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Organic food: A Study of consumer perception and preferences in Greece.

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ABSTRACT

The last decades, organic food shows an increasing trend in production and consumption worldwide. The present study dealt with the depiction of the attitude of Greek consumers towards organic food. The objective was to illustrate whether Greek consumers are aware of the dynamics that organic foods possess, mainly to protect the environment and to maintain healthy life. A survey was conducted and in total 1945 questionnaires were collected from the general public and analyzed statistically, in order to assess the level of awareness and the profile of the consumers. The results revealed that the level of awareness is average and organic food price is considered prohibitive for systematic consumption. In terms of choice, Greeks believe that organic food is mainly safer, though without strongly supporting their environmental aspect. Based on these facts, it is necessary to systematically and intensively inform and increase consumers' awareness about the essential reasons for supporting organic food, which are mainly related to the protection of the environment.

1.1. Introduction

Due to consumers' perception on food safety and quality, there is a trend noted towards organic food consumption in the last decades (Hurtado-barroso et al. 2019). Certified organic foods, being produced or processed in accordance with the European Regulations 834/2007 and 889/2008, as amended (Schleenbecker and Hamm, 2013), are those that indicatively avoid the use of synthetic fertilizers, pesticides, animal growth hormones, antibiotics, genetically modified organisms and irradiation, whereas they enhance natural biological cycles and meet high animal welfare standards (Rana and Paul, 2017). Based on the European Union policies and regulations, organic food production refers to a sustainable agricultural system which respects the environment and animal welfare, but also includes all other stages of the food supply chain (EU, 2021).

According to the Willer's et al. (2021) report on the World of Organic Agriculture Statistics and Trends, 72.3 million hectares are managed organically worldwide. In 2019, the organic food market was estimated to be 106.4 billion Euros, with the European market covering 39% of the global market. In Europe, countries with large economies such as Germany, France, United Kingdom, Spain and Italy contain the majority of the organic food sales (Denver and Jensen, 2014), while the highest market shares are in Denmark, Austria and Switzerland, reaching 5% of the total food market (Stolz et al. 2011). In Greece, the organic food consumption is still very low, although growing rapidly and it mainly includes organic fruits, raisins, olives and olive oil as exports and high processed and packed products as imports (lentils, sugar, cereals, jams and chocolates) (Tsakiridou et al. 2008). The most notable factors for purchasing organic foods are considered to be food safety, human health, animal welfare and environmental concerns alongside with sensory attributes such as taste, freshness and appearance (Doorn and Verhoef, 2015; Shafie and Rennie, 2012). Another factor influencing consumers' attitude towards organic food, at the point-of-sale, is the use of the organic certification labels. Thus, for a certification scheme to be successful, consumers' awareness of the corresponding label and positive attitude towards the underlying scheme are of paramount importance (Gracia and de-Magistris, 2016). Other reasons for choosing organic food are urbanization, income, education and gender (Denver and Jensen, 2014), while demographic variables such as age and income may define organic consumers, even though the correlation is not very significant (Shafie and Rennie, 2012). Conversely, the main obstacle for not purchasing organic food is the higher prices when compared to conventional foods (Doorn and Verhoef, 2015). Nevertheless, some studies highlight that part of the consumers are willing to pay extra for organic foods (Hurtado-barroso et al. 2019; Janssen and Hamm, 2012) up to 40% more, in comparison to conventional food (Cagalj and Haas, 2016). Other parameters which may deter consumers from buying organic food are related to the limited availability in the market, the satisfaction with

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conventional food along with the perception that organic food's benefits may not be actually higher compared to the conventional (Rana and Paul, 2017), the lack of trust in the organic label, the lack of promotion and the general misunderstanding of the organic way of production (Krystallis et al. 2006).

Based on the above-mentioned data and taking into consideration the limited studies assessing Greek consumers' attitude towards organic food, this study aimed at reflecting the perception and attitude of Greek consumers on organic foods, using an extended sample which originates from all the Greek regions.

