or after shopping. The respondents' participation in this survey depended on their willingness to participate.

The sampling strategy of this survey was a non-probability convenience sample since the target population was easily accessible and available at the given time (Dörnyei, 2007). This sampling method is widely used by researchers since it does not require a lot of time as well as money (Marshall, 1996).

In contrast, a non-probability sampling such as convenience sample excludes some sampling units of the population from being part of the sample. As a result, the outcomes of the survey can be biased due to the representativeness of the population (Zafeiropoulos, 2015).

In order to increase the representativeness of the population, the diversity of the respondents and the size of the sample should be kept in mind. The diversity of the respondents can be achieved by performing the survey on different days and hours (Skowronek & Duerr, 2009). For example, a survey in the supermarkets can be performed at different hours during the day in order to approach respondents with different work schedules (Chryssochoidis, 1999). Also, another way to reduce biased outcomes is the selection of the respondents. The respondents should not be selected according to personal assumptions or judgments regarding their answering behavior (who is going or not going to answer) (Skowronek & Duerr, 2009). Also, larger sample size can provide more data and this can reduce the biased results (Skowronek & Duerr, 2009).



**Table 2:** Number of interview sites and their corresponding regions (n=260)

<b>Region</b>	<b>Regional Units</b>	<b>Interview sites</b>		<b>Respondents' sample size (n)</b>
<b>Omonia</b>	Central Athens	1 Organic store	1 Supermarket	52
<b>Peristeri</b>	West suburb of Athens	1 Organic farmers' market	1 Supermarket	52
<b>Psychiko</b>	North suburb of Athens	1 Organic farmers' market	1 Supermarket	52
<b>Palaio Faliro</b>	South suburb of Athens	1 Organic farmers' market	1 Supermarket	52
<b>Gerakas</b>	East suburb of Athens	1 Organic farmers' market	1 Supermarket	52
<b>Total</b>	5	5	5	260

### 4.3 Data collection

The data collection was based on interviews (face-to-face survey) with structured questionnaires. The survey was conducted from the 1<sup>st</sup> of July until the 20<sup>th</sup> of August in organic farmers' markets, supermarket chains, and in one organic store. The aforementioned places located in the center and on the outskirts of Athens as was mentioned in part 4.2. The 260 questionnaires were distributed equally among the five different regions in which the survey was conducted (Omonia, Peristeri, Palaio Faliro, Psychiko, and Gerakas).

Structured questionnaires have a strictly defined set of questions, usually closed-ended questions. This set of questions does not allow the researcher-interviewer to change or to ask the questions with a different order. Structured questionnaires are used in face-to-face surveys as well as in telephone and online surveys (Lavrakas, 1993; Sandhusen, 2000).

Generally, the questionnaires consist of an introductory note in which the purpose of the survey is written with the assurance to the respondents that the given information will be confidential. At the end of the introductory note, there is an invocation to the participants to fill in the questionnaire in order to avoid inaccurate results (Zafeiropoulos, 2015). After this part, the main questionnaire is following with questions that give answers to the research questions or hypotheses. In the last section, there are questions about demographics such as age and sex. Questions about demographics

should be at the end of the questionnaire in order for the respondents to use their time to answer carefully the main part (Zafeiropoulos, 2015).

In the main part of the questionnaire, the questions, as well as the answers, should be formulated in a way that is understandable to the respondents (Williams, 2003). The words that are going to be used in order for a question to be expressed is very important since it can affect the answers of the respondents (Larsen, Mascharka, & Toronski, 1987). The wording should be simple and specific because questions that are difficult to understand lead to inaccurate results (Williams, 2003). The aforementioned information was used, in order to develop the questionnaire.

In order to measure the consumer purchasing behavior and perceptions of organic foods in Athens, a questionnaire of thirteen questions was created. The questions, as well as the response categories, were based on similar studies (Karadima & Karadimas, 2014; Krystallis, Fotopoulos, & Zotos, 2006; Krystallis & Chryssohoidis, 2005; Mutlu, 2007; Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2007). The questionnaire consisted of three parts which had as their main aim to give responses to the research questions (*Table 3*).

The first part included questions regarding consumers purchasing behavior and their knowledge for organic certification labels. As it was mentioned in the section of the literature review, consumer behavior includes the study of what, why, when, where, and how often consumers buy something (Bennett, 1995; Blackwell, Miniard, & Engel, 2001). The consumer knowledge for organic certification labels can be translated into the ability of a person to recognize a label as well as to comprehend its meaning (Thøgersen, 2000).

The first part included five questions. The first four questions assessed consumer purchasing behavior. These questions asked respondents to indicate the frequency of organic products purchasing, the places that they can buy organic products as well as what kind of products in organic quality they buy. Regarding the frequency of purchasing, appropriate quantitative and temporal specifications were used as answers. When the respondents are asked to indicate how often they purchase a product, the recommended answers should not be formed as a range from “never to very often” because these definitions are differently interpreted among the respondents (Zafeiropoulos, 2015). In my case, the respondents were asked how often do they purchase organic products with four recommended answers which were the following: 1) once per week, 2) twice per week 2) more than twice per week, and 3) once per month.

The fourth question included fourteen different criteria that affect consumers during the process of purchasing. The respondents were asked to point out the importance of these criteria by filling out a four-point agreement Likert-type scale (1=strongly disagree and 4=strongly agree). Also, the option of “I don’t know” was available in that question. Scales in questionnaires can act as a way to obtain data that was asked fairly and in balance. Scales measure the strength of an attitude since they do not have only two options as possible answers such as “agree or disagree”, “yes or no” (Mathers, Fox, & Hunn, 2007).

The respondents in the fifth question had to indicate their knowledge for certification labels by recognizing them out of a total number of six labels (*Table 4*). In this question, respondents could choose more than one label. Respondents who did not recognize any certification label had the choice to answer “I don’t recognize any label”. The selection of the labels depended on personal research regarding their frequency of appearance on the packages of processed or fresh products as well as in the organic farmers’ markets. Occasionally, in organic farmers’ markets, the label of the certification body can be found in a certification document which is located on the producer’s counter, close to the cash register and it is visible by consumers.

The second part corresponds to question six which consisted of eleven statements that measured the consumer perceptions for organic agriculture and products by answering a four-point agreement Likert-type scale (1=strongly disagree and 4=strongly agree). Also, the option “I don’t know” was available like in question four of part one.

The last and third part collected demographic data such as sex, birth year, marital status, number of people in the household, number of people aged under 18 living in the household, educational level, and monthly income. The third part was an important part since it gave me the opportunity to see the socio-demographic profile of each respondent and correlate it with the consumer purchasing behavior and perceptions towards organic products and agriculture.

The questionnaires were translated into Greek after the feedback of the supervisor and co-supervisor in the English version. The Greek version of the questionnaire was pretested. The pretest of the questionnaire took place in the region of Peristeri which is located west of Athens. Ten people were interviewed in the Greek version of the questionnaire at the end of June. By doing that, potential difficulties in the structure of the questionnaire were rectified before the official data collection in July and August.

**Table 3:** Questionnaire structure

Part number	Part description	Answer to research question	Number of questions
1	Consumer purchasing behavior and knowledge for organic certification labels	1 and 3	5
2	Consumer perceptions towards organic agriculture and products	4	1 (with 11 statements for answering through four-point agreement Likert-type scale)
3	Demographic data	2 and 4	7
Total number of questions		13	

**Table 4:** Major certification labels in Greece

Label	Name of certification label	Certification body information
	DIO, Inspection and Certification Organization of Organic Products	E-mail: info@dionet.gr Website: <a href="http://www.dionet.gr">http://www.dionet.gr</a>
	Inspection Institute for Organic Products BIO Hellas	E-mail: info@bio-hellas.gr Website: <a href="http://www.bio-hellas.gr">http://www.bio-hellas.gr</a>
	aCert European Organization for Certification	E-mail: info@a-cert.org Website: <a href="http://www.a-cert.org">http://www.a-cert.org</a>
	TÜV HELLAS Member of TÜV NORD Group Certification of Organic Products	Email: info@tuvhellas.gr Website: <a href="http://www.tuvhellas.gr">http://www.tuvhellas.gr</a>
	TÜV AUSTRIA HELLAS	E-mail: info@tuvastriahellas.gr Website: <a href="http://www.tuvastriahellas.gr">http://www.tuvastriahellas.gr</a>
	EU logo for organic agriculture	Its use is obligatory for all EU-members according to EU 834/2007

Source: (Ministry of Rural Development and Food, n.d.)

#### **4.4 Data storage and data analysis**

The data which were collected from the questionnaires were transferred into Microsoft Excel, Version 2013 for Windows (Microsoft Corporation, 2013). The collected data were coded in an Excel sheet before it was analyzed by statistical software. Data coding is the process in which the selected data should be categorized by using category labels or numeric codes (Pazzaglia, Stafford, & Rodriguez, 2016). The process of coding is very essential for quantitative analysis since the numerical values that will arise from coding are going to be used in the analysis process (Newing, Eagle, Puri, & Watson, 2011). The different types of questions in the questionnaires required different coding. Some questions have a more complex coding process such as questions in which you can choose more than one answer (Newing, Eagle, Puri, & Watson, 2011).

After completion of coding, the coded data in the Excel sheet was imported into IBM SPSS (Statistical Package for the Social Sciences) Statistics for Windows, Version 25.0 (IBM Corp., 2017). This statistical program was available and accessible through the University of Hohenheim, Stuttgart.

In the SPSS, appropriate procedures were conducted in order to have accurate analysis and results. The variables were defined by giving them a name and specifying them according to their type (numeric or string) and their level of measurement (ordinal, nominal, scale). The defining of the level of measurement is very important since it can negatively affect the statistical analysis if the variables have an incorrect level of measurement (Kent State University, 2019). Also, these procedures comprised the defining of the values that a variable can have, for instance, male=1 and female=2 (Kent State University, 2019).

For the analysis, descriptive statistics were used such as frequencies. Two non-parametric tests were used in order to measure the statistically significant differences between demographics and frequency of purchasing organic products. In addition, the statistically significant differences between demographics and consumer purchasing criteria as well as between consumer perceptions were measured. The Mann-Whitney U test and Kruskal-Wallis H test were the two aforementioned non-parametric tests that were used with a level of significance at  $\alpha=0,05$ .

The Mann-Whitney U test is an appropriate non-parametric test that is used in order to investigate the presence of any significant differences between two groups (e.g. between male and female in my case) when your dependent variable is ordinal or continuous (Laerd Statistics, 2015a). Mann Whitney U test shows if the distribution or the mean rank of two independent groups differs (Laerd

Statistics, 2015a). Kruskal-Wallis H test is also a non-parametric test that is used in order to investigate the potential statistically significant differences between two or more groups of an independent variable. This test was used with the following independent variables such as age (five age groups), marital status (three marital groups), education (four educational levels), monthly income (four income levels), number of people in household (three groups), and number of people under 18 in household (four groups). The dependent variable of this test, it is ordinal or continuous as it is in the Mann-Whitney U test (Laerd Statistics, 2015b).

If the Kruskal-Wallis H test shows statistically significant differences between groups, namely that the distribution or the mean rank of at least one group differs from the distribution or the mean rank of another group, the running of a post hoc test is appropriate in order to find out which groups presented differences (Laerd Statistics, 2015b). In the Kruskal-Wallis H test, the performing and the interpretation of the pairwise comparisons can be achieved by using the procedure of Dunn (1964) with a Bonferroni adjustment. It is possible to have pairwise comparisons that are not statistically significant even though a statistical significant Kruskal-Wallis H test was recorded (Laerd Statistics, 2015b). The risk of a Type I error is increased when multiple comparisons are performed. Type I error occurs when a statistically significant result is stated when it should not be stated. The SPSS software adjusts the significance level in order to correct the Type I error by using a Bonferroni adjustment.

