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# CONSUMERS' PERCEPTIONS OF ORGANIC FOOD PRODUCTS IN CROATIA

## ABSTRACT

In recent years, there has been an increasing interest in the development of organic farming, as people have started to rethink their eating habits. Consumers perceive organic products as conducive to good health and associate them with a healthy lifestyle. The paper aims to study consumers' perceptions of organic food products in Croatia. For the purpose of this research, a survey was conducted among visitors to the organic food fair in Pula and members of Solidarity Ecological Groups (SEGs) in Croatia (Pula, Rovinj, and Osijek). A total of 232 questionnaires were completed and returned. The collected data were analysed with SPSS (22) software, and the results were presented using descriptive statistics, t-test, One-way ANOVA and Principal Component Analysis (PCA). The results indicate that the typical organic food buyers are university-educated women aged 25 to 44 years. The most frequently bought products include fresh fruit and vegetables, honey, cereal and cereal products, milk and dairy products and olive oil. Consumers have confidence in the certification of organic production and eco-labels. Moreover, the PCA results show that the most important factors that influence organic consumer purchase behaviour are confidence and quality. The results of this study add to the understanding of consumers' preferences with regard to organic food products and could be a useful aid in devising marketing strategies for such products.

**Keywords:** Consumers' perceptions, organic food products, Croatia, Solidarity Ecological Groups (SEGs)

## 1. Introduction

In the last few years, the European Union countries have seen a significant increase in the organic land area (ha) and the number of organic producers. The latest EU policies focus on the development of organic farming as an activity that contributes to sustainable development and considers natural resources, the environment, animal welfare, i.e. the entire ecosystem. The number of organic consumers and consumer demand for organically produced goods show growth because of the increased awareness of the health and environmental benefits of such products.

Organic production is defined as "a holistic production management system which promotes and

enhances agro-ecosystem health, including biodiversity, biological cycles, and soil biological activity. It emphasises the use of management practices in preference to the use of off-farm inputs, taking into account that regional conditions require locally adapted systems. This is accomplished by using, where possible, agronomic, biological, and mechanical methods, as opposed to using synthetic materials, to fulfil any specific function within the system." (FAO/WHO Codex Alimentarius Commission, 1999<sup>1</sup>).

In 2016, there were 57.8 million hectares of organic agricultural land worldwide, which accounts for 1.2% of the total agricultural land, and 2.7 mil-

lion organic producers. The value of the global organic market reached 89.7 billion US dollars (FiBL&IFOAM-Organics International, 2018<sup>2</sup>). The top three countries with the largest share of organic agricultural land were Australia, Argentina and China (FiBL&IFOAM-Organics International, 2018). In 2016, the EU-28 had a total area of 11.9 million hectares under organic agricultural production and 295,618 organic producers (Eurostat, 2016<sup>3</sup>).

According to the data on the official website of the Ministry of Agriculture of the Republic of Croatia<sup>4</sup>, in 2007, 7,577 ha were under organic agricultural production, which accounts for 0.63% of the total agricultural area. Croatia has seen significant growth in organic farming over the years. According to the latest available data (2016) 93,814 ha of land were under organic production, i.e. 6.07% of the total agricultural area. A total of 3,546 producers were registered. In 2016, Croatia was among the top 10 countries with the highest relative growth of organic agricultural land which increased by 23.3% from the previous year and by 846.2% compared to 2007. The retail sales of organic products in Croatia reached €99 million, according to the latest available data for 2014 (FiBL&IFOAM-Organics International, 2018). Gugić et al. (2017) analysed the data on organic farming in Croatia over an eleven-year period (2005-2015) and found that the area under organic farming and the number of farms had increased. Given the growing importance of organic farming and environmental protection and an increase in the production and demand for organic products, the paper looks at the consumers' perceptions of organic food products in Croatia. A field study was conducted to explore consumer needs for such products. The paper seeks to examine consumers' habits of purchasing organic food products, i.e. how often, where and which organic food products they purchase the most. In that context, the paper also explores whether consumers trust organic producers, eco-labels and the organic control system in Croatia and attempts to determine their opinions about the quality of organic food in comparison to conventional food. The main purpose of the research was to gain a better understanding of consumer perceptions of organic food products. The findings may help in developing new marketing strategies that would allow the producers to meet the demand and increase consumer satisfaction with their products.