1.2. Methods

A quantitative survey was performed based on primary data collected through a standardized questionnaire which were completed between October 2013 and March 2014.The questionnaires were completed by consumers living across the 13 regions of Greece, using the personal interview method.

1.2.1. Questionnaire

A standardized questionnaire was developed, including twenty-four (24) questions in total, divided into 3 sections: personal data, level of awareness on organic food and organic food consumers. The questionnaire consisted mainly of closed questions, multiple choice questions and filter questions. The questionnaire was pilot tested by 10 persons, prior completion, in order to identify any weaknesses and shortcomings, to determine the time needed for completion and also to conclude whether the questions were well-perceived by the respondents. The aspects/questions related to organic food which were addressed in the questionnaire are presented in detail in Tables 2 and 3.

1.2.2. Study population

All potential consumers of organic products, who live in Greece, were considered eligible to participate in this study. The sampling frame used on this study, referred to the Greek population latest census (2011). Stratified sampling, with an analogous distribution of the sample between the layers was applied. Thus, thirteen (13) strata corresponding to the thirteen regions of Greece were used and each resident of Greece was considered a sampling unit. A total of 1945 completed responses were collected. Compared to the population of the 10,787,690 inhabitants in Greece, our sample is valid, with an error rate of ± 10.

1.2.3. Statistical analysis

Data were analyzed using SPSS 20.0 (IBM SPSS Inc., USA) with reference to descriptive statistics (frequencies and percentages) and univariate analysis (Chi-square test) in order to explore any statistically significant (p-value<0.05) associations between variables. Variables with p-value less than 0.05 in univariable analysis were included in the logistic regression analysis, which was performed to define the profile of consumers of organic products.

1.3. Results

1.3.1. Sample descriptive characteristics

A random nation-wide sample of 1945 participated in this survey, with age between 15 and 65 years old from all 13 regions of Greece. The majority of the participants (32.1%) were between 20 and 30 years old, 60.1% were women and 76.5% were living in urban areas. With reference to their education level, a 53.1% of the participants was university-educated and most of them (26.0%) were employed in the private sector with a monthly income of more than 1000€ (22.7%) (Table 1).

Table 1
Socio-Demographic profile of participants (N=1945).

	Percentage (%)
Gender	
Male	39.9
Female	60.1
Age	
15-20	6.7
20-30	32.1
30-40	22.9
40-50	22.3
>50	16.0
Region	
Urban	76.5
Rural	23.5
Monthly income (€)	
300-500	10.4
500-800	14.9
800-1000	18.0
>1000	22.7
I don't answer	34.0
Profession	
Unemployed	17.7
Public servant	19.6
Private employee	26.0
Freelancer	17.9
Farmer	6.1
Pupil/student	12.6
Educational level	
Primary school	6.8
Lower secondary school	8.1
Upper secondary school/High school	31.9
University/MSc	53.1

Table 2
Level of awareness on organic food.

	Yes %	No %
Q1. Do you know the existence of organic food?	98.9	1.1
Q2. Do you think that organic products are healthier than conventional ones?	85.6	14.4
Q5. Do you think organic products are more expensive than conventional?	94.5	5.5
Q7. Do you know that organic foods have a special label?	60.5	39.5
Q8. Do you believe that controls on organic production are sufficient?	39.0	61.0

1.3.2. Level of awareness on organic food

In a series of close-type questions, the opinion and attitude of the participants on organic food were recorded (Table 2). Almost all the participants (98.9%) declared that they were aware about the existence of organic food, while they considered organic food as healthier than conventional (85.6%). Fig. 1 presents in detail why consumers claim organic food to be healthier. In terms of organic food price, 94.5% considered them as more expensive than conventional, which was mainly attributed to their low production (66.9%) and better quality (56.1%). Although, 60.5% of the participants were aware of the obligatory organic labeling scheme, only 27.7% knew the actual EU organic food logo. In overall, 61% of the participants believed that there is no adequate control in organic food production. Finally, the high price (69.7%) and the environmental friendly aspect (42.7%) were the dominant features on the organic products mentioned by the participants.