The validity and the reliability of each part of the questionnaire were tested through Cronbach's alpha. The Cronbach's alpha for part one, part two, and part three were 0,841, 0,790, and 0,490 respectively. When Cronbach's alpha is greater than or equal to 0,7 is considered satisfactory (Karadima & Karadimas, 2014). Part three (demographics) had a low Cronbach's alpha due to the fact that this part consisted only of seven questions.

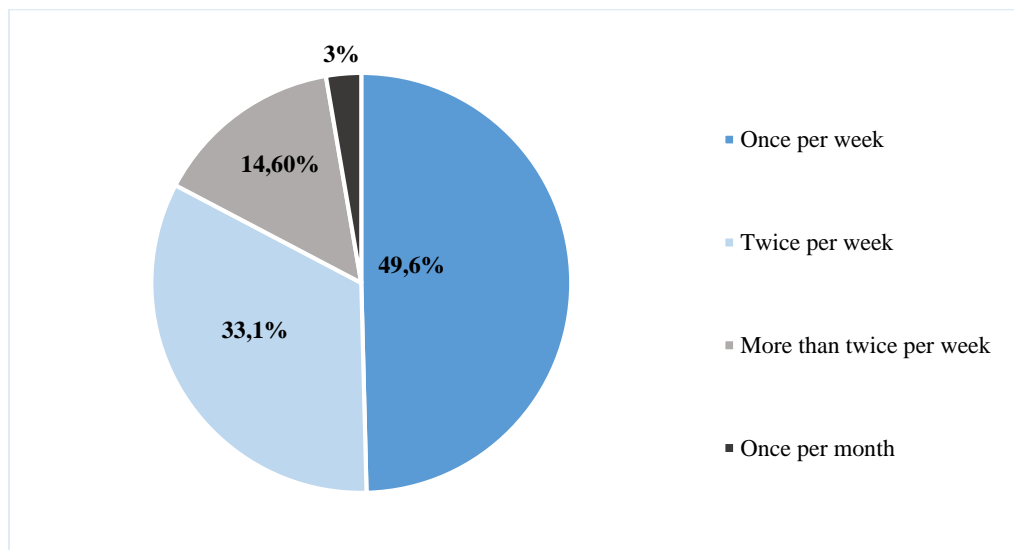
## 5. Results

### 5.1 Purchasing behavior of respondents

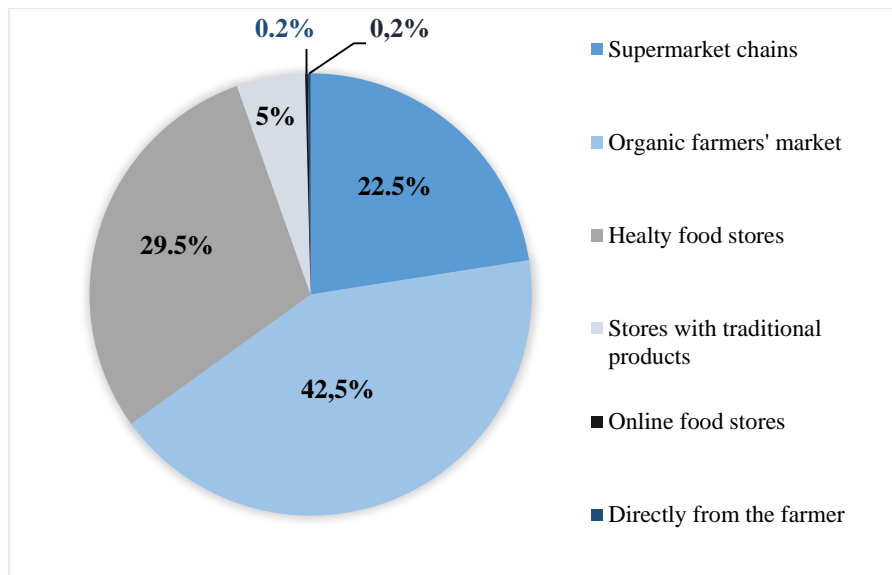
Almost half of the respondents (49,6%) purchase organic products once per week. The rest of the respondents purchase organic products twice per week, more than twice per week and once per month (*Figure 3*).

The majority of consumers (42,5%) chose organic farmers' markets as their primary market place. Then, 29,5% of the respondents shopped at places such as healthy food stores, 22,5% shopped at supermarket chains, 5% preferred stores with traditional products, 0,2% preferred online food stores and directly from the farmer (*Figure 4*).

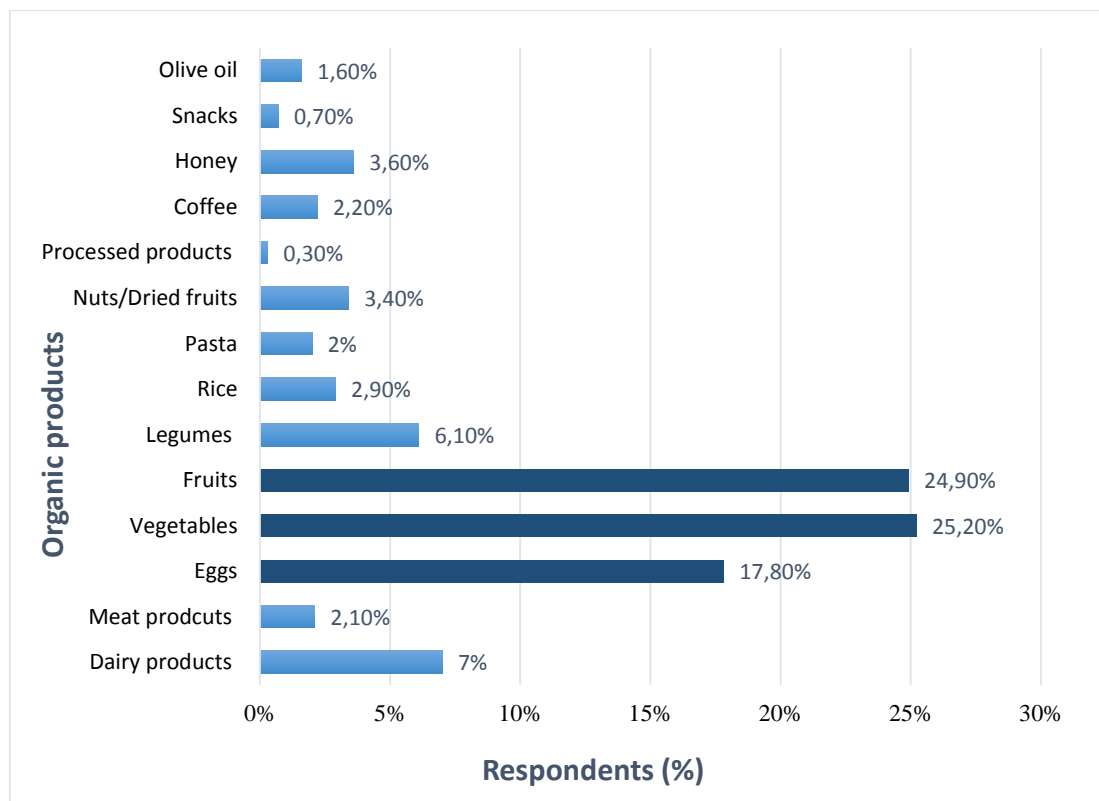
25,2% and 24,9% of the respondents regularly purchase vegetables and fruits respectively (*Figure 5*).



**Figure 3:** How often respondents purchase organic products (in %; n=260)



**Figure 4:** Where respondents purchase organic foods (in %; n=260)

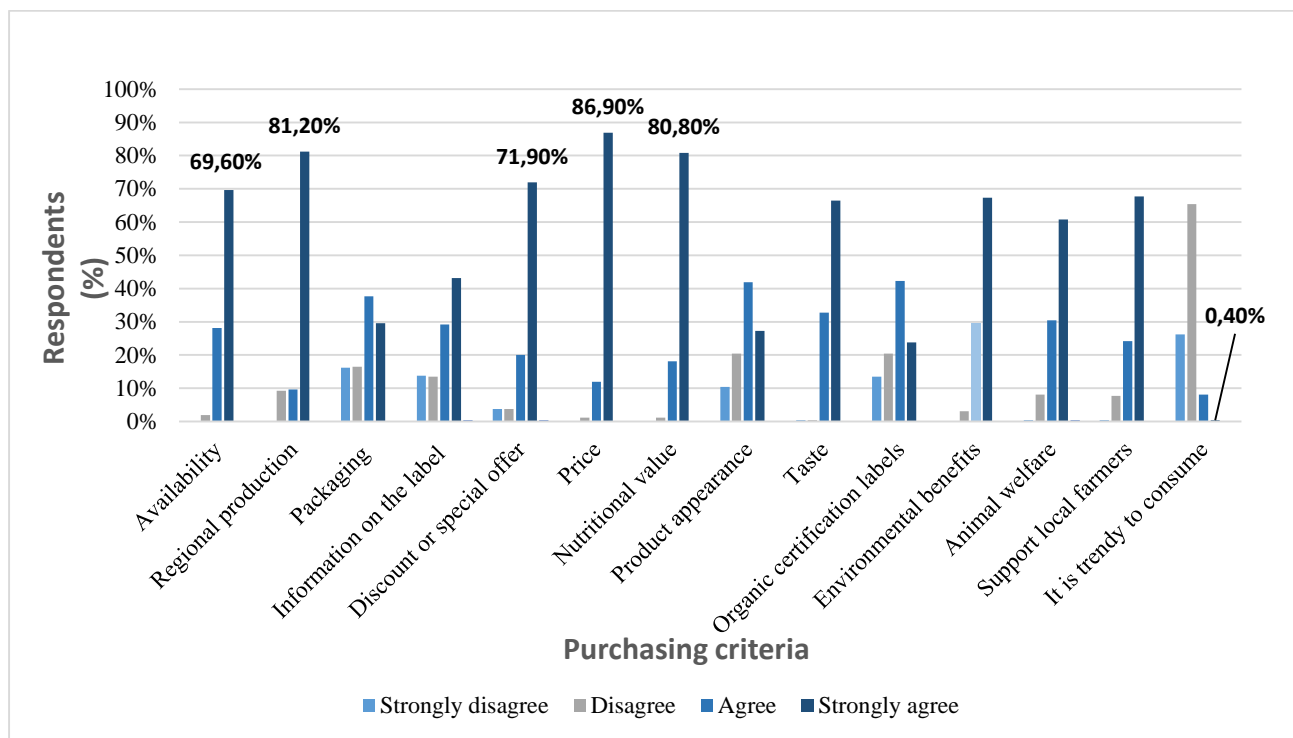


**Figure 5:** Respondents' most often purchased organic products (in %; n=260)



The most important consumer purchasing criteria were price, nutritional value, regional production, discount or special offer, and availability. 86,90% of the respondents strongly agree that price is an important purchasing criterion. 80,8% of the respondents as well as 81,2% of the respondents strongly agree that nutritional value and regional production are important purchasing criteria respectively. 71,9% and 69,6% of the respondents strongly agree that discount or special offer and availability are important purchasing criteria respectively (*Figure 6*).