## 2. Literature review

### *The market for organic products*

In recent years, consumers have become more aware of the benefits of organic production and organic products, and of the need to protect the environment for future generations. Therefore, the demand for organic products in the EU countries has increased. Nucifora (2001) concluded that the demand for organic fruit and vegetables is likely to remain relatively small unless the prices are reduced, and an effort is made to increase consumers' understanding of organic products and their certification. Srinieang and Thapa (2018), pointed out that the distribution of organic products should be improved in order to increase their availability to a larger number of consumers. Suppliers need to satisfy consumers' wishes for product availability and faster delivery (Mozas-Moral et al., 2016).

In Croatia, Gugić et al. (2017) wrote about the state and perspectives for the development of organic farming in Croatia, concluding that the domestic market is not well organised and that it is necessary to increase investments in the market infrastructure and organic control. To produce their products and promote their placement on the market, organic farmers need to be aware of the consumers' preferences with regard to such products. Petljak (2010) emphasises that organic products represent a growing product category in the offer of leading food retailers in Croatia; however, the majority of organic products is imported. Furthermore, consumers in Croatia face the reduced availability and insufficient supply of locally produced and sourced organic products. Petljak (2010) suggests that in order to enhance the development of the organic product market in Croatia, it is necessary to educate consumers, promote cooperation with domestic producers, expand the fresh fruit and vegetable offer, increase production volumes and lower the prices. Renko and Bošnjak (2009) pointed out that on the Croatian market, it is necessary to establish an umbrella organisation of organic producers to facilitate the placement of organic products on the market.

### *Consumer perceptions and attitudes towards organic food products*

Several authors have explored consumer satisfaction with the supply of organic food products, and the motives and factors that influence the purchase

of organic products (Brčić-Stipčević et al., 2010; Brčić-Stipčević, Petljak, 2011; Chiciudean et al., 2012; Kopicć et al., 2008; Sharma et al., 2014; Zanoli, Naspetti, 2002). Paul and Rana (2012) investigated consumer satisfaction with the taste, quality, freshness, availability, packaging, size, variety, information provided and delivery of organic products. They concluded that consumers were satisfied with organic food for a variety of reasons. 'Healthy content', followed by 'environmental safety' were reported as the main reasons for purchase. Consumers tend to prefer organic food for intrinsic characteristics such as taste and quality (Chiciudean et al., 2012).

Several authors have used the Theory of Planned Behaviour to examine consumers' attitudes, behaviour, and intentions to purchase organic food (Arvola et al., 2008; Yadav, Pathak, 2016; Yazdanpanah, Forouzani, 2015; Zagata, 2012). Arvola et al. (2008) indicated that "many consumers experience organic food choice as the morally right thing to do" and confirmed the usefulness of moral norms in understanding consumer intentions to buy organic food. Yadav and Pathak (2016) concluded that moral attitude and health consciousness positively influence the consumer's intention to purchase organic food. Koivisto Hursti and Magnusson (2003) found that organic foods were positively described by consumers and associated with "no concern, little reluctance and no risks, and they were seen as 'healthy', as 'not used for profit only', 'serving a good purpose', 'necessary', and most of the respondents felt that they are well aware of the consequences". Based on previous studies by various authors, and considering the trend in the literature that portrays sustainable consumption and purchase of organic food as a way for consumers to engage in socially desirable behaviour, Ham et al. (2018) used the Theory of Planned Behaviour to examine and explain the discrepancy between the intention to purchase organic food and actual purchase behaviour in Croatia. They concluded that consumers are aware that the purchase of organic products is socially desirable but realise that this behaviour is not yet mainstream.

Consumer perceptions and attitudes towards organic food products have been extensively studied over the last decade (Buder et al., 2014; Bryła, 2018; Hashem et al., 2018; Koivisto Hursti, Magnusson, 2003; Mehra, Ratna, 2014; Midmore et al., 2011; Mukul et al., 2013; Paul, Rana, 2012; Peštek et al., 2018; Roitner-Schobesberger et al., 2008; Sangkumchaliang, Huang, 2012; Shafie, Rennie, 2012; Xie et

