

## Attitudes towards organic fruits and vegetables

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### ***Abstract***

*Organic food market is very challenging in Europe and developing rapidly with different rates between western and eastern part. Consumers have raised great interest to healthy and tasty diet with high nutritional compounds, confidence in food safety, environmental and animal welfare concern and also sustainability. The objective of this paper is to gain knowledge about attitudes toward organic fruits and vegetables among European Union (EU) consumers. Results indicated that organic buyers tend to be younger and higher educated than those who do not buy them. In addition, consumers' trust in the authenticity of the goods and price are also issues. According to the research results an important task for the producers will be to increase consumers' knowledge of what an organic product is and how to differentiate it in the marketplace. Along with knowledgeable and educated consumers, consumption could be raised on another level.*

***Key Words:*** attitudes, organic food, organic fruits and vegetables, consumer behaviour, agriculture, marketing, European Union (EU).

***JEL Classification:*** Q13

### **Introduction**

Development of the world food market has, in recent years, been marked by rapid, unexpected and complex changes. The world food industry is operating in an explicitly dynamic environment which demands constant adjustments and responses. These intensive processes increase the competitive advantage of operating activities on the global market and are the result of numerous changes in the period of new economy (Vukasovič, 2009). Last three decades have witnessed dramatic change in agri-food marketing system. The system, which has become more organized and customer-centric, is facilitating growth of organized food retailing (Chen et al., 2005). In this saturated market environment, distribution channels, marketing activities, diversification strategies, and food quality are increasingly important. In addition, consumers have become more concerned about the nutrition, health, and quality of food they eat (Gil et al., 2000). Therefore, organic products have become very popular. In recent years there has been a rising trend in the consumption of organic products and for several reasons. Some consumers buy them because they seek to purchase environmentally-friendly products while others

want to become more health-conscious about what they eat. The market for organic products has increased considerably over the last decade due to consumer's increasing awareness of both health and environmental issues. This growth in demand is expected to continue in the coming years, even though the situation differs from one country to another in term of type and quantities of production (Vindigni et al., 2002). The future of organic will, to a large extent, depend on consumer demand. Thus, a consumer-oriented approach to understanding organic agriculture is important not only in its own right, but also in terms of a response to shifting market dynamics (Bonti-Ankomah and Yiridoe, 2006). Nevertheless, to increase the consumption of organic products, many efforts needed to communicate the benefits of organic products and farming to get potential consumers.

Trend of growth in organized food market doesn't always represent the trend of sale of fresh food produces, like fruits and vegetables. Market of fruits and vegetables has many peculiarities because the products are easily perishable and they represent an important component for the consumer diet (Nicolae and Corina, 2011). Throughout the world, major shift in dietary patterns are occurring towards more diversified and high value products like, milk and milk products, fruits and vegetables, and meat (Huang and Bouis, 1996; Meenakshi 1996; Mittal, 2006; D'Monte, 2011). A change in dietary preferences, socio-demographic factors, increased awareness about health benefits of fruits and vegetables, food industry's marketing policies, have been driving the fruits and vegetables market in Europe. However it has also been reported that the growth in sales by supermarkets of fresh fruits and vegetables tends to lag behind the growth in sales of processed food products as most of the household continue to buy fruits and vegetables from traditional retailers even though they may shop at supermarkets for other products (Chen et al., 2005).