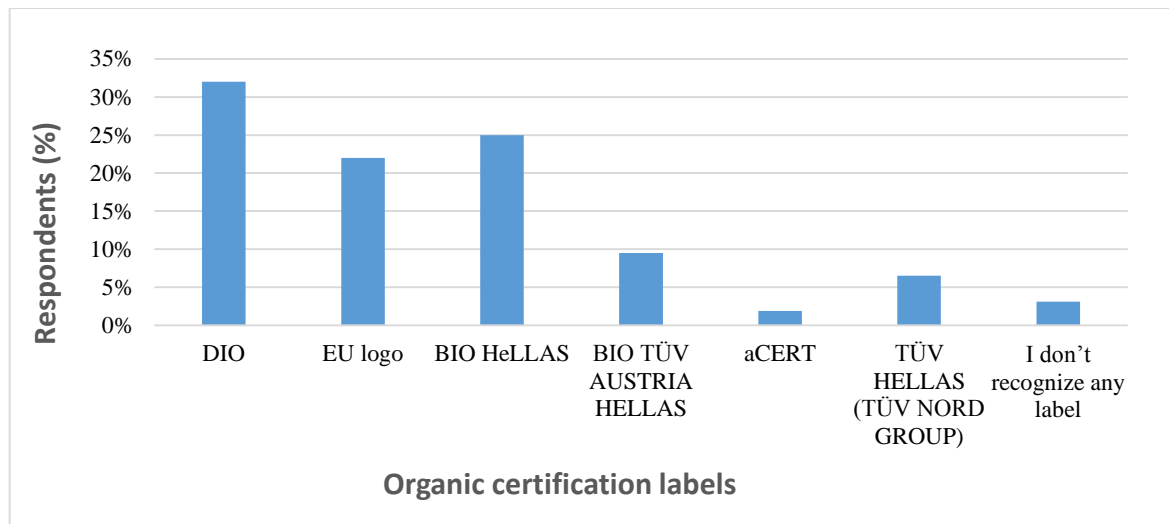
Only, 0,4% of the respondents strongly agree with the criterion it is trendy to consume organic products.



**Figure 6:** Respondents' most important purchasing criteria (in %; n=260)

## 5.2 Respondents' knowledge towards organic certification labels

The majority of the respondents (32%) recognize the DIO certification label (*Figure 7*). 25% of the respondents recognize the certification label of BIO HELLAS and the 22% of the respondents recognize the EU logo. The rest of the respondents recognize the remaining labels such as BIO TÜV AUSTRIA HELLAS, TÜV HELLAS (TÜV NORD GROUP), and aCert. Only 3,1% of the respondents indicated that they do not recognize any certification label.



**Figure 7:** Respondents' knowledge towards organic certification labels (in %; n=260)

### 5.3 Consumer perceptions towards organic agriculture and products

The participants of the survey had positive perceptions towards organic agriculture and products (Table 5). 74,6% of the respondents strongly agree and 25,4% agree with the statement that “Organic agriculture is good for the environment”. 88,1% of the respondents (strongly) agree (sum of the percentages in the strongly agree and agree category) that “Organic agriculture does not use synthetic pesticides, fertilizers, and herbicides”.

70% of the organic buyers strongly agree that “Organic products are healthier”. 75,4% and 69,6% of the respondents strongly agree that “Organic products have better taste and quality” respectively. 58,8% of the respondents strongly agree and 40% agree that “Organic products are of particular value for children’s diet”.

88,8% of the participants (strongly) agree with the statement that “Organic products are free from GMOs”. 83,9% of the participants (strongly) agree that “Organic products are free from pesticide residues”. 85,4% of them (strongly) agree that “Organic certification procedures are reliable”.

54,2% of the organic buyers disagree with the statement that “Organic products are expensive for what they offer” while 33,5% of them (strongly) agree with the aforementioned statement. 97,7 % of the participants (strongly) agree that “Organic products are not promoted well”.

**Table 5:** Respondents' perceptions towards organic agriculture and products (in %; n=260)

Consumer perceptions	Strongly disagree	Disagree	Agree	Strongly agree	I don't know
<i>Organic agriculture is good for the environment</i>	-	-	25,40%	74,60%	-
<i>Organic agriculture does not use synthetic pesticides, fertilizers, and herbicides</i>	-	4,20%	54,60%	33,50%	7,70%
<i>Organic products have better quality</i>	-	-	30,40%	69,60%	-
<i>Organic products have better taste</i>	-	-	24,60%	75,40%	-
<i>Organic products are healthier</i>	-	-	30%	70%	-
<i>Organic products are free from GMOs</i>	-	4,20%	57,30%	31,50%	6,90%
<i>Organic products are free from pesticide residues</i>	-	13,10%	58,10%	25,80%	3,10%
<i>Organic certification procedures are reliable</i>	-	10,80%	60%	25,40%	3,80%
<i>Organic products are of particular value for children's diet</i>	-	1,20%	40%	58,80%	-
<i>Organic products are expensive for what they offer</i>	11%	54,20%	31,20%	2,30%	1,20%
<i>Organic products are not promoted well</i>	-	0,80%	35,40%	62,30%	1,50%

#### 5.4 Demographics and how often participants purchase organic products

Demographics factors were correlated to consumer purchasing frequency of organic products. Mann Whitney and Kruskal-Wallis test showed statistically significant differences between consumer purchasing frequency of organic products and all demographic factors such as sex, age, marital status, number of people in household, number of people under 18 living in household, education and monthly income (*Table 6*).

Mann Whitney U test shows if the distribution or the mean rank of two independent groups differs. Kruskal-Wallis H test shows statistically significant differences between groups, namely that the distribution or the mean rank of at least one group differs from the distribution or the mean rank of another group.

**Table 6:** Statistically significant differences between demographics and purchasing frequency of organic products

Demographic factors	Type of non-parametric test	Statistics
Sex	Mann Whitney	U=10.503, z=5,4, p<0,0005
Age	Kruskal-Wallis	$\chi^2=50,103$ , df=4, p<0,0005
Marital status	Kruskal-Wallis	$\chi^2=17,990$ , df=2, p<0,0005
Number of people in household	Kruskal-Wallis	$\chi^2=60,860$ , df=2, p<0,0005
Number of people under 18 living in household	Kruskal-Wallis	$\chi^2=85,179$ , df=2, p<0,0005
Education	Kruskal-Wallis	$\chi^2=14,765$ , df=3, p=0,002
Monthly income	Kruskal-Wallis	$\chi^2=113,069$ , df=2, p<0,0005

Notes: Level of significance  $\alpha=0,05$ , df= degrees of freedom, n=260

**Sex:** The purchasing frequency of organic products was higher in females (U=10.503, p<0,0005) compared to males (*Table 7*).

**Table 7:** Statistically significant difference between sex and purchasing frequency of organic products

Sex	Mean rank	Mann Whitney p-value
Female	147,28	p<0,0005
Male	98,80	

Notes: Level of significance  $\alpha=0,05$ , Mann Whitney test was used for comparisons, n=260

**Age:** The purchasing frequency of organic products was higher in younger people (age groups: 26-35, and 36-45) compared to older people (age group: 56 and older) and people under 25 (*Table 8*).

**Table 8:** Statistically significant pairwise comparisons between age and purchasing frequency of organic products

Age groups	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
Under 25	90,67	1. 26-35 and 56 and older	p<0,0005
26-35	142,92	2. 36-45 and 56 and older	p<0,0005
36-45	164,07	3. 26-35 and under 25	p=0,001
46-55	125,05	4. 36-45 and under 25	p<0,0005
56 and older	83,35		

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Marital status:** The purchasing frequency of organic products was higher in married/in partnership people (p<0,0005) compared to single (*Table 9*).

**Table 9:** Statistically significant pairwise comparisons between marital status and purchasing frequency of organic products

Marital status	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
Single	96,3	1. Married/in partnership and single	p<0,0005
Married/in partnership	139,83		
Other	65		

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Number of people in the household:** The purchasing frequency of organic products was higher for people that live in households with 3-4 ( $p<0,0005$ ) and more than 5 persons ( $p<0,0005$ ) compared to households with 1-2 people (*Table 10*).

The purchasing frequency of organic products was higher for people that live in households with more than 5 people ( $p=0,021$ ) compared to households with 3-4 people (*Table 10*).

**Table 10:** Statistically significant pairwise comparisons between the number of people in the household and purchasing frequency of organic products

Number of people in the household	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
1-2 people	100,19	1. 3-4 people and 1-2 people	$p<0,0005$
3-4 people	157,35	2. more than 5 people and 1-2 people	$p<0,0005$
More than 5	213,83	3. more than 5 people and 3-4 people	$p=0,021$

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons,  $n=260$

**Number of people under 18 living in the household:** The purchasing frequency of organic products was higher for people that live with 1-2 people ( $p<0,0005$ ) and 3-4 people ( $p<0,0005$ ) under 18 in the household compared to people that live with no people under 18 in the household (*Table 11*).

**Table 11:** Statistically significant pairwise comparisons between the number of people under 18 living in the household and purchasing frequency of organic products

Number of people under 18 living in the household	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
0	98	1. 1-2 people under 18 and no people under 18	$p<0,0005$
1-2	172,20	2. 3-4 people under 18 and no people under 18	$p<0,0005$
3-4	215,90		

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons,  $n=260$

**Education:** The purchasing frequency of organic products was higher for people with tertiary educational level ( $p=0,030$ ) compared to people with vocational education and training (*Table 12*).

**Table 12:** Statistically significant pairwise comparisons between educational level and purchasing frequency of organic products

Educational level	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
Primary education	65	1. Tertiary education and vocational education and training	$p=0,030$
Secondary education	122,33		
Vocational education and training	101,28		
Tertiary education	140,13		

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons,  $n=260$

**Income:** The purchasing frequency of organic products was higher for people with a monthly income of 751-1.500€ ( $p<0,0005$ ) and 1.501-2.500€ ( $p<0,0005$ ) compared to people with a monthly income of  $\leq 750$ € (*Table 13*).

The purchasing frequency of organic products was higher for people with a monthly income of 1.501-2.500€ ( $p<0,0005$ ) compared to people with a monthly income of 751-1.500€ (*Table 13*).

**Table 13:** Statistically significant pairwise comparisons between monthly income and purchasing frequency of organic products

Monthly income	Mean rank	Statistically significant pairwise comparisons	Kruskal-Wallis p-value
$\leq 750$ €	78,99	1. 751-1.500€ and $\leq 750$ €	$p<0,0005$
751-1.500€	137,40	2. 1.501-2.500€ and $\leq 750$ €	$p<0,0005$
1.501-2.500€	221,54	3. 1.501-2.500€ and 751-1.500€	$p<0,0005$

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons,  $n=260$

## 5.5 Demographics and consumer purchasing criteria

Demographic factors influenced consumer purchasing criteria. Mann Whitney and Kruskal-Wallis test showed statistically significant differences between all demographic factors and consumer purchasing criteria.

**Sex:** Mann Whitney test showed statistically significant differences between sex and consumer purchasing criteria such as packaging, information of the label, discount or special offer, product appearance, and organic certification labels (*Table 14*). Females are more interested in packaging, information of the label, discount or special offer, product appearance, and organic certification labels compared to males (*Table 15*).