al., 2015). Shafie and Rennie (2012) emphasized that "consumer perceptions of organic food are highly subjective". Based on his empirical study conducted in Taiwan, Chen (2009) concluded that health and environmental concerns are the main determinants of a positive consumer attitude towards organic foods. 'Health consciousness' was also found to be a major contributor to the positive attitude towards organic foods. According to Ueasangkomsate and Santiteerakul (2016), consumers' attitudes towards organic food are influenced by the following factors, ranked in order of importance: health concerns, local sourcing, environmental concerns, food safety and animal welfare. Lockie et al. (2002) found that the main motivating factors for purchasing organic food include, first and foremost health concerns, followed by natural content, price, and animal welfare. Mehra and Ratna (2014) identified the following as significant factors affecting consumer attitude towards organic food: perceptions towards organic food, health consciousness, product information, value for money, accessibility and trust. A similar conclusion was made by Croatian authors Brčić-Stipčević et al. (2010) who found that the main motives for choosing organic products are health, environmental protection, animal welfare and support for local farmers. The results of the study conducted by Sangkumchaliang and Huang (2012) also indicate that the main motives for purchasing organic food are health and environmental benefits and support for local producers. These findings are consistent with the results of a number of other studies which indicated that health is the primary motivation for purchasing organic products and that there is a need to regulate prices as a major factor in the purchase decision (Annunziata, Vecchio, 2016; Callieris et al., 2016; Ham, 2019; Paul, Rana, 2012; Srinieang, Thapa, 2018; Xie et al., 2015; Yiridoe et al., 2005).

Several studies that analysed the differences in the demographic profile of consumers found that "organic buyers tend to have a higher education level and disposable incomes, be families with children and be older than those who have not bought them" (Xie et al., 2015). Similarly, Roitner-Schobesberger et al. (2008) reported that "the respondents who have bought organic vegetables tend to be older, have a higher education level and a higher family income than those who have not bought them". In terms of gender, women show preference and have a more favourable attitude towards the pur-

chase and consumption of organic food compared to men (Sivathanu, 2015; Ureña et al., 2008). Furthermore, the results of the study by Koivisto Hursti and Magnusson (2003) show that women are significantly more positive about organic food than men and perceive organic food as a healthier option (Mehra, Ratna, 2014). Mostafa (2007) concluded that the majority of green consumers are well-educated young adult women, who have more money to spend. Chiciudean et al. (2012) concluded that women are influenced by the fact that organic food is trendy, while men pay more attention to the brand. The study by Ureña et al., (2008) found that men are inclined to pay a higher price for organic food compared to women. Fillion and Arazi (2002) concluded that the level of awareness of the benefits of organic food is high, especially among consumers living in urban areas.

A number of studies have examined consumer willingness to pay higher prices for organic products on different markets (Batte et al., 2007; Charatsari, Tzimitra-Kalagianni, 2007; Gil et al., 2000; Krystallis et al., 2006; Pellegrini, Farinello, 2009; Rödiger et al., 2016). The results of several of these studies show that consumers with a higher level of education buy organic food more frequently (Brčić-Stipčević, Petljak, 2011; Lockie et al., 2002; Sivathanu, 2015) and are willing to pay a higher price for such products (Charatsari, Tzimitra-Kalagianni 2007; Mehra, Ratna, 2014). Charatsari and Tzimitra-Kalagianni (2007) concluded that women are willing to pay more for organic vegetables, while Srinien and Thapa (2018) highlighted that women exhibit a higher level of awareness of the benefits associated with organic vegetables than men. The results of research conducted in Romania indicated that most of the respondents are willing to pay 20% more for organic products than for conventional products; however, the price of organic products was reported to be the main limiting factor in the purchase decision (Bozga, 2015). Charatsari and Tzimitra-Kalagianni (2007) concluded that consumers in Greece are willing to pay, on average, 27.53% more for organic vegetables than for conventional vegetables. Laheri and Arya (2015) reported that the primary barriers to organic product purchase are high prices and low availability. In the study by Lockie et al. (2002) the focus group suggested that the limiting factors for consumption of organic food are cost, availability, and convenience. Zagata (2012) found that consumers who had bought organic food in the past con-

sider high prices and the availability of organic food as only moderate obstacles to purchase.

Brčić-Stipčević and Petljak (2011) identified two main reasons why consumers do not buy organic food in Croatia: high prices and lack of information. The results of this research show that consumers are not quite sure about the definition of organic food (Brčić-Stipčević, Petljak, 2011). Roitner-Schobesberger et al. (2008) confirmed that the lack of information on organic farming is a major limiting factor for purchasing organic products. Therefore it is essential to inform and raise awareness among consumers about organic production and certification. Furthermore, many researchers pointed to the need to continually raise understanding and awareness among consumers about the health benefits of organic products and advantages of organic farming (Brčić-Stipčević, Petljak, 2011; Fotopoulos et al., 1999; Gil et al., 2000; Laheri, Arya, 2015; Srinien, Thapa, 2018).