## **Materials and Methods**

### ***Review of Literature***

Purchase and consumption behavior of food consumers have undergone considerable change in last few years (Boone and Kurtz, 1998). Studies have indicated that food consumers' buying behavior has been influenced by combination of social, economic, cultural, and psychological factors (Goyal and Singh, 2007; Kuhar and Juvancic, 2010; Al-Gahaifi and Svetlik, 2011). It has been reported that besides exogenous factors like, culture, reference group, family and socio-economic situations; endogenous factors like, needs and motives, learning, self-concept, personalities and attitudes affected consumers' buying behavior (Crawford, 1997). In a developing economy with rising per capita income, there have been changes in the consumer demand for food attributes such as safety, freshness, appearance and texture (Hadi et al., 2010). Across the food categories price has been traditionally one of the most important factors influencing consumers' purchasing decisions (Matanda et al., 2000, Maxwell, 2001). Studies have indicated that in addition of socio-demographic and socio-cultural factors like, product quality, price, place of sale, ambience, country of origin and convenience in purchasing affect purchase decisions of food consumers (Fox et. al. 2004; Van Waterschoot et al., 2008; Akpınar, et al.; 2009, Gupta, 2009; Vukasovič, 2013). Most mentioned obstacles to the purchase organic fruits and vegetables were high prices and deficiencies in distribution

channels (O'Donovan and McCarthy 2002; Hill and Lynchehaun 2002; Magnusson et al., 2001; Gil et al., 2000; Gendall et al., 1999; Pearson, 2001; Radman, 2005). According to Magnusson et al. (2001), the concept of "habit" also represents at least a partial explanation of why so few consumers buy organic fruits and vegetables regularly in spite of their positive attitudes. On the production side, high costs, especially labour costs, insufficient know-how, and the difficulty of shifting from conventional to organic farming are also limiting factors (Stefanic et al., 2001; Gil et al., 2000). Further, organic products are very seasonal; and their availability, assortment and price can vary dramatically between seasons (Squires et al., 2001). All of these factors influence marketing activities, and make it difficult to establish appropriate retail outlets for organic products (Gil et al., 2000; Radman, 2005). Results of studies confirmed that consumers have positive attitudes towards organic products. Organic products are perceived as healthier than conventional alternatives and that was one of the most common mentioned reasons for their purchase (Chinnici et al., 2002; Harper and Makatouni, 2002; O'Donovan and McCarthy, 2002; Hill and Lynchehaun, 2002; Hutchins and Greenhalgh, 1995; Beharrel and MacFie, 1991; Pearson, 2001; Radman, 2005). In earlier research most respondents are described organic food consumer as white, female, professional and younger (Vukasovič, 2013), however these characteristics cannot be used across all studies as the responds towards organic products changes according to countries background, level of awareness, product availability and attitude changes.

Contemporary research literature in food choices considers product attributes as one of the perspective to increase understanding of consumer (Assael, 1998). Consumers during a complex, cognitive process form belief and develop attitude and intentions (Kuhar and Juvancic, 2010). In recent decades efforts to understand attitudes or overall buying behavior and relative importance of various attributes in purchasing food have been widely explored (Kiesel and Villas Boas, 2007). Product particularities make up most critical factors determining the consumer's purchase decision. Outcome of some studies have shown that the most important criteria considered in buying fresh fruits and vegetables are quality and price respectively (Akpinar et al., 2009). Studies have concluded that credence attributes have a positive impact on consumer's attitude towards a product, and consequently influence consumers buying intentions (Dentoni et al., 2009; Wirth, et al., 2011) Visual smell, and aroma components were often top rated among attributed listed, which is logical since they represent basic components of eating pleasures (Ernst et al., 2006). Most of the consumers make their buying decision regarding fruits and vegetables based on an analysis of cognitive and emotional elements and are not very much influenced by advertising or other campaigns (Nicolae and Corina, 2011). Consumers valued freshness, appearance, and price more than other characteristics (Mahaliyanaarachchi, 2007). Consumers attach considerable importance of food safety than external appearance of the fruits and vegetables, where as in a study. Dimech et al. (2011) found that most of the consumers considered safety as the most important quality aspect in fruits and vegetables, a credence attribute which cannot be checked by consumers. It is evident that the perception or attitude towards food attributes such as taste, nutritional qualities, and convenience are the key determinants of food choices and these attitude and perception are in turn influenced by a number of personal characteristics such as education, socio economic status, age, sex (Fearne and Lavelle, 1996).