**Table 14:** Statistically significant differences between sex and purchasing criteria (I)

Purchasing criteria/Sex	Statistics
1. Packaging	U=10.684, z=5,508, p<0,0005
2. Information on the label	U=10.225, z=4,732, p<0,0005
3. Discount or special offer Marital status	U=9.023, z=3,023 p=0,003
4. Product appearance	U=10.489, z=5,198, p<0,0005
5. Organic certification labels	U=10.286, z=4,817, p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Mann Whitney test was used for comparisons, n=260

**Table 15:** Statistically significant differences between sex and purchasing criteria (II)

Purchasing criteria	Mean rank Female	Mean rank Male	Mann Whitney p-value
Packaging	148,35	96,79	p<0,0005
Information on the label	145,65	101,88	p<0,0005
Discount or special offer	138,58	115,24	p=0,003
Product appearance	147,20	98,96	p<0,0005
Organic certification labels	146,01	101,21	p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Mann Whitney test was used for comparisons, n=260



**Age:** Kruskal-Wallis test showed statistically significant differences between age groups and consumer purchasing criteria such as regional production, packaging, nutritional value, information on the label, taste, discount or special offer, product appearance, organic certification labels, animal welfare, support local farmers, and it is trendy to consume (*Table 16*). Older people are more interested in purchasing criteria such as regional production, nutritional value, taste, and support local farmers. Younger consumers are more interested in the packaging, information on the label, discount or special offer, product appearance, organic certification labels, animal welfare, and it is trendy to consume (*Table 17-18*).

**Table 16:** Statistically significant differences between age groups and purchasing criteria

Purchasing criteria/Age	Statistics
1. Regional production	$\chi^2=14,053$ , df=4, p=0,007
2. Packaging	$\chi^2=50,964$ , df=4 p<0,0005
3. Nutritional value	$\chi^2=10,280$ , df=4, p=0,036
4. Information on the label	$\chi^2=42,605$ , df=4, p<0,0005
5. Taste	$\chi^2=18,402$ , df=4, p=0,001
6. Discount or special offer	$\chi^2=31,709$ , df=4, p<0,0005
7. Product appearance	$\chi^2=34,208$ , df=4, p<0,0005
8. Organic certification labels	$\chi^2=47,202$ , df=4, p<0,0005
9. Animal welfare	$\chi^2=10,389$ , df=4, p=0,034
10. Support local farmers	$\chi^2=20,747$ , df=4, p<0,0005
11. It is trendy to consume	$\chi^2=11,276$ , df=4, p=0,024

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df= degrees of freedom, n=260

**Table 17:** Statistically significant pairwise comparisons between age groups and purchasing criteria (I)

<b>Purchasing criteria</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Regional production	1. 56 and older (149,24) and Under 25 (108,37)	p=0,005
Packaging	1. Under 25 (139,43) and 56 older (61,06) 2. 26-35 (148,32) and 56 and older (61,06) 3. 36-45 (149,12) and 56 and older (61,06)	p<0,0005 p<0,0005 p<0,0005
Information on the label	1. Under 25 (129,53) and 56 and older (68,18) 2. 26-35 (149,09) and 56 and older (68,18) 3. 36-45 (146,86) and 56 and older (68,18)	p=0,002 p<0,0005 p<0,0005
Discount or special offer	1. Under 25 (135,27) and 56 and older (86,02) 2. 26-35 (143,60) and 56 and older (86,02) 3. 36-45 (141,28) and 56 and older (86,02)	p=0,003 p<0,0005 p<0,0005
Nutritional value	1. 36-45 (141,70) and under 25 (107,77)	p=0,016

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Table 18:** Statistically significant pairwise comparisons between age groups and purchasing criteria  
(II)

<b>Purchasing criteria</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Organic certification labels	1. Under 25 (134,96) and 56 and older (65,63)	p<0,0005
Animal welfare	1. 26-35 (143,66) and 56 and older (105,94)	p=0,019
Support local farmers	1. 36-45 (131,10) and under 25 (88,04) 2. 56 and older (135,50) and under 25 (88,04) 3. 26-35 (139,22) and under 25 (88,04) 4. 46-55 (149,74) and under 25 (88,04)	p=0,008 p=0,008 p<0,0005 p=0,003
It is trendy to consume	1. Under 25 (159,67) and 56 and older (112,29)	p=0,011
Taste	1. 26-35 (132,34) and under 25 (96,60) 2. 56 and older (138,32) and under 25 (96,60) 3. 36-45 (147,04) and under 25 (96,60)	p=0,033 p=0,032 p=0,001
Product appearance	1. 46-55 (130,33) and 56 and older (71,88) 2. 26-35 (139) and 56 and older (71,88) 3. Under 25 (142,34) and 56 and older (71,88) 4. 36-45 (148,06) and 56 and older (71,88)	p=0,022 p<0,0005 p<0,0005 p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Marital status:** Kruskal-Wallis test showed statistically significant differences between marital status and consumer purchasing criteria such availability, taste, support local farmers, and it is trendy to consume (*Table 19*). People which were married or in partnership seem to be more interested in the purchasing criteria like the taste and support local farmers compared to the purchasing criterion of availability which was important for people who mentioned “other” in their marital status (*Table 20*).

**Table 19:** Statistically significant differences between marital status and purchasing criteria

Purchasing criteria/Marital status	Statistics
1. Availability	$\chi^2=9,359$ , df=2, p=0,009
2. Taste	$\chi^2=6,622$ , df=2, p=0,036
3. Support local farmers	$\chi^2=10,531$ , df=2, p=0,005
4. It is trendy to consume	$\chi^2=7,014$ , df=2, p=0,030

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df= degrees of freedom, n=260

**Table 20:** Statistically significant pairwise comparisons between marital status and purchasing criteria

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Availability	1. Other (260) and single (114,19)	p=0,049
Taste	1. Married/in partnership (135,19), and single (111,89)	p=0,040
Support local farmers	1. Married/in partnership (136,59) and single (106,60)	p=0,005
It is trendy to consume	Statistically significant pairwise comparisons were not recorded.	

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Number of people in the household:** The purchasing criteria which were affected by this demographic factor were packaging, information on the label, nutritional value, product appearance, taste, organic certification labels, and support local farmers (*Table 21*). People that live in households with 3-4 people and more than 5 people are more interested in purchasing criteria such as packaging, information on the label, product appearance, taste and organic certification labels (*Table 22-23*).

**Table 21:** Statistically significant differences between number of people in the household and purchasing criteria

Purchasing criteria/Number of people in the household	Statistics
1. Packaging	$\chi^2=28,425$ , df=2, $p<0,0005$
2. Information on the label	$\chi^2=17,663$ , df=2, $p<0,0005$
3. Nutritional value	$\chi^2=6,464$ , df=2, $p=0,039$
4. Product appearance	$\chi^2=16,447$ , df=2, $p<0,0005$
5. Taste	$\chi^2=9,408$ , df=2, $p=0,009$
6. Organic certification labels	$\chi^2=16,951$ , df=2, $p<0,0005$
7. Support local farmers	$\chi^2=6,349$ , df=2, $p=0,042$

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df= degrees of freedom, n=260

**Table 22:** Statistically significant pairwise comparisons between the number of people in the household and purchasing criteria (I)

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Packaging	1. 3-4 people (145,27) and 1-2 (111,05) 2. More than 5 people (207,42) and 1-2 (111,05) 3. More than 5 people (207,42) and 3-4 people (145,27)	$p=0,001$ $p<0,0005$ $p=0,013$
Information on the label	1. 3-4 people (142,74) and 1-2 people (114,96) 2. More than 5 people (187,83) and 1-2 people (114,96)	$p=0,006$ $p=0,002$
Nutritional value	Pairwise comparisons were not statistically significant	

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Table 23:** Statistically significant pairwise comparisons between the number of people in the household and purchasing criteria (II)

<b>Purchasing criteria</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Product appearance	1. 3-4 people (143,53) and 1-2 people (114,85) 2. More than 5 people (181,50) and 1-2 people (114,85)	p=0,005 p=0,006
Taste	1. More than 5 people (174) and 1-2 people (122,01)	p=0,015
Organic certification labels	1. 3-4 people (142,68) and 1-2 people (115,12) 2. More than 5 people (186,50) and 1-2 people (115,12)	p=0,007 p=0,003
Support local farmers	Pairwise comparisons were not statistically significant	

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Number of people under 18 living in the household:** Consumer purchasing criteria such as packaging, information on the label, discount or special offer, nutritional value, product appearance, taste, organic certification labels, and environmental benefits were influenced by number of people under 18 living in the household (*Table 24*). People who live in households with people under 18 are more interested in packaging, information on the label, discount or special offer, product appearance, taste, organic certification labels, and environmental benefits (*Table 25-26*).

**Table 24:** Statistically significant differences between the number of people under 18 living in the household and purchasing criteria

Purchasing criteria/Number of people under 18 in the household	Statistics
1. Packaging	$\chi^2=44,379$ , df=2, p<0,0005
2. Information on the label	$\chi^2=28,864$ , df=2, p<0,0005
3. Discount or special offer	$\chi^2=11,038$ , df=2, p=0,004
4. Nutritional value	$\chi^2=6,810$ , df=2, p=0,033
5. Product appearance	$\chi^2=28,889$ , df=2, p<0,0005
6. Taste	$\chi^2=7,873$ , df=2, p=0,020
7. Organic certification labels	$\chi^2=30,015$ , df=2, p<0,0005
8. Environmental benefits	$\chi^2=7,534$ , df=2, p=0,023

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 25:** Statistically significant pairwise comparisons between the number of people under 18 living in the household and purchasing criteria (I)

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Packaging	1. 1-2 people under 18 (160,19) and no people under 18 (106,49) 2. 3-4 people under 18 (204,50) and no people under 18 (106,49)	p<0,0005 p<0,0005
Information on the label	1. 1-2 people under 18 (155,01) and no people under 18 (111,13) 2. 3-4 people under 18 (184,70) and no people under 18 (111,13)	p<0,0005 p=0,004
Discount or special offer	1. 1-2 people under 18 (141,68) and no people under 18 (120,96)	p=0,021
Nutritional value	Pairwise comparisons were not statistically significant	

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260



**Table 26:** Statistically significant pairwise comparisons between number of people under 18 living in the household and purchasing criteria (II)

<b>Purchasing criteria</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Product appearance	1. 1-2 people under 18 (156,97) and none people under 18 (110,65) 2. 3-4 people under 18 (172,80) and none people under 18 (110,65)	p<0,0005 p=0,022
Taste	1. 3-4 people under 18 (174,00) and none people under 18 (123,64)	p=0,037
Organic certification labels	1. 1-2 people under 18 (156,93) and none people under 18 (110,34) 2. 3-4 people under 18 (177,90) and none people under 18 (110,34)	p<0,0005 p=0,011
Environmental benefits	1. 3-4 people under 18 (173) and none people under 18 (123,79)	p=0,043

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Education:** The purchasing criteria which were influenced by the different levels of education were: packaging, information on the label, discount or special offer, product appearance, organic certification labels, and animal welfare (*Table 27*). People with higher educational levels took into account the aforementioned purchasing criteria during the process of purchasing with the only exception of people in secondary education. Consumers with secondary educational level are more concerned about packaging and discount or special offer compared to people in vocational education and training (*Table 28-29*).