1.3.3. Organic food consumers

Even though 70.8% of participants claimed to have consumed at least once organic foods, only 34.8% consume them regularly (Table 3). As for the duration of systematically consuming organic food most of the participants (47%) declared two years. The proportion of consumers who purchased organic food on a daily basis was very low (~7%). The per-

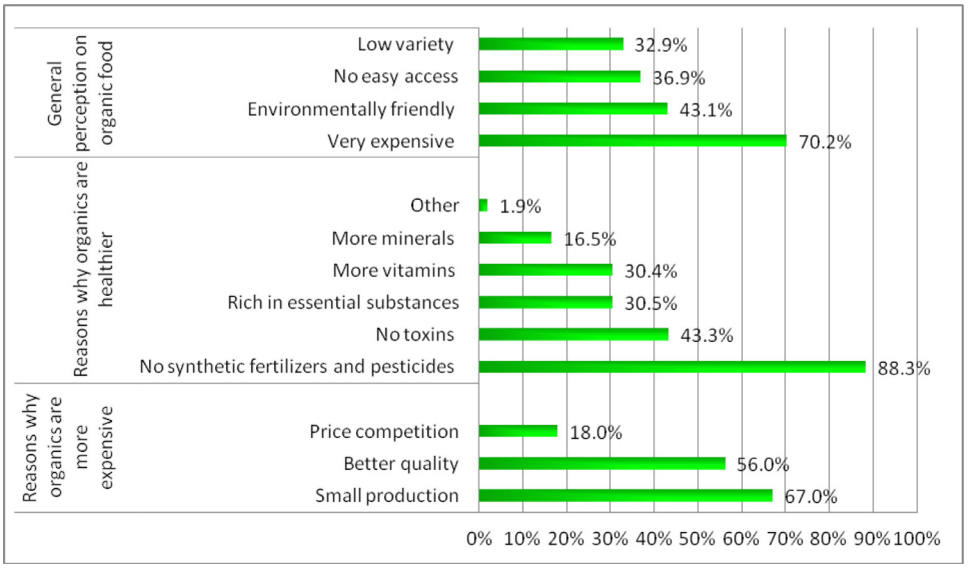

Fig. 1. Participant's perception on organic food.

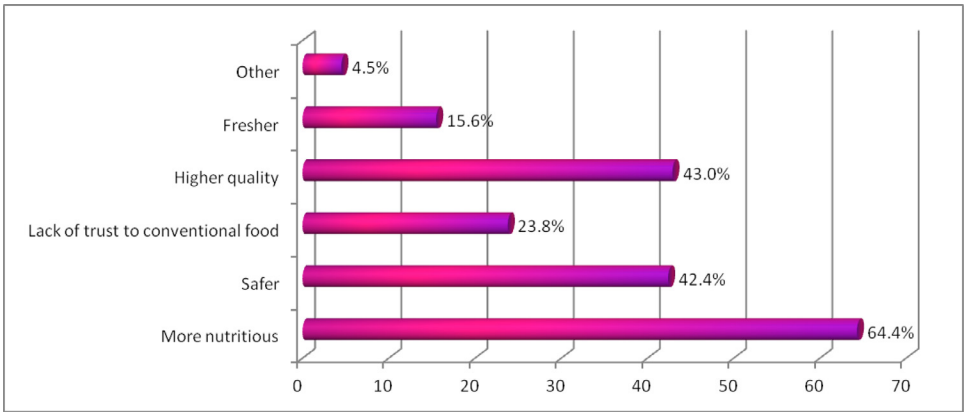

Fig. 2. Organic food consumer's preference reasons.

Table 3
Organic food consumers.