Most people exhibit certain habits when they do their main trip to the supermarket and have usual day and time of day to shop (East et al., 1994; Singh and Powell 2002). About 50% of consumers bought less perishable vegetables (like potato) on weekly basis and more perishable vegetables (like cabbage) twice a week, and overall quantity-wise less perishable vegetables were bought in more quantity during a given period of time (Mahaliyanaarachchi, 2007). 93% of consumers in Croatia bought fruits and vegetables in the city markets, 60% visited just one market, and 63% of consumers visited city markets more than once in week (Kovacic et al., 2007). Several studies have concluded that consumers' of fruits and vegetables are willing to pay premium price for quality products (Boccaletti and Nardella, 2000; Moser et al., 2011).

### ***The survey objectives and methodology***

In the next part of the paper the key research characteristics are summarized. The research was carried out in EU member state. A quantitative research method with face-to-face survey was used for data collecting. A stratified sample of the quantitative research, N=520, is represented by the inhabitants of an EU member state population, aged 18 to 65. The socio-economic profile of the consumer households surveyed for the present study, has been presented in Table 1. The most respondent of consumers were in the group between 40 and 49 years. More than half of them had finished high school (64%), 20% had a higher, high or more education, 9% of respondents completed secondary school and 7% had a primary school. About 37% lived in a two member family, about 31% had two member families, about 20% had four member families and about 8% were single or lived in five or more member families. 88% of respondents currently living in cities, visit rural areas regularly, at least once a month.

The sample was stratified the place of residence, gender and age. Regarding the selection method the sample was classified as a three-stage, proportional and stratified sample. In the first sampling stage streets were selected randomly, based on the register of spatial units at The Surveying and Mapping Authority. The selected streets represented sampling points of the first level, where sample representativeness regarding relaying and type of a built-up area was assured. Based on the mentioned sampling points of the first level households, as sampling points of the second level, were selected by a method for random selection called the random route method. In selecting the final respondents (the third level) a quota regarding gender and age, based on the data obtained from the population register was considered. Sample was representative regarding age, gender, region and type of built-up area. The elimination criteria were additionally used for all the selected respondents of the third level. The respondents, not familiar with the organic products and vegetables, were eliminated, so that the final sample was consisted only of the respondents, familiar with the organic fruits and products. The additional criteria were used, because the key survey questions were related to organic market. That the survey respondents provide an interesting study group for this issue. At the 95% reliability level the standard error of the N = 520 sample was +/- 2.1 percentage points at the most.

**Table 1.** Structure of the sample

N = 520		%
Gender	man	35
	woman	65
Age	18-29	26
	30-39	20
	40-49	32
	50-65	22
Education level	primary school	7
	secondary school	9
	high school	64
	higher, high or more	20
Number of members in the household	one	6
	two	37
	three	31
	four	20
	five or more	6

**Data collection instrument**

The introduction letter, reminder, and draft questionnaire were developed for purpose of the research. The guidelines were used in order to give the questionnaire a good look and feel, and to ensure that respondents could progress quickly through it. All questionnaires carried a stamped number in order to be able to add factual consumers' data. The survey examined various factors and determinants that influence the attitudes, perceptions, knowledge and consumption of organic fruits and vegetables in EU member state. The data were collected using a structured questionnaire administered on the field survey with the use of closed (questions with multiple choice answers) and open questions (questions that were not given the alternative answers). The survey questionnaire developed for the study had questions representing three different components of the study, namely, socio-economic profile of consumers, their buying behavior of fruits and vegetables, and the various products and market attributes. The first component included questions related to socio-economic information of the respondents such as gender, age, education level and number of members in the household. The second component related to buying behavior of consumers and consisted of questions related to consumers' purchase frequency, quantity of fruits and vegetables purchased in one transaction, perception of organic fruits and vegetables and preferred market place. To understand the product attributes (the third component of the study), questions were asked related to various product attributes such as quality, nutrition value, organically grown, freshness, variety, size, colour, and taste. In order to analyze the relative importance of these product attributes, the consumers' perception on these attributes was taken on a Likert scale (1 = not at all important, 2 = some what important, 3 = important, 4 = very important and 5 = extremely important).