**Table 27:** Statistically significant differences between education and purchasing criteria

Purchasing criteria/Education	Statistics
1. Packaging	$\chi^2=42,597$ , df=3, p<0,0005
2. Information on the label	$\chi^2=31,188$ , df=3, p<0,0005
3. Discount or special offer	$\chi^2=15,524$ , df=3, p=0,001
4. Product appearance	$\chi^2=27,851$ , df=3, p<0,0005
5. Organic certification labels	$\chi^2=38,506$ , df=3, p<0,0005
6. Animal welfare	$\chi^2=9,952$ , df=3, p=0,019

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 28:** Statistically significant pairwise comparisons between education and purchasing criteria (I)

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Packaging	1. Secondary education (122,28) and primary education (21,50) 2. Tertiary education (146,60) and primary education (21,50) 3. Secondary education (122,28) and vocational education and training (71,78) 4. Tertiary education (146,60) and vocational education and training (71,78)	p=0,007 p<0,0005 p=0,014 p<0,0005
Information on the label	1. Secondary education (122,55) and primary education (24,42) 2. Tertiary education (143,88) and primary education (24,42) 3. Tertiary education (143,88) and vocational education and training (86,88)	p=0,008 p<0,0005 p<0,005
Discount or special offer	1. Tertiary education (134,29) and vocational education and training (90,86) 2. Secondary education (141,08) and vocational education and training (90,86)	p=0,002 p=0,002

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Table 29:** Statistically significant pairwise comparisons between education and purchasing criteria (II)

<b>Purchasing criteria</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Product appearance	1. Secondary education (117,06) and primary education (34,17), (p=0,042) 2. Tertiary education (144,34) and primary education (34,17) 3. Tertiary education (144,34) and vocational education and training (92,00)	p=0,042 p=0,001 p=0,001
Organic certification labels	1. Secondary education (119,60) and primary education (25,33) 2. Tertiary education (146,25) and primary education (25,33) 3. Tertiary education (146,25) and vocational education and training (77,83)	p=0,013 p<0,0005 p<0,0005
Animal welfare	1. Secondary education (131,08) and primary education (56,75) 2. Tertiary education (135,21) and primary education (56,75)	p=0,048 p=0,022

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Income:** Packaging, information on the label, nutritional value, product appearance, taste, and organic certification labels were affected by the different levels of monthly income (*Table 30*). People with higher incomes are more concerned about the aforementioned purchasing criteria (*Table 31-32*).

**Table 30:** Statistically significant differences between monthly income and purchasing criteria

Purchasing criteria/Income	Statistics
1. Packaging	$\chi^2=33,403$ , df=2, p<0,0005
2. Information on the label	$\chi^2=20,391$ , df=2, p<0,0005
3. Nutritional value	$\chi^2=10,949$ , df=2, p=0,004
4. Product appearance	$\chi^2=32,407$ , df=2, p<0,0005
5. Taste	$\chi^2=6,679$ , df=2, p=0,035
6. Organic certification labels	$\chi^2=20,652$ , df=2, p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 31:** Statistically significant pairwise comparisons between monthly income and purchasing criteria (I)

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Packaging	1. 1.501-2.500€ (190,73) and $\leq 750$ € (109,70) 2. 1.501-2.500€ (190,73) and 751-1.500€ (127,04)	p<0,0005 p<0,0005
Information on the label	1. 1.501-2.500€ (175,09) and $\leq 750$ € (111,92) 2. 1.501-2.500€ (175,09) and 751-1.500€ (129,86)	p<0,0005 p=0,002
Nutritional value	1. 1.501-2.500€ (152,03) and $\leq 750$ € (118,79)	p=0,003

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Table 32:** Statistically significant pairwise comparisons between income and purchasing criteria (II)

Purchasing criteria	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Product appearance	1. 1.501-2.500€ (191,43) and ≤750€ (114,87) 2. 1.501-2.500€ (191,43) and 751-1.500€ (123,73)	p<0,0005 p<0,0005
Taste	1. 1.501-2.500€ (153,08) and ≤750€ (121,79)	p=0,030
Organic certification labels	1. 1.501-2.500€ (178,61) and ≤750€ (116,28) 2. 1.501-2.500€ (178,61) and 751-1.500€ (126,29)	p<0,0005 p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

### 5.6 Demographics and consumer perceptions towards organic agriculture and products

**Sex:** Consumer perceptions towards organic agriculture and products were influenced by sex.

Females indicated that organic certification procedures are reliable, organic products are free from pesticide residues, organic products are of particular value for children's diet, and organic products are not promoted well. On the other hand, males indicated that organic products are expensive for what they offer (*Table 33*).

**Table 33:** Statistically significant differences between sex and consumer perception

Consumer perceptions/Sex	Female mean rank	Male mean rank	Statistics
Organic certification procedures are reliable	140,38	111,84	U=9.329, z=3,325, p=0,001
Organic products are free from pesticide residues	137,45	117,38	U=8.831, z=2,311, p=0,021
Organic products are of particular value for children's diet	142,11	108,57	U=9.624, z=3,999, p<0,0005
Organic products are expensive for what they offer	119,37	151,53	U=5.757,5, z=-3,648, p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Mann Whitney test was used for comparisons, n=260

**Age:** Only three statements regarding consumer perceptions were influenced by age. Kruskal-Wallis test showed statistically significant differences in: organic products are free from pesticide residues, organic certification procedures are reliable and organic products are expensive for what they offer) (*Table 34*). Younger people (26-35 and 36-45) perceive that organic products are free from pesticide residues and organic certification procedures are reliable. Older people (56 and older) perceive that organic products are expensive for what they offer (*Table 35*).

**Table 34:** Statistically significant differences between consumer perceptions and age

Consumer perceptions/Age	Statistics
1. Organic products are free from pesticide residues	$\chi^2=10,060$ , df=4, p=0,039
2. Organic certification procedures are reliable	$\chi^2=11,356$ , df=4, p=0,023
3. Organic products are expensive for what they offer	$\chi^2=17,819$ , df=4, p=0,001

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 35:** Statistically significant pairwise comparisons between consumer perceptions and age

Consumer perceptions	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Organic products are free from pesticide residues	1. 36-45 (140,58) and 56 and older (101,51)	p=0,031
Organic certification procedures are reliable	1. 26-35 (136,99) and 56 and older (101,38)	p=0,037
Organic products are expensive for what they offer	1. 56 and older (168,57) and 26-35 (116,22)	p<0,0005
	2. 56 and older (168,57) and 36-45 (126,78)	p=0,018

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Marital status:** Consumer perceptions towards organic agriculture and products were not influenced by the marital status (single, married/in partnership, and other). Kruskal-Wallis test did not show any statistically significant differences between consumer perceptions and the different groups of marital status.

**Number of people in the household:** Kruskal-Wallis test showed that four statements about consumer perceptions were statistically significantly different among the different groups of people that live in a household (*Table 36*). People that live in households with more than two people have more positive perceptions towards organic products compared to households with 1-2 people. Consumers that live in households with 3-4 people perceive that organic products are not promoted well (*Table 37*).

**Table 36:** Statistically significant differences between consumer perceptions and number of people in the household

Consumer perceptions/ Number of people in the household	Statistics
1. Organic products have better taste	$\chi^2=8,890$ , df=2, p=0,012
2. Organic products are free from pesticide residues	$\chi^2=8,621$ , df=2, p=0,013
3. Organic products are for particular value for children's diet	$\chi^2=17,649$ , df=2, p<0,0005
4. Organic products are not promoted well	$\chi^2=9,598$ , df=2, p=0,008

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 37:** Statistically significant pairwise comparisons between consumer perceptions and number of people in the household

Consumer perceptions	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Organic products have better taste	1. more than 5 people (162,50) and 1-2 people (121,75)	p=0,048
Organic products are free from pesticide residues	1. more than 5 people (173,58) and 1-2 people (121,26)	p=0,027
Organic products are for particular value for children's diet	1. 3-4 people (141,17) and 1-2 people (116,63) 2. more than 5 (184) and 1-2 people (116,63)	p=0,008 p=0,002
Organic products are not promoted well	1. 3-4 people (139,46) and 1-2 people (119,79)	p=0,045

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260



**Number of people under 18 living in the household:** Consumer perceptions towards organic agriculture and products were influenced by the number of people under 18 living in household. Seven out of eleven statements were statistically significantly different among the different groups of people under 18 living in the household (*Table 38*). People that live in households with people under 18 are more concerned about organic agriculture and products compare to people that live with no people under 18 (*Table 39*). Consumers that live with 1-2 people under 18 perceive that organic products are not promoted well (*Table 39*).

**Table 38:** Statistically differences between consumer perceptions and number of people under 18 living in the household

Consumer perceptions/ Number of people under 18 living in the household	Statistics
1. Organic agriculture is good for the environment	$\chi^2=10,472$ , df=2, p=0,005
2. Organic products have better quality	$\chi^2=7,848$ , df=2, p=0,020
3. Organic products have better taste	$\chi^2=9,277$ , df=2, p=0,010
4. Organic products are free from pesticide residues	$\chi^2=11,673$ , df=2, p=0,003
5. Organic certification procedures are reliable	$\chi^2=7,049$ , df=2, p=0,029
6. Organic products are of particular value for children's diet	$\chi^2=25,263$ , df=2, p<0,0005
7. Organic products are not promoted well	$\chi^2=11,901$ , df=2, p=0,003

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 39:** Statistically significant pairwise comparisons between consumer perceptions and number of people under 18 living in the household

<b>Consumer perceptions</b>	<b>Statistically significant pairwise comparisons (mean rank)</b>	<b>Kruskal-Wallis p-value</b>
Organic agriculture is good for the environment	1. 1-2 people under 18 in household (140,95) and no people under 18 (121,59)	p=0,025
Organic products have better quality	1. 1-2 people under 18 in household (140,82) and no people under 18 (122,1)	p=0,048
Organic products have better taste	1. 1-2 people under 18 (139,95) and no people under 18 (122,3)	p=0,046
Organic products are free from pesticide residues	1. 1-2 people under 18 (142,54) and no people under 18 (119,79) 2. 3-4 people under 18 (175,4) and no people under 18 (119,79)	p=0,025 p=0,032
Organic certification procedures are reliable	Pairwise comparisons were not statistically significant	
Organic products are of particular value for children's diet	1. 1-2 people under 18 (149,91) and no people under 18 (114,47) 1. 3-4 people under 18 (184) and no people under 18 (114,47)	p<0,0005 p=0,003
Organic products are not promoted well	1. 1-2 people under (144,40) and no people under 18 (119,41)	p=0,007

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Education:** Four statements about consumer perceptions towards organic agriculture and products were influenced by the different educational levels (*Table 40*). Consumers with higher educational level perceive that organic products are free from pesticide residues and organic certification procedures are reliable (*Table 41*). Consumers with lower educational level perceive that organic products are expensive for what they offer (*Table 41*).

**Table 40:** Statistically significant differences between consumer perceptions and educational level

Consumer perceptions/Education	Statistics
1. Organic products are free from pesticide residues	$\chi^2=15,047$ , df=3, p=0,002
2 Organic certification procedures are reliable	$\chi^2=17,036$ , df=3, p=0,001
3. Organic products are not promoted well	$\chi^2=12,445$ , df=3, p=0,006
4. Organic products are expensive for what they offer	$\chi^2=19,626$ , df=3, p<0,0005

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 41:** Statistically significant pairwise comparisons between consumer perceptions and educational level

Consumer perceptions	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Organic products are free from pesticide residues	1. Tertiary education (139,21) and primary education (48,33)	p=0,006
Organic certification procedures are reliable	1. Vocational education and training (114,36) and primary education (29,83) 2. Tertiary education (134,56) and primary education (mean rank=29,83) 3. Secondary education (137,60) and primary education (29,83)	p=0,025 p=0,001 p=0,001
Organic products are not promoted well	Pairwise comparisons were not statistically significant	
Organic products are expensive for what they offer	1. Vocational education and training (159,21) and tertiary education (119,58) 2. Primary education (211) and tertiary education (119,58)	p=0,021 p=0,007

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

**Income:** Three out of eleven statements presented statistically significant differences among the different levels of income (*Table 42*). Consumers with higher income perceive that organic products are free from pesticide residues, organic products are particular value for children's diet and organic products are not promoted well (*Table 43*).