### 3. Methodology

#### *Field research*

The paper aims to investigate consumers' perceptions of organic food products in Croatia. Secondary data were collected from the websites of the Ministry of Agriculture of the Republic of Croatia, Eurostat and IFOAM organisation. A survey was undertaken for the purpose of this empirical study. The survey questionnaire focused on the following aspects of organic consumer behaviour: frequency of purchase, place of purchase, most frequently purchased products, willingness to pay for organic products and level of agreement with a number of statements about organic products. The survey was carried out at an event called "Watch what you eat" which took place in Pula on 7 and 8 November 2015. The respondents were visitors to the organic food fair. In total, 83 questionnaires were returned. To increase the sample size an online questionnaire created on Google forms was administered. The link to the survey was sent to the members of Solidarity Ecological Groups (SEGs) in Istria County (Pula and Rovinj) and Osijek-Baranja County. The survey was active from November 2015 until April 2016. The respondents were asked to fill in the questionnaire if they are active members of SEGs, i.e. if they buy organic food products. This was done because some of the members joined SEGs just to show their support. In total, 149 online questionnaires

were returned. The respondents were instructed not to take the online survey if they have already filled in the questionnaire at the food fair. A total of 232 questionnaires were returned and analysed. A 5-point Likert scale (where 5 means strongly agrees and 1 means strongly disagrees) was used to assess the respondents' level of agreement with specific statements on organic products. A 5-point Likert-type scale was used to rate the importance of several organic food attributes in their decision to purchase the product. The data were analysed with SPSS (22) software and the results were presented using descriptive statistics, t-test, One-way ANOVA and Principal Component Analysis (PCA).

### *Solidarity Ecological Groups*

In the second phase, the survey examines the attitudes of Solidarity Ecological Group (SEG) members. The following section of the paper explains what SEGs are. The Community-supported agriculture (CSA) model was first introduced in Croatia only a few years ago. Thus, few studies have investigated this topic in Croatia. Sarjanović (2014) wrote about the role of Community Supported Agriculture in the development of organic agriculture and concluded that the introduction of CSA in Croatia could have a positive impact on the economic development of rural areas and sustainable development of agriculture.

Solidarity Ecological Groups in Croatia have been modelled after similar groups in the world, such as GAS (*Gruppi di Acquisto Solidale*-) in Italy and AMAP (*Association pour le Maintien de l'Agriculture Paysanne*) in France, which support the development of small certified organic farms. Fonte (2013) wrote about GAS as an alternative system of food provision which enables consumers to purchase healthy products directly from the producer at affordable prices, respecting the environment and the principle of solidarity. GAS members collectively plan the purchase and distribution of goods. They also discuss the production planning with producers and how to solve possible problems during all stages of production. GAS members insist on the just price, i.e. the price that is fair both for the consumer and the producer. The goal is to make organic food sustainable, so it is essential that organic products are accessible to everyone at affordable prices (Fonte, 2013). As stated by Sarjanović (2014), the AMAP system is based on selling weekly

baskets of fruit and vegetables to consumers, and, commonly, consumers are involved in agricultural work. Furthermore, he emphasised that the most positive change brought by these groups is the improvement of the relationship between producers and consumers.