	Yes %	No %
Q3. Have you ever consumed organic products at least once?	70.8	29.2
Q4. Do you systematically/regularly consume them for your diet?	34.8	65.2
Q6. Will you continue to purchase them despite their high price?	79.5	20.5

ceived healthy and nutritious effect of organic products was the main reason (Fig. 2) why organic food consumers choose them, while quality (42.9%) and safety (42.4%) were considered important as well. Supermarkets and specialty stores (48.3% and 31.1% respectively) were the retail outlets where buyers usually purchase organic products. Supermarkets were declared to have the best prices and the easiest access and specialty stores appeared to have the greatest variety and better serving (Fig. 3). Fig. 4 presents the purchase frequency of organic foods, according to which a 30.9% stated that it is once a month. The most consumed and preferred organic products (Fig. 5) were vegetables and fruits, followed by milk and dairy products, while fish was the less consumed (5.5%).

1.3.4. Associated factors to organic food consumers

In order to determine the profile of an average organic products consumer in Greece, the research took into consideration the participants' answers to the following questions: "Have you tried organic?", "Do you systematically choose organic products for your diet?" and "Do you think they are healthier?". Logistic regression analysis was performed on these parameters, which highlighted the associated factors.

Based on the socio-demographic characteristics of the sample, it can be stated that the average Greek Organic Food Consumer has the following profile: women, post-graduate level of education, living in urban areas, working in public sector and earning more than 1000€ per month (all p-values <0.05). Significant differences ($p<0.05$) were also observed among those who would continue to purchase organic products despite their high prices; they had monthly income >1000€ and were university-educated.

In more detail, some notable differences within the sample are highlighted:

***Gender*:** Women (99.5%) were more concerned about organic products, ($p=0.003$) and had a more positive attitude on their consumption ($p=0.000$).

Age: The age group over 50 years old presented the highest percentage on the frequency of buying organic food once a month (39.7%, $p=0.010$).

Region: The place of residence (rural or urban region) was identified as a parameter affecting the awareness of existence of organic food, with individuals living in a city/town being more informed (99.3%, $p=0.009$), while more participants from this group expressed that their general attitude towards organic food was that they are very expensive (65.6%, $p=0.000$), even though this group does not systematically choose organic food (33.4%, $p=0.024$).

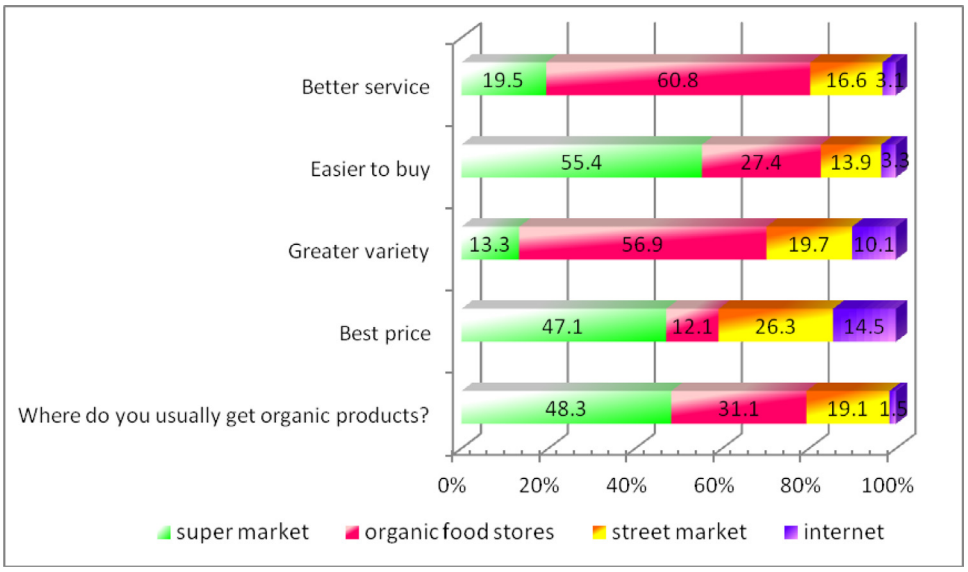

Fig. 3. Supply chain characteristics of organic food according to the organic food consumers.