**Table 42:** Statistically significant differences between consumer perceptions and monthly income

Consumer perceptions/Income	Statistics
1.Organic products are free from pesticide residues	$\chi^2=8,871$ , df=2, p=0,012
2. Organic products are particular value for children's diet	$\chi^2=17,404$ , df=2, p<0,0005
3. Organic products are not promoted well	$\chi^2=9,969$ , df=2, p=0,007

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, df=degrees of freedom, n=260

**Table 43:** Statistically significant pairwise comparisons between consumer perceptions and monthly income

Consumer perceptions	Statistically significant pairwise comparisons (mean rank)	Kruskal-Wallis p-value
Organic products are free from pesticide residues	1. 1.501-2.500€ (160,08) and 751-1.500€ (123,50)	p=0,009
Organic products are particular value for children's diet	1. 1.501-2.500€ (170,11) and $\leq 750$ € (118,22) 2. 1.501-2.500€ (170,11) and 751-1.500€ (127,38)	p<0,0005 p=0,001
Organic products are not promoted well	1. 1.501-2.500€ (160,58) and 751-1.500€ (123,70) 2. 1.501-2.500€ (160,58) and $\leq 750$ € (128,50)	p=0,005 p=0,031

Notes: Level of significance  $\alpha=0,05$ , Kruskal-Wallis test was used for comparisons, n=260

## **6. Discussion**

### **6.1 Respondents' demographical characteristics**

Organic consumers of this survey tend to be female, younger (26-35), high educated, married/in partnership, and have a monthly income between 751-1.500€. A similar consumer profile was mentioned in other studies (Karadima & Karadimas, 2014; Krystallis & Chryssohoidis, 2005; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). Also, the majority of the respondents live in households with no people under 18 which comes in contrast with other reports in which the majority of the respondents mentioned that they live with 1-2 people under 18 in the household (Fotopoulos & Krystallis, 2002a; Krystallis, Fotopoulos, & Zotos, 2006).

### **6.2 Respondents' purchasing behavior**

The majority of the respondents purchase organic products once per week. A similar study showed that organic products are not regularly purchased by Greek consumers even though the majority of them present positive attitudes for organic products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008; Krystallis, Fotopoulos, & Zotos, 2006). A low purchasing frequency of organic products is also observed in other countries such as Turkey and Croatia (Ergönül & Ergönül, 2015; Radman, 2005). In other countries such as Denmark the consumption of organic products is higher since Denmark has the highest organic share in the world and its market is very developed (Kaad-Hansen, 2019).

This study showed that the most regularly purchased products were vegetables and fruits with organic farmers' markets to be the primary market place for purchasing such products. For some studies such as Karadima & Karadimas (2014) and Krystallis & Chryssohoidis (2005), organic farmers' markets were not the primary market place for purchasing organic products but supermarkets. On the other hand, in other study, organic farmers' markets were considered as the main place for purchasing organic products ( Krystallis, Fotopoulos, & Zotos, 2006). In Turkey, public bazaars (which are similar to farmers' markets in Greece) are the places where people buy organic products since they are associated with the Turkish culture (Ergönül & Ergönül, 2015). Organic vegetables and fruits were also regularly purchased by consumers in similar studies (Karadima & Karadimas, 2014; Krystallis & Chryssohoidis, 2005; Krystallis, Fotopoulos, & Zotos, 2006; Radman, 2005). In this study, organic olive oil was characterized by a low purchasing frequency. Even though olive oil is a significant element of the Greek diet and cuisine its frequency of purchasing in stores is low since olive oil can be purchased in bulk form from the producers (Krystallis & Ness, 2004).

This study showed that women are the main organic buyers compared to men. This is in line with several studies such as Bosona & Gebresenbet (2018), Davis, Titterton, & Cochrane (1995), Fotopoulos & Krystallis (2002a), Krystallis, Fotopoulos, & Zotos (2006), Kurnia, Sun, & Collins, (2013), and Tsakiridou, Boutsouki, Zotos, & Mattas (2008). Women are more interested about organic production and their level of awareness regarding organic products is higher compared to men (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

Results indicated that the purchasing frequency of organic products was higher, in people with children as well as in people with high educational level and income. High educational levels as well as income, positively influence the consumption of organic products (Millock, Wier, & Andersen, 2004; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). People in those categories prefer to consume organic products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). Families start to purchase organic products when a baby is born (Hill & Lynchehaun, 2002). Consumers that live with people under 15 in household increase the frequency of organic products purchasing (Millock, Wier, & Andersen, 2004). Similar to the findings of literature (Cicia, Del Giudice, & Scarpa, 2002, Radman, 2005), younger consumers (under 25) do not purchase organic products as often as older consumers (26-35, and 36-45). Older consumers tend to be buyers of organic products because they have the ability to pay premium prices on organic products (Hughner et al., 2007)

### **6.3 Consumer knowledge towards organic certification labels**

The most recognizable organic certification label among respondents was DIO. Studies that measure the consumer knowledge regarding organic certification labels have not yet been conducted in Greece. As a result, this findings cannot be correlated with Greek literature but with foreigner literature. In Denmark, the Danish organic label is the most recognizable by the majority of the consumers (Millock, Wier, & Andersen, 2004). Danes trust more Danish products with the Danish organic label compared to foreign organic labels (Millock, Wier, & Andersen, 2004). Consumers in Turkey are not familiar with the organic labels since 9% of them recognized the right organic label that should be on the packages of organic products (Ergönül & Ergönül, 2015). A very small number of organic consumers trust organic products in which the word organic is only written on the packages without having any organic certification label (Janssen & Hamm, 2012). The willingness to purchase and pay for such products was higher when an organic certification label existed on the packages (Janssen & Hamm, 2012).

## 6.4 Consumer purchasing criteria

The most important consumer purchasing criteria with a descending order were: price, nutritional value, regional production, discount or special offer, and availability. A similar pattern of results was obtained in two different studies. In the first study, the most important consumer purchasing criteria with a descending order were: price, taste, certification methods, nutritional value, environmental benefits, and raw materials, and country of origin (Krystallis & Chryssohoidis, 2005) while in the second study were quality, taste, certification labels, high nutritional value of organic products ingredients, discount or special offer, protect the natural environment, and packaging (Karadima & Karadimas, 2014).

Personal motives such as health issues are considered more important reasons for buying organic products compared to altruistic motives such as environmental concerns (Magnusson, et al., 2003). Health issues, nutritional value, and taste of organic products seem to be more important reasons for buying organic products (Magnusson, et al., 2003; Mitsostergios & Skiadas, 1994; Zanolli & Naspetti, 2002). Animal welfare is a essential factor for buying organic products but not so important like environmental and health concerns (Aarset, et al., 2004; Hill & Lynchehaun, 2002).

Consumers are in favor of purchasing organic products owing to the fact that they perceive that the process of purchasing organic products could support the local economy (Hughner et al., 2007). This can be explained by consumer beliefs that organic products are locally produced by small farms which were owned by small families (Hughner et al., 2007). Greek organic consumers care about the origin of products when purchasing foods (Fotopoulos & Krystallis, 2002a). Danish consumers are willing to buy domestic conventional fruits and vegetables rather than organic fruits and vegetables which were produced in a foreign country (Millock, Wier, & Andersen, 2004). The same behavior was noticed with Austrian consumers who also prefer local produced conventional products rather than foreign-produced organic products (Freyer, 2007).

Price and discount or special offers are important purchasing criteria for consumers since these criteria could negatively or positively influence the purchasing behavior (Fotopoulos & Krystallis, 2002a; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). High prices are important reasons for avoiding organic products (Fotopoulos & Krystallis, 2002a; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). People can increase the consumption of organic products if the prices decrease (Chiciudean, et al., 2019) but lower prices in organic products do not guarantee significantly higher sales (Bunte, van Galen, Kuiper, & Tacken, 2010).

Availability, product appearance, and the limited trust to organic production are considered as barriers for purchasing organic products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). Reduced availability is also considered as a reason for organic product avoidance (Theodoropoulou, Barda, & Apostolopoulos, 2002; Zanolli & Naspetti, 2002).

## **6.5 Consumer perceptions towards organic agriculture and products**

The overall perceptions of participants towards organic agriculture and products were positive which was in line with similar studies (Karadima & Karadimas, 2014; Krystallis, Fotopoulos, & Zotos, 2006; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

For instance, respondents believed that organic products have better quality and taste, they are free from pesticides residues and they are healthier. According to literature, the consumption of organic products is based on the high nutritional quality of such products (Theodoropoulou, Barda, & Apostolopoulos, 2002). Organic vegetables in comparison with conventional vegetables are perceived as more nutritious and less contaminated (Hoefkens, Verbeke, Aertsens, Mondelaers, & Camp, 2009; Hill & Lynchehaun, 2002). People who purchase organic products more frequently, they perceive that organic products are healthier as well as safer independently of the demographics such as education, level of income, sex, and place of residence (Hoefkens, Verbeke, Aertsens, Mondelaers, & Camp, 2009).

Contrary to the reports in literature (Krystallis, Fotopoulos, & Zotos, 2006), consumers of organic products do not believe that organic products are expensive for what they offer. Consumers perceive that products with higher prices are products with high quality while products with lower prices are products with lower taste (Hill & Lynchehaun, 2002; Marian & Thøgersen, 2013). Organic buyers in Denmark were more interested in health issues, environmental concerns, animal welfare, and local production rather than the lower prices of organic products (Millock, Wier, & Andersen, 2004). In Bangkok, consumers perceive that organic products are just a marketing trick (Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2007).

Consumers mentioned that organic certification procedures are reliable. A similar conclusion was reached by Krystallis & Chrysoschoidis (2005) and Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, (2007).

Females, younger people, people with children in household as well as people with higher educational level and income presented more positive perceptions towards organic products and agriculture. These findings are in accordance with findings reported by other researchers (Krystallis



& Chryssohoidis, 2005; Kurnia, Sun, & Collins, 2013; Theodoropoulou, Barda, & Apostolopoulos, 2002; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

Older people find that organic products are tastier (Kurnia, Sun, & Collins, 2013; Radman, 2005). Older consumers and families with children purchase organic products for health reasons and they are also aware of the various environmental issues (Theodoropoulou, Barda, & Apostolopoulos, 2002). Health consciousness is correlated to the purchasing of organic products since it includes the consumption of nutritious food (Paul & Rana, 2012). Older people care more about their health as well as about the safety of the products that they consume and they are willing to pay higher prices towards organic products (Fotopoulos & Krystallis, 2002b; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). Younger people are environmentally conscious but they do not have the purchasing power of older (Fotopoulos & Krystallis, 2002b; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). Younger people are interested in the appearance of organic products and they are not eager to buy products that do not have a good shape (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

Women with children are considered the main buyers of foods in a household due to the fact that they care more for the nutritional value of food (Krystallis & Chryssohoidis, 2005). They seem to perceive that organic products contain more vitamins compared to conventional products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

People with high income as well as with high educational level perceive that organic products are healthier and they do not harm the environment (Kurnia, Sun, & Collins, 2013; Tsakiridou, Boutsouki, Zotos, & Mattas, 2008). They believe that organic products have a better taste as well as quality and they do not pay attention to the appearance of organic products (Tsakiridou, Boutsouki, Zotos, & Mattas, 2008).

## **6.6 Methodological limitations and potential biases**

Potential biases could arise from the chosen sampling strategy, from the sample size that was obtained during the specific time frame of the survey, and from the structure of a specific question in questionnaire.