### ***Research Hypotheses***

The specific hypotheses tested in this study are as follows:

H1: The definition of "traditional fruits and vegetables" is yet not clearly installed in the consumers' perception.

Organic is a word interpreted by individuals in a variety of ways and contexts. The term has many different meanings and interpretations and is often associated and sometimes confused with terms such as "green", "ecological", "environmental", "natural" and "sustainable" (Hutchins and Greenhalgh, 1995; McDonagh and Prothero, 1997; Schif-ferstein and Oude Ophuis, 1998). For example, what is organic to one consumer may not be organic to another and producers and regulators' interpretations of the term may differ from those of the consumer (Aarset et. al. 2004; Vukasovič, 2013).

H2: Consumers' buying behavior in terms of frequency and volume of purchase, is same for both fruits and vegetables.

H3: Gender variable has an effect on the purchase place of organic fruits and vegetables.

Most of the studies have considered both fruits and vegetables together; however, these are two different food product categories and are of varying importance for the consumers. While vegetables are one of the regular and essential constituents of regular food, fruits are mostly considered as additional supplement to the regular food by average consumer. Being the fresh and perishable products, it is important to understand consumers purchase behavior of both the categories of products separately so that not only fresh products are made available to customers but also wastage and inventory costs for the retailers are minimized. An understanding of the buying pattern is important in planning and organizing other marketing activities (Mahaliyanaarachchi, 2007).

H4: The most important reasons of purchasing organic fruits and vegetables are quality, freshness, nutritional value, organically grown and safety products.

Review of related literature indicates that organic fruits and vegetables are perceived as healthier than conventional alternatives and that was one of the most common mentioned reasons for their purchase.

### ***Data analyses***

Analysis of data provided by mentioned questionnaire used the Statistical Package for Social Sciences (SPSS 17.0). A simple statistical analysis with the help of frequency distribution and cross tabulation was conducted to assess the buying behavior of the consumers. Analysis of variance (ANOVA) was conducted to test whether socio-economic factors of consumers are important in explaining the buying behavior of fruits and vegetables. Factor analysis was performed to identify the importance of different set of product attributes. Prior to hypotheses testing, factor analysis was conducted to determine the independent variables of the study. Ambiguous items were eliminated from the survey by varimax rotation. The data collected from the surveys was put through a validity assessment (KMO = 0.867; Bartlett's Test sign = 0.000) thus revealing that the sample of the study was appropriate for factor analysis and that there is a strong relationship between the variables. The reliability analysis of the research instrument yielded a Cronbach's Alpha value of 0.87 and a significance level of 0.000.