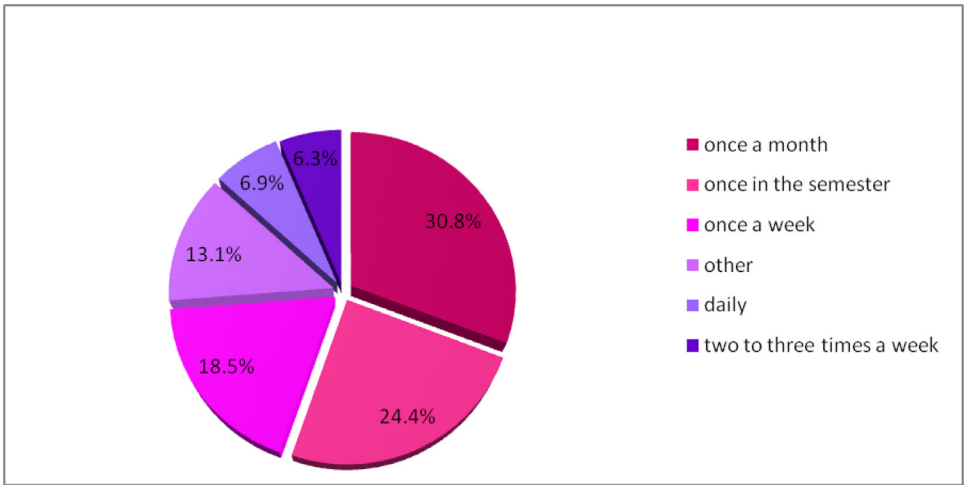

Fig. 4. Frequency of purchasing organic products.

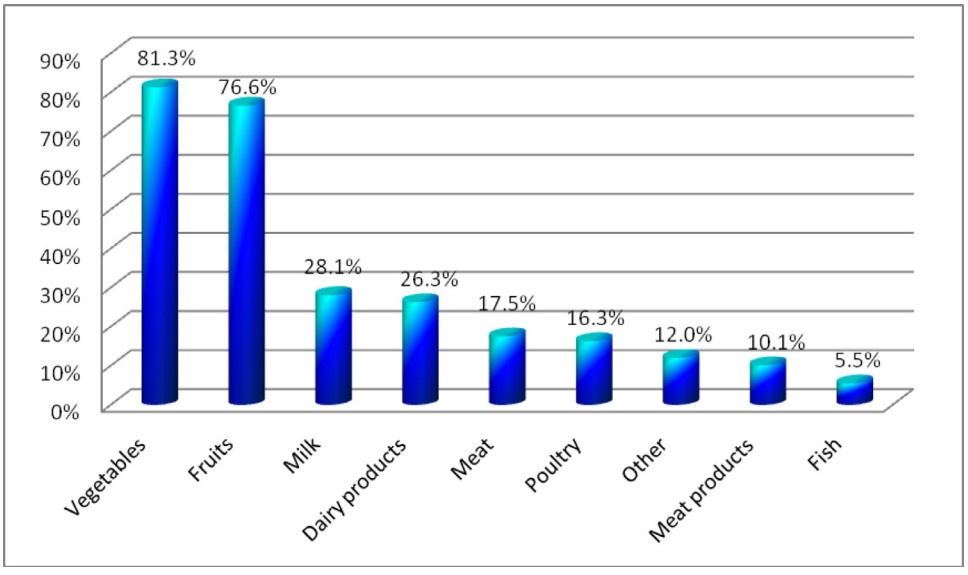

Fig. 5. Preferred organic food products.

Monthly income: Concerning the impact on the participants' attitude towards organic food, those with monthly income of more than 1000€, presented higher percentage of awareness on the existence (99.8%, p=0.048) and previous experience with organic food (78.9%, p=0.000) and they considered the low production volume of organic food as the reason why they are more expensive than the conventional food (73.2%, p=0.000).

Profession: Regarding the profession, the public servants presented higher percentages of awareness on the existence of organic food (99.5%, p=0.047), consider organic food as more healthy than conventional food (89.8%, p=0.000), they have previous experience with organic food(76.6%, p=0.000), believe that the reason for being more expensive is the low production volume of organic food (72.8%, p=0.000) and consider vegetables as the most frequently purchased organic products (84.7%, p=0.016).