The sampling strategy of this study was a non-probability convenience sample since the target population (organic buyers) was easily accessible and available (in supermarket chains, organic stores, and farmers' markets) at the given time (Dörnyei, 2007). Convenience sample excludes some sampling units of the population from being part of the sample because at the given time of the survey some people are not able to participate due to their working hours (Zafeiropoulos, 2015). For example, the majority of the Greek organic farmers' markets operate between 16:00 and 19:30

in the summer. These business hours may not be suitable for everyone. The survey was conducted during different times in each market place in order to increase the representativeness of the sample but this cannot completely assure that the representativeness has been increased. The chosen time for data collection could still be inappropriate for potential participants. In addition, the non-probability sampling cannot be used for generalized assumptions.

During the survey some people were not able to participate because of time constraints. Some participants had the tendency to speak a lot during the survey and shift the discussion towards politics which could potentially decrease the total number of interviewed participants on a given day. Also, a large number of people refused to participate in the survey when they were asked for it. The cause for this may be that a lot of people falsely perceive street surveys as a practice for asking money and avoid the person who conducts the survey.

Another factor that acted as a barrier in order to increase the sample size is the way that the survey was performed. The survey was conducted only by myself between 1<sup>st</sup> of July and 20<sup>th</sup> of August. This practice limited the number of participants that could be interviewed per day. The number of people that administer a questionnaire can considerably increase the sample size. For example, a similar study with the same sampling strategy (convenience sample) which was conducted in Bangkok between late April and early May had a sample size of 848 respondents. This sample size was acquired since the questionnaires were administered by twelve different people (Roitner-Schobesberger, Darnhofer, Somsook, & Vogl, 2007).

A potential bias from the questionnaire structure could also arise from question number five which is related to consumer knowledge towards organic certification labels. The choice of the certification labels was based on personal research regarding their frequency of appearance in product's packages and in organic farmers' markets. Available data or research studies that could indicate the most important certification bodies in Greece was not available. As a result, my personal choice might be not representative and subjective. A further research regarding organic certification labels in Greece should be performed since such labels are related to consumer trust towards organic products (Janssen & Hamm, 2012).

## **7. Conclusion and outlook**

The survey of this study was targeted to adult organic buyers in the center as well as in the suburbs of Athens. Participants expressed overall positive perceptions towards organic agriculture and products which show that organic buyers are well informed about organic agriculture. Even though they had positive perceptions, the majority of them purchase organic products once per week. All demographics influenced the frequency of purchasing organic products, the consumer purchasing criteria, and consumer perceptions.

The results from this study could be very helpful for the Greek authorities which are related to organic agriculture since they give information that can be used in order to improve the sales of organic products and be more responsive to consumer needs. We know how often, where, and what kind of organic products the consumers buy. This information can target the sales of specific products in specific market places. The investigation of consumer purchasing criteria, consumer perceptions as well as consumer knowledge towards organic certification labels is very important. For instance, participants indicated that organic products were not well promoted. This information can be used by the authorities in order to increase the promotional activities of organic agriculture and products through festivals and workshops. Also, respondents mentioned that discounts or special offers are an important purchasing criterion. Discounts or special offers attract more consumers but they are mainly correlated to supermarkets. In Greek conventional farmers' markets, the prices of vegetables and fruits drop after 12:00 and at that time the number of consumers is considerably higher compared to the morning hours. Greek organic farmers' markets do not follow this strategy. In organic farmers' markets the organic certification labels are prominently displayed in the counter of the producer in a form of certification paper which is close to the cash register but this practice is not followed by all the farmers. This should be implemented by the entirety of the producers since only a small number of respondents did not recognize any organic certification label at all which means that consumers do not pay attention to the labels. By displaying the certification labels producers build trust about their products which can lead to increased sales.

Also, the correlation of demographics to consumer perceptions and consumer purchasing criteria can also be proven beneficial for the authorities so that they can target their promotional activities to specific groups of people in order to cover their specific needs. For example, women purchase more often organic products compared to men and they are more interested in packaging and in organic certification labels of organic products. This information could be used in order to create products that fulfill the aforementioned criteria.

It is worth mentioning that the first “bio festival” was held in the city of Athens in May of 2019 in which consumers had the chance to be informed about organic agriculture and products as well as to purchase such products. Also, the dates for the next years “bio festival” have already been announced.

This festival is a good opportunity for non-organic buyers to learn more about organic agriculture and increase their trust in organic products since they can be informed by organic certification bodies that are at the festival. The problem of organic product reliability was mentioned in a well-known Greek newspaper (Stathakou & Konti, 2019). This article with the title “The big fraud of organic products” mentioned that Greek state controls are not sufficient regarding the products which are used in organic production. As a result, the final product is not completely organic while its price is 30 to 70% higher compared to conventional products. With this article, the trust of Greek non-organic buyers as well as of organic buyers might negatively be affected.

## 8. Summary

The organic per capita consumption in Greece is considerably lower compared to other Mediterranean countries such as Italy and Spain. The organic per capita consumption in Greece was 6€ in 2017 while the organic per capita consumption in Italy and Spain in 2017 was 52€ and 42€ respectively.

Having in mind the lower per capita consumption in Greece the aim of the study was to gather knowledge regarding the perceptions and the purchasing behavior of Greek consumers towards organic foods in Athens through structured questionnaires. 260 questionnaires distributed in the center as well as in the suburb of Athens between 1<sup>st</sup> of July and 20<sup>th</sup> of August. The participants were adult organic buyers and the survey took place in organic farmers' markets, supermarkets, and organic stores. Questionnaires included questions that measured how often, where, and what kind of products in organic quality do consumers purchase as well as the criteria that they take into account when purchasing organic products. These questionnaires included questions respecting consumer perceptions of organic agriculture and products as well as questions about the consumer knowledge towards organic certification labels. The consumer purchasing frequency, the consumer purchasing criteria, and the consumer perceptions were correlated to demographics.

The results showed that the majority of the respondents purchase organic products once per week mainly in organic farmers' markets with vegetables and fruits to be the most regularly purchased products. The most important criteria which participants take into account when purchasing organic products with a descending order were: price, regional production, nutritional value, discount or special offer. The most recognizable organic certification label among organic buyers was the DIO label.

The participants of the survey had overall positive perceptions towards organic agriculture and products. The purchasing frequency and consumer purchasing criteria were affected by demographic factors such as sex, age, marital status, number of people in the household, number of people under 18 living in the household, educational level, and monthly income. Consumer perceptions towards organic agriculture and products were also affected by the aforementioned demographic factors with the only exception of marital status.

Consumers of organic products are not characterized by complete homogeneity regarding their beliefs or demographics. The results of this study could be used by Greek authorities in order for them to improve the marketing strategy of organic products and be more responsive to the needs of Greek organic consumers.

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## 10. Appendix

### 10.1 Questionnaire in English

#### Questionnaire for organic buyers

This questionnaire is used in the framework of my master thesis at the University of Natural Resources and Life Sciences in Vienna. The recorded data will be confidential and the anonymity of the respondents is going to be kept. The answering of the questionnaire will take approximately 10 minutes. Thank you for your participation.

#### *Part 1: Consumer purchasing behavior and knowledge for organic certification labels*

##### 1. How often do you purchase organic products?

<input type="checkbox"/> <sub>1</sub> Once per week	<input type="checkbox"/> <sub>2</sub> Twice per week
<input type="checkbox"/> <sub>3</sub> More than twice per week	<input type="checkbox"/> <sub>4</sub> Once per month

##### 2. Which are the places that you purchase organic products? (You can choose more than one answer)

<input type="checkbox"/> <sub>1</sub> Supermarket chains	<input type="checkbox"/> <sub>2</sub> Organic farmers' markets
<input type="checkbox"/> <sub>3</sub> Healthy food stores	<input type="checkbox"/> <sub>4</sub> Stores with traditional products
<input type="checkbox"/> <sub>5</sub> Online food stores	<input type="checkbox"/> <sub>6</sub> Directly from the farmer
<input type="checkbox"/> <sub>7</sub> Other (Please define: .....)	

**3. What kind of products in organic quality do you regularly purchase? (You can choose more than one answer)**

<input type="checkbox"/> <sub>1</sub> Dairy products	<input type="checkbox"/> <sub>2</sub> Meat products	<input type="checkbox"/> <sub>3</sub> Eggs	<input type="checkbox"/> <sub>4</sub> Vegetables
<input type="checkbox"/> <sub>5</sub> Fruits	<input type="checkbox"/> <sub>6</sub> Legumes	<input type="checkbox"/> <sub>7</sub> Rice	<input type="checkbox"/> <sub>8</sub> Pasta
<input type="checkbox"/> <sub>9</sub> Nuts/Dried fruits	<input type="checkbox"/> <sub>10</sub> Processed products	<input type="checkbox"/> <sub>11</sub> Bakery products	<input type="checkbox"/> <sub>12</sub> Coffee
<input type="checkbox"/> <sub>13</sub> Honey	<input type="checkbox"/> <sub>14</sub> Alcoholic beverages	<input type="checkbox"/> <sub>15</sub> Snacks	<input type="checkbox"/> <sub>16</sub> Olive oil
<input type="checkbox"/> <sub>17</sub> Other (Please define: .....)			

**4. How important are the following criteria for you when purchasing organic products?**

	<b>Strongly disagree</b> <sub>1</sub>	<b>Disagree</b> <sub>2</sub>	<b>Agree</b> <sub>3</sub>	<b>Strongly agree</b> <sub>4</sub>	
<b>1. Availability</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>2. Regional production</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>3. Packaging</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>4. The information on the label</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>5. Discount or special offer</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>6. The price</b>					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>



	<b>Strongly disagree</b> <sub>1</sub>	<b>Disagree</b> <sub>2</sub>	<b>Agree</b> <sub>4</sub>	<b>Strongly agree</b> <sub>5</sub>	
<b>7.</b> Nutritional value					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>8.</b> Product appearance					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>9.</b> Taste					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>10.</b> Organic certification labels					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>11.</b> Environmental benefits					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>12.</b> Animal welfare					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>13.</b> Support local farms					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>14.</b> It is trendy to consume					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>

5. Which of the following labels have you ever seen before? (You can choose more than one answer)

<div data-bbox="421 336 592 506" data-label="Image"> </div> <div data-bbox="347 472 392 517" data-label="Form"> <input type="checkbox"/> </div>	<div data-bbox="1003 385 1193 495" data-label="Image"> </div> <div data-bbox="906 488 951 533" data-label="Form"> <input type="checkbox"/> </div>
<div data-bbox="464 674 596 869" data-label="Image"> </div> <div data-bbox="347 846 392 891" data-label="Form"> <input type="checkbox"/> </div>	<div data-bbox="999 674 1214 797" data-label="Image"> </div> <div data-bbox="906 846 951 891" data-label="Form"> <input type="checkbox"/> </div>
<div data-bbox="375 1061 590 1149" data-label="Image"> </div> <div data-bbox="295 1223 339 1267" data-label="Form"> <input type="checkbox"/> </div>	<div data-bbox="1027 1077 1190 1238" data-label="Image"> </div> <div data-bbox="916 1216 960 1261" data-label="Form"> <input type="checkbox"/> </div>
<div data-bbox="288 1420 713 1471" data-label="Form"> <input type="checkbox"/> I do not recognize any label         </div>	