SEG in Croatia is an informal citizen's initiative developed on the principle of solidarity and sustainability, which encourages the development of organic farming to generate enough organic food for all group members. The goal of SEGs is to promote a healthy lifestyle and raise awareness of the benefits of organic products for both health and the environment. The principles of SEG work are solidarity, mutual trust, cooperation, tolerance, transparency and protection of producers and consumers. The first SEG was founded in Pula in 2013. It was followed by SEGs founded in Rovinj and Osijek in 2014 and SEGs in Novigrad and Vukovar, which were founded in 2016. Initially, they were called Solidarity Exchange Groups but in 2015 their name was changed to Solidarity Ecological Groups due to changes in their work practices. In 2018, they had about 300 registered members in Istria (Pula, Rovinj and Novigrad), about 250 members in Osijek and about 20 members in Vukovar. It is important to note that the frequency of purchasing organic products differs among SEG members. The main advantages for consumers are affordable prices of organic food, direct contact with producers and an informal agreement with producers about production planning, depending on which products consumers intend to buy. Members participate in the work and decision-making on a voluntary basis. Consumers also have the option of ordering a weekly small or large basket of seasonal vegetables payable by monthly subscription. SEGs communicate through Google Groups where product orders and arrangements regarding the group's actions are being made. Thus, Solidarity Ecological Markets have been established, which take place once a week in the cities where SEGs operate (Pula, Rovinj, Novigrad and Osijek). Products are sold exclusively by certified organic producers and include fresh fruit and vegetables, olive oil, cereals, honey, dairy products, lavender products and others. Siljan and Cerjak (2017) examined the satisfaction of producers and consumers with the organic farmer's market (SET) in Pula. They found that the main motive for visiting an eco-market was to purchase organic products directly from the producers, and that the consumers were very satisfied with the service provided and the quality of organic products.

#### 4. Results

##### *Socio-demographic characteristics of the respondents*

The socio-demographic characteristics of the respondents are presented in Table 1. Women accounted for a larger share of the sample (81.9%) than men (18.1%). Most of the respondents were aged 25 to 34 (42.7%), followed by respondents aged 35 to 44 (28%), making a total of 70.7% in the age group 25 -

44. In terms of their education, most of the respondents had a university degree (54.8%). The majority (70.5%) had an average monthly household income of €669 to €2,004. The average number of household members was 3 (N=228, mode=3, median=3). According to the 2011 Census in Croatia, the average household had 2.8 members, and according to the Croatian Bureau of Statistics<sup>5</sup>, the average monthly salary in 2016 was €760 (5,685 HRK).

**Table 1** *Socio-demographic characteristics of the respondents*

Variables	N	Share (%)
Gender (n = 232)		
Female	190	81.9
Male	42	18.1
Age group (n = 232)		
18 - 24	11	4.7
25 - 34	99	42.7
35 - 44	65	28.0
45 - 54	30	12.9
55 - 64	21	9.1
> 65	6	2.6
Level of education(n = 232)		
Primary school	1	0.4
Secondary school	64	27.6
College degree	20	8.6
University degree	127	54.8
Master's degree or PhD	20	8.6
Average monthly household income* (n = 227)		
≤ €668 (≤ 5,000 HRK)	29	12.8
€669 - €1,336 (5,001 - 10,000 HRK)	96	42.3
€1,337 - €2,004 (10,001 - 15,000 HRK)	64	28.2
€2,005 - €2,672 (15,001 - 20,000 HRK)	26	11.5
€2,673 - €3,340 (20,001 - 25,000 HRK)	9	3.9
> €3,341 (> 25,000 HRK)	3	1.3

\*InforEuro<sup>6</sup>, exchange rate 1 EUR = 7.48 HRK for July 2016 (rounded values), available at: [http://ec.europa.eu/budget/contracts\\_grants/info\\_contracts/inforeuro/index\\_en.cfm](http://ec.europa.eu/budget/contracts_grants/info_contracts/inforeuro/index_en.cfm) (Accessed on: 10 May 2018)

Source: Authors' research

The results in Table 2 show the respondents' organic food purchase behaviour. Most of the respondents purchase organic products once a week (40.1%) followed by those who buy them three times a week (21.1%) and once a month (16.8%). These results are not surprising as most respondents are SEG members and purchase organic products often. To answer the question which organic food products they purchase most frequently, the respondents could choose more than one answer. The results show that consumers mostly purchase fresh fruit and vegetables (85.3%), honey (50%), cereals and cereal products (47%), milk and dairy products (37.5%) and olive oil (35.8%). Another question to which

the respondents could select more than one answer inquired about the place of purchase. The majority (50.9%) reported purchasing organic products directly from producers, followed by those who purchase them at the markets (44%) and in specialised stores (42.7%). It is important to emphasise that for this question an option 'through Solidarity Ecological Groups' was added in the online questionnaire because it targeted SEG members. Of a total of 149 online survey respondents 100 (67.1%) chose this answer. It is of note that not all SEG members follow SEG policy and opt for the default when ordering organic fruit and vegetables online. Some buy them directly from the producer or at the markets.