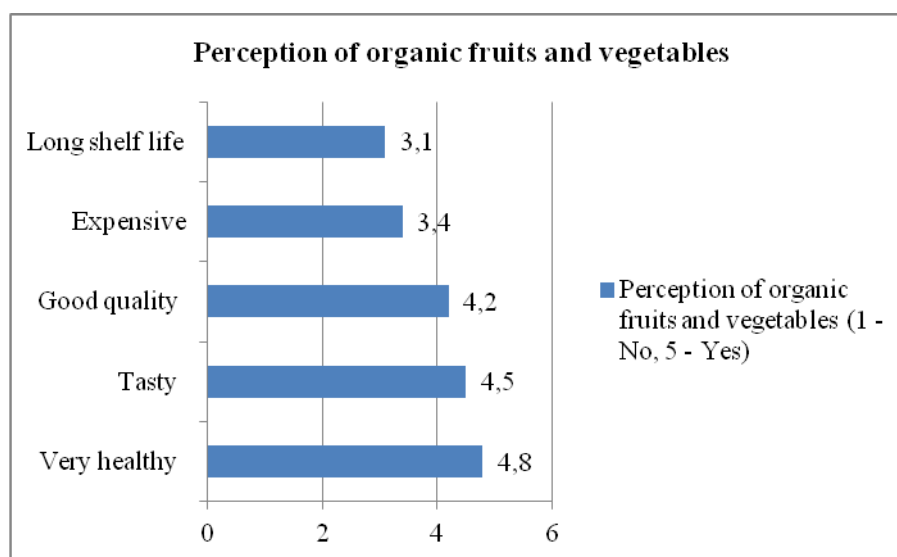
## Results and discussion

### *Level of recognition of the term "organic fruits and vegetables"*

The definition of "organic fruits and vegetables " is not yet clearly installed in the food market and in consumers' perception. The data of quantitative research have shown that knowledge and recognition is not high for organic fruits and vegetables. Only 35% of respondents clearly installed the definition of organic. The best knowledge is present at younger population and respondents with higher educational level. Based on the presented results the hypothesis 1 was confirmed. According to the research of Renko and Bosnjak (2009) and Vlahović et. al. (2011), in Croatia around 83% of respondents and in Serbia 87% were informed of the existence of organic products. This is slightly higher compared to the our results. The conclusion that can be drawn from these facts is that better knowledge could be achieved through constant education of consumers. This means that there is a need in Eu member state to continuously inform more the consumer about the meaning of the organic products and the meaning of the labeling put on products. Both health care institutions and other institutions of public importance, and manufacturers as well, should take this obligation. It is in the best interest of all subjects participating in the process of production, research and consumption of food to lift the quality of nutrition in EU member state to a higher level. According to Gracia and de Magistris (2007), information on organic products is an important factor, representing the only instrument that consumers have to differentiate the attributes of organic products from those of the conventional ones, and to form positive attitudes and quality perceptions towards these products. The knowledge on organic products is determined by socio-demographic variables (education level, income, values, lifestyle), but it is also affected by information provided by public administration, mass media, environmental associations and shopping site.

### *Consumers' perception of organic products*

Characteristics of organic fruits and vegetables, prepared in advance were in the



*Figure 1. Consumers' perception of organic fruits and vegetables*

questionnaire in order to help the consumers express their points of view toward the mentioned products. Respondents expressed their opinions by marking an answer in the proper spot. They were evaluating the characteristics that refer to organic fruits and vegetables. The average evaluations of the recounted characteristics were calculated based on the acquired evaluations and by that an image of views of EU member state consumers toward organic fruits and vegetables was determined. A research shows that consumers perceive organic fruits and vegetables as very healthy, tasty, and of good quality (Figure 1).

Some socio-demographic characteristics and buying behaviours of consumers influence their perception of organic fruits and vegetables. ANOVA showed that women considered organic products more healthy, more tasty and of good quality than did men (Table 2).

**Table 2.** *Organic fruits and vegetables perception and sex of respondents*

Organic products characteristics	Woman	Men	F	Sig.
Very healthy	4.97	4.63	2.700	0.121
Tasty	4.35	3.69	7.876	0.005*
Expensive	2.34	3.28	0.962	0.413
Good quality	4.64	4.47	5.154	0.012*
Long shelf life	3.11	2.93	0.846	0.370

*Note:* Scale = low or bad degree; 5 = high or good degree significantly different

### **Consumers' buying behavior for fruits and vegetables**

The data for analyzing the assortment of organic products purchasing was collected by means of open-ended question. The market for fruit and vegetables is seen as being the most valuable category of organic products in the future (94%). The second most frequent purchases in EU member state are milch and dairy products which represent only 24% (Table 3). Similar results about consumer's buying behaviour organic products were obtained in a study of Croatian consumers (Radman, 2005), Sicilian consumers (Chinnici et al., 2002) and in the study of Irish organic products consumers (O'Donovan and McCarthy 2002).