**Part 2: Consumer perceptions for organic agriculture and products**

**6. Do you agree or disagree with the following statements?**

	<b>Strongly disagree <sub>1</sub></b>	<b>Disagree <sub>2</sub></b>	<b>Agree <sub>3</sub></b>	<b>Strongly agree <sub>4</sub></b>	
<b>1.</b> Organic agriculture is good for the environment					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>2.</b> Organic agriculture does not use synthetic pesticides, fertilizers, and herbicides					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>3.</b> Organic products have better quality					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>4.</b> Organic products have better taste					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>5.</b> Organic products are healthier					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>6.</b> Organic products are free from GMOs					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>7.</b> Organic products are free from pesticide residues					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>8.</b> Organic certification procedures are reliable					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>9.</b> Organic products are of particular value for children's diet					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>10.</b> Organic products are expensive for what they offer					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>
<b>11.</b> Organic products are not promoted well					<b>I don't know</b> <input type="checkbox"/> <sub>5</sub>

**Part 3: Demographic data**

<b>7. Sex</b>
<sub>1</sub> <input type="checkbox"/> Male <sub>2</sub> <input type="checkbox"/> Female
<b>8. Birth year:</b>
<b>9. Marital status</b>
<sub>1</sub> <input type="checkbox"/> Single <sub>2</sub> <input type="checkbox"/> Married/in partnership <sub>3</sub> <input type="checkbox"/> Other
<b>10. Number of people living in the household: .....</b>
<b>11. Specify the number of people aged under 18 living in the household: .....</b>
<b>12. Education</b>
<sub>1</sub> <input type="checkbox"/> Primary education <sub>2</sub> <input type="checkbox"/> Secondary education <sub>3</sub> <input type="checkbox"/> Vocational education and training  <sub>4</sub> <input type="checkbox"/> Tertiary education
<b>13. Income per month (€)</b>
<sub>1</sub> <input type="checkbox"/> ≤750 € <sub>2</sub> <input type="checkbox"/> 751-1.500 € <sub>3</sub> <input type="checkbox"/> 1.501-2.500 € <sub>4</sub> <input type="checkbox"/> > 2.501€

## 10.2 Questionnaire in Greek

### Ερωτηματολόγιο

Το ερωτηματολόγιο χρησιμοποιείται στα πλαίσια της μεταπτυχιακής εργασίας μου στο Πανεπιστήμιο Φυσικών Πόρων και Βιοεπιστημών της Βιέννης (University of Natural Resources and Life Sciences, Vienna). Τα συλλεχθέντα δεδομένα θα είναι εμπιστευτικά και η ανωνυμία του ερωτηθέντων θα διατηρηθεί. Η συμπλήρωση του ερωτηματολογίου θα διαρκέσει περίπου 10 λεπτά. Ευχαριστώ για τη συμμετοχή σας.

**Μέρος 1:** Η καταναλωτική συμπεριφορά των αγοραστών βιολογικών προϊόντων και η γνώση τους όσον αφορά τις ετικέτες βιολογικής πιστοποίησης.

#### 1. Πόσο συχνά αγοράζετε βιολογικά προϊόντα;

<input type="checkbox"/> <sub>1</sub> Μία φορά την εβδομάδα	<input type="checkbox"/> <sub>2</sub> Δύο φορές την εβδομάδα
<input type="checkbox"/> <sub>3</sub> Περισσότερο από δύο φορές την εβδομάδα	<input type="checkbox"/> <sub>4</sub> Μια φορά το μήνα

#### 2. Ποιά είναι τα μέρη που αγοράζετε βιολογικά προϊόντα; (Μπορείτε να επιλέξετε περισσότερες από μία απαντήσεις)

<input type="checkbox"/> <sub>1</sub> Αλυσίδες σουπερ μαρκετ	<input type="checkbox"/> <sub>2</sub> Λαϊκές βιολογικών προϊόντων
<input type="checkbox"/> <sub>3</sub> Καταστήματα υγιεινής διατροφής	<input type="checkbox"/> <sub>4</sub> Καταστήματα με παραδοσιακά προϊόντα
<input type="checkbox"/> <sub>5</sub> Ηλεκτρονικά καταστήματα τροφίμων	<input type="checkbox"/> <sub>6</sub> Απευθείας από τον παραγωγό
<input type="checkbox"/> <sub>7</sub> Άλλο (Παρακαλώ συμπληρώστε: .....)	

**3. Τι είδους βιολογικά προϊόντα αγοράζετε τακτικά; (Μπορείτε να επιλέξετε περισσότερες από μία απαντήσεις)**







<input type="checkbox"/> <sub>1</sub> Γαλακτομικά προϊόντα	<input type="checkbox"/> <sub>2</sub> Προϊόντα κρέατος	<input type="checkbox"/> <sub>3</sub> Αυγά	<input type="checkbox"/> <sub>4</sub> Λαχανικά
<input type="checkbox"/> <sub>5</sub> Φρούτα	<input type="checkbox"/> <sub>6</sub> Όσπρια	<input type="checkbox"/> <sub>7</sub> Ρύζι	<input type="checkbox"/> <sub>8</sub> Ζυμαρικά
<input type="checkbox"/> <sub>9</sub> Ξηροί καρποί/ Αποξηραμένα φρούτα	<input type="checkbox"/> <sub>10</sub> Επεξεργασμένα προϊόντα	<input type="checkbox"/> <sub>11</sub> Προϊόντα αρτοποιίας	<input type="checkbox"/> <sub>12</sub> Καφές
<input type="checkbox"/> <sub>13</sub> Μέλι	<input type="checkbox"/> <sub>14</sub> Αλκοολούχα ποτά	<input type="checkbox"/> <sub>15</sub> Σνακ (Snacks)	<input type="checkbox"/> <sub>16</sub> Ελαιόλαδο
<input type="checkbox"/> <sub>17</sub> Άλλο (Παρακαλώ συμπληρώστε: .....)			

**4. Πόσο σημαντικά είναι τα ακόλουθα κριτήρια για εσάς όταν αγοράζετε βιολογικά προϊόντα;**

	Διαφωνώ έντονα <sub>1</sub>	Διαφωνώ <sub>2</sub>	Συμφωνώ <sub>3</sub>	Συμφωνώ απόλυτα <sub>4</sub>	
<b>1.</b> Η διαθεσιμότητα τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>2.</b> Η εγχώρια παραγωγή τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>3.</b> Η συσκευασία τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>4.</b> Οι πληροφορίες που αναγράφονται στις ετικέτες					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>5.</b> Η έκπτωση ή ειδική προσφορά τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>6.</b> Η τιμή τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>

	Διαφωνώ έντονα <sub>1</sub>	Διαφωνώ <sub>2</sub>	Συμφωνώ <sub>3</sub>	Συμφωνώ απόλυτα <sub>4</sub>	
<b>7.</b> Η διατροφική τους αξία					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>8.</b> Η εμφάνιση τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>9.</b> Η γεύση τους					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>10.</b> Οι ετικέτες πιστοποίησης βιολογικών προϊόντων					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>11.</b> Τα περιβαλλοντικά οφέλη					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>12.</b> Η ευζωία των ζώων					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>13.</b> Η υποστήριξη στους παραγωγούς					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>14.</b> Καταναλώνω βιολογικά προϊόντα επειδή είναι της μόδας					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>

5. Ποιές από τις ακόλουθες ετικέτες έχετε δει στο παρελθόν; (Μπορείτε να επιλέξετε περισσότερες από μία απαντήσεις)

 <input type="checkbox"/> 1	 <input type="checkbox"/> 2
 <input type="checkbox"/> 3	 <input type="checkbox"/> 4
 <input type="checkbox"/> 5	 <input type="checkbox"/> 6
<input type="checkbox"/> 7 Δεν αναγνωρίζω καμία ετικέτα	



**Μέρος 2:** Οι αντιλήψεις των καταναλωτών για τη βιολογική γεωργία και τα βιολογικά προϊόντα

**6. Συμφωνείτε ή διαφωνείτε με τις ακόλουθες δηλώσεις;**

	Διαφωνώ έντονα <sub>1</sub>	Διαφωνώ <sub>2</sub>	Συμφωνώ <sub>3</sub>	Συμφωνώ απόλυτα <sub>4</sub>	
<b>1.</b> Η βιολογική γεωργία είναι ωφέλιμη για το περιβάλλον					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>2.</b> Η βιολογική γεωργία δεν χρησιμοποιεί συνθετικά φυτοφάρμακα, λιπάσματα και ζιζανιοκτόνα					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>3.</b> Τα βιολογικά προϊόντα έχουν καλύτερη ποιότητα					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>4.</b> Τα βιολογικά προϊόντα έχουν καλύτερη γεύση					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>5.</b> Τα βιολογικά προϊόντα είναι πιο υγιεινά					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>6.</b> Τα βιολογικά προϊόντα είναι απαλλαγμένα από γενετικά τροποποιημένους οργανισμούς					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>7.</b> Τα βιολογικά προϊόντα είναι απαλλαγμένα από υπολείμματα φυτοφαρμάκων					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>8.</b> Οι διαδικασίες πιστοποίησης των βιολογικών προϊόντων είναι αξιόπιστες					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>9.</b> Τα βιολογικά προϊόντα είναι προϊόντα ιδιαίτερης αξίας για τη διατροφή των παιδιών					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>
<b>10.</b> Τα βιολογικά προϊόντα είναι ακριβά για αυτά που προσφέρουν					<b>Δεν ξέρω</b> <input type="checkbox"/> <sub>5</sub>

	Διαφωνώ έντονα <sub>1</sub>	Διαφωνώ <sub>2</sub>	Συμφωνώ <sub>3</sub>	Συμφωνώ απόλυτα <sub>4</sub>	
<b>11.</b> Τα βιολογικά προϊόντα δεν προωθούνται καλά					Δεν ξέρω <input type="checkbox"/> <sub>5</sub>

### Μέρος 3: Δημογραφικά στοιχεία

<b>7. Φύλο</b>
<input type="checkbox"/> <sub>1</sub> Άνδρας <input type="checkbox"/> <sub>2</sub> Γυναίκα
<b>8. Έτος γέννησης:</b> .....
<b>9. Οικογενειακή κατάσταση</b>
<input type="checkbox"/> <sub>1</sub> Άγαμος-η <input type="checkbox"/> <sub>2</sub> Παντρεμένος-η /Σε σχέση <input type="checkbox"/> <sub>3</sub> Άλλο
<b>10. Αριθμός ατόμων που ζουν στο σπίτι:</b> .....
<b>11. Προσδιορίστε τον αριθμό των ατόμων ηλικίας κάτω των 18 ετών που ζουν στο σπίτι:</b> .....
<b>12. Εκπαίδευση</b>
<input type="checkbox"/> <sub>1</sub> Πρωτοβάθμια εκπαίδευση <input type="checkbox"/> <sub>2</sub> Δευτεροβάθμια εκπαίδευση <input type="checkbox"/> <sub>3</sub> Επαγγελματική εκπαίδευση <input type="checkbox"/> <sub>4</sub> Τριτοβάθμια εκπαίδευση
<b>13. Μηνιαίο εισόδημα (€)</b>
<input type="checkbox"/> <sub>1</sub> ≤750 € <input type="checkbox"/> <sub>2</sub> 751-1.500 € <input type="checkbox"/> <sub>3</sub> 1.501-2.500 € <input type="checkbox"/> <sub>4</sub> > 2.501€

## 11. Declaration

I hereby declare that I am the sole author of this work. No assistance other than that which is permitted has been used. Ideas and quotes taken directly or indirectly from other sources are identified as such. This written work has not yet been submitted in any part.

.././...

Stella Michopoulou

Date

Signature