**Table 2 Organic food purchase behaviour**

Variables	N	Share (%)
Purchase frequency (n=232)		
Every day	21	9.1
Up to three times a week	49	21.1
Once a week	93	40.1
Up to three times a month	17	7.3
Once a month	39	16.8
Twice a year	9	3.9
Once a year	4	1.7
Most frequently purchased organic food products * (n=232)		
Fresh fruit and vegetables	198	85.3
Processed fruit and vegetable products	63	27.2
Milk and dairy products	87	37.5
Medicinal and aromatic herbs	44	19.0
Honey	116	50.0
Olive oil	83	35.8
Cereals and cereal products	109	47.0
Meat and meat products	22	9.5
Other (chicken eggs, nuts and seeds)	5	2.2
Places where the consumers most frequently purchase organic food products* (n=232)		
In specialised stores	99	42.7
At the market	102	44.0
Directly from the organic producers	118	50.9
In supermarkets	28	12.1
At organic fairs	85	36.6
Online	21	9.1
Through Solidarity Ecological Groups**	100	67.1

\* the possibility to choose several answers

\*\* data collected from 149 members of SEG via an online questionnaire

Source: Authors' research

83.1% of the respondents consider that it is justified for organic products to be more expensive than conventional products ( $n=231$ ), and as many as 95.7% of them are willing to pay more for such products ( $n=232$ ). When asked how much more they would be willing to pay for organic products, 211 respondents answered they are would be willing to pay 24% more.

Using an independent t-test it was found there is no significant difference between male and female respondents in terms of the frequency of purchase ( $t(230) = -0.320$ ,  $p = 0.749$ ) and willingness to pay more for organic products ( $t(230) = -0.997$ ,  $p = 0.320$ ). These results were anticipated given that the respondents were surveyed at the organic food fair, and most of them were also active members of SEGs. One-way ANOVA showed no significant differences among the respondents in terms of their answers to questions as to the frequency of purchasing organic products, whether it is justifiable

for organic products to be more expensive, willingness to pay more for organic than for conventional products and other socio-demographic characteristics (age, education and income).

To learn more about their perceptions of organic products, the respondents were asked to indicate their level of agreement with several statements on a scale of 1-5, 1 being strongly disagree and 5 being strongly agree. The results show (Table 3) that the respondents neither agree nor disagree with the statements "Organic products are too expensive" and "Generally, the supply of organic products is poor". They tend to disagree with the statements "I do not trust organic producers", "I do not trust eco-labels" and "I do not have confidence in the organic farming control system". Given that the majority of respondents were SEG members, it is not surprising that they reported trusting organic producers, eco-labels and the organic farming control system.

**Table 3 Consumers' perceptions of organic food products**

Statements (n=229)	Average	SD
Organic products are too expensive.	3.04	1.24
Generally, the supply of organic products is poor.	2.57	1.27
I do not have confidence in the organic farming control system.	2.46	1.22
I do not trust eco-labels.	2.14	1.13
I do not trust organic producers.	2.12	1.11

Source: Authors' research

Table 4 shows consumers' perceptions of the importance of specific attributes of organic food products. The respondents were asked to rate the importance of several statements on a 5-point Likert-type scale (1 - not important, 5 - very important) in their purchase decision. The respondents find that high quality of products is impor-

tant no matter what their price is (average=4.02). Furthermore, they are of the opinion that organic products must have an eco-label (average=3.89) and should be locally produced and sourced (average=3.86). It is not particularly important to them for the product to have attractive packaging (average=1.95).

**Table 4 Consumers' perceptions of the importance of specific attributes of organic food products**

Statements (n=228)	Average	SD
It is important that organic products are of high quality no matter what their price is.	4.02	0.98
Organic products must have an eco-label.	3.89	1.19
It is important that organic products are locally produced and sourced.	3.86	1.10
Organic products must have attractive packaging.	1.95	1.15

Source: Authors' research

To determine their perceptions of quality attributes of organic food products, the respondents were asked to indicate their level of agreement

with several statements on a 5-point Likert scale (1 - strongly disagree, 5 - strongly agree). The results in Table 5 show that the respondents consider



organic products to be of higher quality compared to conventional products. Specifically, respondents strongly agree that organic products are healthier

(average=4.67) and of higher quality (average=4.63). They also believe that they have greater nutritional value (average=4.58) than conventional products.