**Table 3.** *Purchase of organic products*

Which organic products do you buy?	% of respondents
Fruit and vegetable	94
Milch and dairy products	24
Cereals	22
Meat and meat products	17
Bread	9.3
Rice and pasta products	4.6



The purchase behavior of the consumers was assessed based on frequency of purchase, volume of transaction and preferred market place (Table 4). The results indicate that vegetables are purchased more frequently as compared to fruits as about 95 % of respondent purchase vegetables either daily or twice or thrice a week. On the other hand maximum number of respondents like to purchase fruits on weekly basis. Being the necessary products, the consumption of vegetables is more as evident from average volume of transaction. While 78 % consumer do on an average a shopping of 2-4 kg of vegetables, whereas majority of consumers purchase fruits less than 2 kg in one transaction. Consumers do not give similar emphasis to frequency and volume of purchase, while purchasing fruits and vegetables. Based on the presented results the hypothesis 2 was rejected.

**Table 4.** Consumers' purchase behavior for fruits and vegetables

Sl. No.	Frequency of Purchase	Percent of Respondents	
		Vegetables	Fruits
1.	Daily	18.3	2.0
2.	Twice a week	46.4	26.6
3.	Thrice a week	30.2	12.4
4.	Weekly	3.1	45.7
5.	Rarely	2.0	13.3
	Total	100	100
	Volume of transaction (kilogram)		
1.	< 2	20.0	64.0
2.	2 - 4	78.0	35.0
3.	4-10	2.0	1.0
	Total	100	100

In the case of the location of organic fruits and vegetables purchase, the most of consumers purchase organic fruits and vegetables in shopping malls (47%) and (25%) at the open air market. Around 20 % of respondents indicated that they bought organic fruits and vegetables in specialised shops, so called "healthy food" shops and around 12% of respondents bought organic fruits and vegetables directly from producers. With the third hypothesis the researcher assessed whether gender variable has any effect on the purchase place of organic fruits and vegetables. T-test was performed on H3 and Levene's test results indicated equal variances between both male and female consumer groups ( $F = 0.971$ ;  $p = 0.343$ ). No significant differences could be detected, implying no support for H3 ( $p = 0.225 > 0.05$ ).

According to research results by Radman (2005), in Croatia most of the respondents (46.3%) purchase organic products at the local city markets and only 9.9% buy them in supermarkets. In Serbia consumers (45%) mostly buy organic products in specialised shops, so called "healthy food" shops, followed by conventional retail stores (supermarkets) (25%), green markets (15%), and direct purchases from producers (11%) (Vlahović et. al, 2011). According to research by Briz and Al-Hajj (2004), organic products in Spain is mostly purchased directly from producers (52.3%). Most favored location for organic products purchase in some countries is supermarket. In Greece

80.9% (Fotopoulos and Krystallis, 2002), in U.S.A. 49% (Dimitri and Green, 2002), in Czech Republic 50%-60% (Richter, 2005) of examinees shop for organic products in supermarkets. In Macedonia, according to Sekovska (2010), the distribution of organic products is mainly through supermarkets 50% (specially organized departments for healthy food). The other important sale channel consists of specialized shops for organic products, with a share of 45%, while additional 5% comes from direct sale from farms to companies which deal in catering (restaurants, hotels, etc.) and some public institutions (hospitals).

Product attributes play a major role in purchase choices of the buyers and are crucial determinants of success/failure of product and its marketing strategies. The product can be defined in terms of its different attributes like search, experience and credence. The buying decisions for different products mainly depend on a combination of these attributes. The mean value of consumers' response on various product attributes indicate that consumers attach more importance to credence attributes (like freshness, nutrition, safety, quality, organically grown) over the search (size, colour and variety) and experience attributes (like taste and odour). Consumers' responses on product attributes were grouped to three sets of related attributes through principal component analysis. Using factor analysis, these three attributes explain 68.34 % of variance (Table 5). The variance indicated by credence attributes is 31.14 %, and it loads high on quality, nutrition value, organically grown, safety and freshness. Search attributes explain 18.57 % variation and are loaded on sorting, variety, and size. The variance shown by experience attributes turned out to be 16.32 % and taste and odour have been loaded high. Based on the presented results the hypothesis 4 was confirmed.