Education: The participants with higher education considered that organic food is healthier than conventional food (88.2%, p=0.003).

1.3.5. Logistic regression analysis

According to binary logistic regression analysis, decreased possibility to consider organic products healthier than conventional ones was associated with being male (OR=0.46; 95% CI: 0.349 – 0.606; p<0.001) and belonging to the age group of 30-40 years old (OR=0.5; 95% CI: 0.299 – 0.845; p=0.041). On the contrary, increased possibility to consider organic products as healthier than conventional ones was associated with being a public servant OR=2.7; 95% CI: 1.645-4.481; p<0.001) and having university education (OR=2.11; CI: 1.124-3.974; p=0.020) or being a high school student (OR=1.99; CI: 1.078-3.677; p=0.028).

Moreover, men are less likely to have tried organic food at least once compared to women (OR=0.737; 95% CI: 0.595 – 0.913; p=0.005), as well as the individuals which belong to the age group 15-20 years old (OR=0.448; 95% CI: 0.281 – 0.712; p<0.001). On the contrary, increased possibility to have tried organic food at least once was associated with having a University education (OR= 3.2; 95% CI: 2.050 – 5.064; p<0.001), being a high school student (OR= 1.5; 95% CI: 1.003 – 2.434; p<0.049) and having the perception that organic products are healthier than conventional ones (OR: 3.4; 95% CI: 2.567-4.465; p<0.001).

Decreased possibility to systematically/regularly consume organic food was associated with being a student (OR: 0.544; 95% CI: 0.335 – 0.883; p=0.014) while increased possibility was associated with being a farmer (OR: 1.9 times; 95% CI: 1.071 – 3.421; p=0.028) and having the perception that organic products are healthier than conventional ones (OR=2.9 times; 95% CI: 1.757-4.700; p<0.001).

1.4. Discussion

The current survey examined the attitude and the habits of Greek consumers from 13 Greek regions, towards the organic foods. As noticed, almost all respondents were familiar with the concept of organic food. These results were in accordance with other studies, in which the majority of Irish (Tobin et al. 2011), Cypriot (Petasis and Louroutziati, 2020; Chrysargyris et al. 2017), Spanish (Madureira et al. 2021) and Swedish (Bosona and Gebresenbet, 2018) participants were aware of organic food. The latter finding was expected, because nowadays consumers have a higher health consciousness, animal welfare concerns, environmental awareness (Ríos Guayasamín et al. 2016) and access to mass media (Pilař et al. 2018). Moreover, the use of pesticides, antibiotics, chemicals and the use of various alternative methods in order to increase the food production (Basha and Lal, 2019; Hurtado-barroso et al. 2019; Longo et al. 2017), seemed to lead the consumers to have a higher interest in organic foods.

There was a noted trend in the relating the organic food consumption with the perceived higher quality and better nutrition, high level of safety, environmental consciousness and food freshness when compared to conventional food. Indeed, various studies have concluded that organic products contain higher amounts of vitamin C (Duarte et al. 2010) antioxidants (Barański et al. 2014), omega-3 fatty acids and conjugated α-linolenic acid in milk (Givens and Lovegrove, 2016). In addition, lower levels of pesticide and cadmium residues have been determined in organic food compared to conventional food (Barański et al. 2014).

Concerning the Greek organic food consumer profile, our results are comparative with other studies. More specifically other researchers state that, women seemed to be more concerned about organic food and had a more positive attitude towards organic products, as they prefer to eat healthier following a better lifestyle, while supporting the family nutrition and being the housekeepers, (Martins et al. 2020; Olivas and Bernabéu, 2012) that is also a statistically significant result in the present study. Moreover, we noticed that people with higher education and income were willing to continue purchasing organic food despite their premium price, which are conclusions drawn by other studies as well (Curl et al., 2013). However, in the current survey, no significant differences (p>0.05) were noticed among the sub-groups of ages, apart from the fact that the age group over 50 years old presented the highest percentage on the frequency of buying organic products. In line to this conclusion, Tsakiridou et al. (2008) observed that older Greek people were more willing to buy organic products, while Hansmann et al. (2020) and Yazdanpanah et al. (2015) noticed that it was mainly young people who were willing to buy organic products, because of their environmental consciousness.