**Table 5 Consumers' perceptions of quality attributes of organic food products**

Statements (n=230)	average	SD
Organic products are healthier than conventional ones.	4.67	0.66
Organic products are of higher quality than conventional ones.	4.63	0.73
Organic products have greater nutritional value than conventional ones.	4.58	0.87
Organic products taste better than conventional ones.	4.42	0.88
Organic products are fresher than conventional ones.	4.07	1.11

Source: Authors' research

To gain a deeper insight into the consumers' perceptions of organic food products, a Principal Component Analysis was conducted on a set of 14 variables. The following variables were not used in the PCA: "Organic products are too expensive"; "Generally, the supply of organic products is poor"; "It is important that organic products are locally sourced"; and "It is important that organic products are of high quality no matter what their price is". Thus, ten variables were included in the analysis and three principal components were obtained. However, the Cronbach alpha for the second component was too low (0.469) which led to the conclusion that the vari-

ables do not explain this component very well and the statements "Organic products must have an eco-label" and "Organic products must have attractive packaging" were removed from the final analysis. Thus, eight variables were analysed in the final analysis and two principal components were obtained. Two components had eigenvalues greater than 1, explaining 67.68% of the total variance (KMO = 0.773, Bartlett's Test  $\chi^2$  sig. 0.000). The PCA was conducted to identify the main factors that influence consumer perceptions of organic food products. The data obtained may be used in future research as the basis for developing a predictive model.

**Table 6 Principal Component Analysis (PCA) results, Consumers' perceptions of organic food products**

Statement	Pattern Matrix Component	
	1	2
I do not trust organic producers.		.863
I do not trust eco-labels.		.903
I do not have confidence in the organic farming control system.		.890
Organic products are healthier than conventional ones.	.840	
Organic products taste better than conventional ones.	.780	
Organic products are of better quality than conventional ones.	.804	
Organic products have greater nutritional value than conventional ones.	.799	
Organic products are fresher than conventional ones.	.664	
Factor statistics		
Eigenvalue	3.204	2.210
Variance, %	40.053	27.628
Cumulative variance, %	40.053	67.681
Cronbach alpha	0.819	0.863
Mean	4.47	2.24

Extraction Method: Principal Component Analysis.

Rotation Method: Promax with Kaiser Normalisation.a

a. Rotation converged in 3 iterations.

Source: Authors' research

Two principal components were identified. The first is the "quality" of organic products compared to conventional products, which is associated with the following statements: "Organic products are healthier than conventional ones"; "Organic products taste better than conventional ones"; "Organic products are of better quality than conventional ones"; "Organic products have greater nutritional value than conventional ones" and "Organic products are fresher than conventional products". The respondents rated the quality of organic products the highest. The second principal component can be described as "confidence" in organic products. As can be seen in Table 6, this component includes the following statements: "I do not trust organic producers", "I do not trust eco-labels" and "I do not have confidence in the organic farming control system".

## 5. Discussion

The paper examines consumers' perceptions of organic food products in Croatia. The results of the survey indicate that the typical organic food buyers are university-educated women aged 25 to 44. In terms of gender, several studies have shown that women show preference for organic food (Charatsari, Tzimitra-Kalagianni, 2007; Mostafa, 2007; Sivathanu, 2015; Ureña et al., 2008). The results of this study are consistent with the results of several other studies (Xie et al., 2015; Roitner-Schobesberger et al., 2008; Brčić-Stipčević, Petljak, 2011; Lockie et al., 2002; Sivathanu, 2015) which showed that consumers with a higher level of education purchase organic products more often. Respondents reported buying fresh fruit and vegetables, honey, cereal and cereal products, milk and dairy products, and olive oil once a week directly from producers (50.9%) or at the market (44%). In comparison, only 15.5% of the respondents in the survey among Australian consumers buy organic food directly from farmers (Lockie et al., 2002). The results of this study may be used to determine why consumers in Croatia tend to buy organic food products directly from producers, and to explore the availability of organic food products in supermarkets in Croatia. Future research is suggested to explore the gap between demand and supply of organic food products and identify which products are in short supply. The results could be used by organic producers in planning, i.e. expanding their production. The results of the study show that the respondents trust organic

producers and have confidence in the certification of organic production and eco-labels. These results are not surprising because the surveyed respondents were mostly members of SEGs, which operate on the principle of trust between consumers and producers. Moreover, organic farmers must justify and maintain consumer confidence by maintaining product quality. The study also found that the respondents believe that organic food products are healthier, of higher quality and have greater nutritional value than conventional products. These findings are consistent with those of Brčić-Stipčević and Petljak (2011), who found that most consumers in Croatia believe that organic food is healthier than conventional food. According to Bozga (2015), Romanian consumers also consider organic products to be healthier, better tasting and safer than conventional products. The present study found that most of the respondents consider that it is justified for organic products to be more expensive than conventional products, and most of them are willing to pay, on average, 24% more for such products. These findings are also consistent with those of other studies (Annunziata, Vecchio, 2016; Aryal et al., 2009; Ureña et al., 2008; Rödiger et al., 2016; Štefanić et al., 2001; Radman, 2005) that suggest that consumers are willing to pay a higher price for organically produced food.