**Table 5.** Importance of various Product Attributes

	Mean*	Credence Attributes	Search Attributes	Experience Attributes
Quality	4.9	0.943	0.234	0.005
Nutrition value	4.6	0.932	0.245	-0.021
Organically grown	4.4	0.865	0.0756	0.046
Safety	4.2	0.843	0.276	0.089
Freshness	4.1	0.721	0.214	0.304
Sorting	3.5	-0.054	0.867	0.009
Variety	3.9	0.674	0.692	-0.023
Size	3.7	0.743	0.654	0.089
Colour	3.6	0.721	0.496	0.375
Taste	4.8	-0.231	0.243	0.876
Odour	4.5	0.246	-0.198	0.967
Total variance explained (%)		31.15	18.56	16.35
Cumulative variance explained (%)		31.15	50.12	68.34

\*1 = not all important, 5 = most important

*Extraction Method:* Principal Component Analysis.

*Rotation Method:* Varimax with Kaiser Normalization.

### ***Recognition of organic fruits and vegetables on the point of sale***

59% of the respondents think they may recognize organic fruits and vegetables on the point of sale. Higher level of recognition is characteristic for younger consumers and respondents with higher education level. Similar results about recognition of organic products on the point of sale were obtained in a study of Serbian consumers (Vlahović et. al. 2011). On the market, the organic products are marked with a legally defined sign. On purchasing products bearing the sign "organic", consumers may be sure that at least 95% of the ingredients are of organic origin, that the product complies with all inspection regulations that is packed in biodegradable packaging and possesses code and personal data of the inspection body. So, any certified organic product must be marked with the label "organic product". Unfortunately, on the market there are many labels for so-called "health food" that often confuse consumers and slow down the demand growth (Vlahović et. al., 2011). For example, in Macedonia, according to Sekovska (2010), most of the consumers can not recognize the national logo for organic product (45.9%). Just 18.2% of them are familiar with it, but usually they are not quite sure about its meaning, confusing it with the Macedonian logo for quality.

### **Summary and conclusions**

The organic sector is developing at a fast pace in EU member state. In the last few years the production of organic products and also interest of consumers for organic products have increased significantly. The definition of "organic fruits and vegetables" is not yet clearly installed in the food market and in consumers' perception. 35% of respondents clearly installed the definition of organic fruits and vegetables. This means that there is a need to continuously inform more the consumer about the meaning of the organic products and the meaning of the labeling put on products. Both health care institutions and other institutions of public importance, and manufacturers as well, should take this obligation. The market for fruits and vegetables is seen as being the most valuable category of organic products in the future. Results show that consumers perceive organic fruits and vegetables as very healthy, tasty, and of good quality. Among the purchase motives quality, freshness, nutritional value, organically grown and safety products were indicated as the most important reasons of purchasing organic fruits and vegetables in EU member state. As such, these elements should be strong components of any communication / marketing aiming to reinforce positive organic messages and increase purchase frequency. According to the research results an important task for the producers will be to increase consumers' knowledge of what an organic product is and how to differentiate it in the marketplace. Along with knowledgeable and educated consumers, consumption could be raised on another level. This paper gives the latest insight into buying behavior and attitudes of organic fruits and vegetables consumers. The results of the research could be used for planning further marketing activities. According to the research results an important key factors for the development of the organic market in EU member state are education and information to consumers about organic agriculture and products, adequate marketing activities especially point-of-sale promotional activities and clear labeling of organic products.

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