It is notable that a trend was shown regarding the frequency of organic food consumption, by people living in a rural area, being farmers and stating that they are regular consumers of organic products. This is estimated to be a misunderstanding, as this group is more possible to produce their own food, which they consider as organic, something that is not necessarily certified as such. Furthermore, a small proportion reported that they consumed organic food on a daily basis, which is in accordance with other studies (González-García et al. 2020; Seconda et al. 2017) The majority of Greek consumers preferred as main retail outlets, supermarkets and specialty stores. Similar profile was noticed in the Spanish (Madureira et al. 2021), Cypriot (Chrysargyris et al. 2017) French and US market as well (Ngobo and Jean, 2012). Greek consumers choose mainly organic vegetables and fruits, followed by milk, dairy products and fish. These findings are in accordance to the results by Vukasovič (2015) in which, European inhabitants prefer to consume mainly organic fruits and vegetables than conventional.

Various studies established that the premium price is a major dilemma for consumers in purchasing organic products. However, this study showed that Greeks would prefer to buy organics despite their high price. This result is in accordance to a survey conducted by the Whole Foods Market (2005) (Winter and Davis, 2015) which reported that consumers were willing to pay extra, more than 10%, for organic products as they do not contain pesticides, they are not modified, they are fresher, healthier and more nutritious than the conventional ones. However, Doorn and Verhoef (2015) study showed that purchasers were not willing to pay for all types of organically-produced foods, such as chocolate, beer and soft drinks, but only for yogurt, fruits and vegetables.

Regarding the high proportion of the participants who believed that there are no adequate controls during organic food production, this is in line with reports for Danish, Czechs, Germans and English consumers (Janssen and Hamm, 2012). However, Hamm and Janssen (2011) suggested that communication campaigns should support the new EU logo in order to earn the trustworthiness of the consumers, by explaining what the EU logo stands for and what its benefits are. Social networking phenomenon, such as Facebook and Instagram, could also contribute to that (Pilař et al. 2018). In any case, combined efforts by all stakeholders, from the production and distribution to the certification, are required, in order to ensure modern consumer's protection at all levels.

The current survey was a snapshot in Greece, conducted on a specific time period and this might be considered as a possible limitation. In any case, as there is lack of published data on Greek consumer's perception for organic food, the data collected and analyzed in this study are considered valuable, as they support us to draw conclusions and identify trends. Nevertheless, in order to conclude about the beliefs of a consumer towards organic products, more regular studies should take place. By this manner, the market will be able to realize customer's needs and will be able to change the way of production according to customers' trend. Even though a highly representative sample from various Greek areas was used, it is important to obtain continual monitoring data, as the purchasers' trends and habits constantly change. Undoubtedly, organic market is experiencing a rapid growth the last decades and is expected to be continually extended, as it constitutes an alternative diet model that is strongly supported by a great proportion of consumers for different reasons. Therefore, future work should focus on the impact of different life aspects (health, wellness, economic stability, environmental changes, social networking etc. on organic food consumption.

1.5. Conclusion

Greek consumers present an average level of awareness in relation to organic food, thus they consider their price prohibitive for systematic consumption. In terms of choice, Greeks believe that organic food is mainly safer than conventional. It is considered necessary to systematically and intensively inform and increase consumer's awareness about the essential reasons for supporting organic food, which are mainly related to the protection of the environment.

Declaration of Competing Interest

The authors declare that they have no conflict of interest.

CRediT authorship contribution statement

Eleni Malissiova: Supervision, Conceptualization, Methodology, Writing – review & editing. **Konstantina Tsokana:** Data curation, Writing – original draft. **Georgia Soultani:** Data curation, Writing – original draft. **Maria Alexandraki:** Visualization, Investigation. **Antonios Katsioulis:** Formal analysis. **Athanasios Manouras:** Resources, Writing – review & editing.

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