## 6. Conclusion

The main finding of the research is that consumers value confidence and quality of organic food products the most. To facilitate the placement of organic products on the market, it is recommended to continue developing Solidarity Ecological Markets and Solidarity Ecological Groups. The development of new SEGs should be encouraged by local authorities as an example of good and sustainable practice in Croatia. Also, it is necessary to improve the supply and availability of organic products in Croatia as well as market control. The results of the research could be a useful aid for producers of organic food in developing marketing strategies.

The results of this research may serve as a base for future empirical studies that would focus on SEG members and organic consumers, in general. It is suggested that future research looks at a larger sample of SEG members across Croatia to monitor the development of SEGs and justify their existence. It would be interesting to identify the main motives

for being a member of SEG and the benefits provided by an organisation like SEG to consumers. Furthermore, it may be useful to determine the differences between organic consumers who are SEG members and those who are not. Further research might explore the young consumers' attitudes towards organic food. Gil et al. (2000) concluded that young people are an attractive target group for organic food products because they are seeking to improve their eating habits. It might also be interesting to investigate whether local origin influences the perceived quality of organic products, i.e. whether consumers consider that locally produced and sourced products are of higher quality.

### **7. Research limitations**

The limitation of the study is sampling bias. The data were collected from SEG members and visitors to the organic food fair, i.e. people who have already shown interest in organic products. Thus, the

results of the study may not be generalised to the entire population of Croatia. The questionnaires were sent via e-mail to members of three SEGs, in Pula, Rovinj and Osijek. Hence, the sample is not representative either of Istria County or of Croatia. Moreover, the results should be validated by a larger sample size to include consumers of organic food who are not SEG members and who purchase organic food through other distribution channels (via the Internet, in supermarkets, in special organic food stores, etc.).

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## PERCEPCIJA POTROŠAČA O EKOLOŠKIM PREHRAMBENIM PROIZVODIMA U HRVATSKOJ

### SAŽETAK

Razvoj ekološke poljoprivrede tema je o kojoj se sve više raspravlja. Posljednjih godina ljudi sve više obraćaju pozornost na hranu koju konzumiraju. Potrošači percipiraju ekološke proizvode kao prihvatljive za zdrav način života. Cilj rada je istražiti percepciju potrošača o ekološkim prehrambenim proizvodima u Hrvatskoj. Za istraživačke svrhe provedeno je istraživanje i prikupljena su 232 ispunjena upitnika, i to na sajmu ekološke hrane u Puli i putem internetskih mreža solidarnih ekoloških grupa (SEG) u Hrvatskoj (Pula, Rovinj i Osijek). Prikupljeni podatci analizirani su pomoću SPSS (22) softvera, a za prikaz rezultata korištena je deskriptivna statistika, t-test, One-way ANOVA i Principal Component Analysis (PCA). Prema dobivenim rezultatima, tipični kupci ekološke hrane su žene u dobi od 25 do 44 godine s visokom stručnom spremom. Ispitanici najčešće kupuju svježe voće i povrće, med, žitarice i proizvode od žitarica, mlijeko i mliječne proizvode te maslinovo ulje. Potrošači imaju povjerenja u certificiranje ekološke proizvodnje i ekološke oznake, a prema PCA analizi najvažnije teme vezane uz potrošače ekoloških prehrambenih proizvoda mogu se svrstati u skupine: povjerenje i kvaliteta. Rezultati istraživanja mogu biti korišteni za bolje razumijevanje preferencija potrošača prema ekološkim prehrambenim proizvodima pri kreiranju marketinške strategije za ekološke proizvode.

**Ključne riječi:** percepcija potrošača, ekološki prehrambeni proizvodi, Hrvatska, Solidarne Ekološke Grupe (SEG)