A Comparative Analysis of Consumers' Current and Future Preferences Toward Organic Products

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Abstract

In many countries, consumers prefer organic products with the concern that conventional products disturb human health and natural stability. Recently producers began to engage in crops and animal production that are expected not to damage nature, agricultural areas and human being. Consumers also expect organic production methods that respect biologic diversity, animal welfare along with food safety, quality and affordable prices. This study provide a comparison of consumers' current and future preferences taking into account the features of production and consumption of some organic food products such as fresh fruit and vegetables, bread, olive oil, dairy products and meat products. The data were collected from households in Karsiyaka/Izmir and analyzed by applying Multi-Dimensional Scaling Method (MDS) in order to examine common features of organic food products. The findings show that there were no differences between consumers' current and future preferences toward organic products except some minor criterias.

Keywords: Organic Product, Consumer Preference, Multi-Dimensional Scaling

Tüketicilerin Organik Ürünlere Yönelik Bugün ve Gelecekte ki Tercihlerinin Karşılaştırmalı Analizi

Özet

Birçok ülkede tüketiciler, konvansiyonel ürünlerin insan sağlığına ve doğal dengeye zarar verdiğini düşündüğünden organik ürünleri tercih etmektedir. Son zamanlarda üreticiler bitkisel ve hayvansal üretimlerinde doğaya, tarım alanlarına ve insan sağlığına zarar vermeyen yöntemleri uygulamaya başlamışlardır. Tüketiciler de biyolojik çeşitliliğe, hayvan refahına saygılı, yanı sıra gıda güvenliğine sahip, kaliteli ve makul fiyatlı organik üretim yöntemlerinin beklentisi içindedir. Bu çalışma, tüketicilerin bugün ve gelecekteki bazı organik gıda tercihlerinin örneğin, taze meyve ve sebze, ekmek, yağ, süt ve et ürünlerinin üretim ve tüketim özelliklerini de dikkate alarak karşılaştırılmasını sağlamaktadır. Organik gıda ürünlerinin ortak özelliklerini saptamak için Karşıyaka/İzmir hane halkından toplanan veriler, Çok Boyutlu Ölçekleme Metodu (MDS) uygulanarak analiz edilmiştir. Bulgular, tüketicilerin bugün ve gelecekte ki organik ürün tercihleri arasında ufak bazı kriterler dışında farklılık olmadığını göstermiştir.

Anahtar Kelimeler: Organik Ürün, Tüketici Tercihi, Çok Boyutlu Ölçekleme Metodu

JEL Code: Q13- Agricultural Markets and Marketing; Cooperatives; Agribusiness

Received (Geliş Tarihi): 05.05.2015 Accepted (Kabul Tarihi): 18.06.2015

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1. Introduction

People have noticed that the environment has been damaged by the agricultural activities. For this purpose, new agricultural approaches which are in harmony with the nature, aiming the sustainable development and caring about the animal welfare have begun to spread worldwide.

The organic agriculture which has been developed as an alternative to conventional agriculture is a controlled and certified agricultural production system. It provides the production without using hazardous chemical materials, additives and methods to human and environment.

The purpose of this study is to compare the consumers' current and future preferences for organic products together with the production features by applying Multidimensional Scaling (MDS) Analysis. MDS divides the range of organic products and buying preferences into the similar subgroups. The results obtained are thought to be a guide for the policy makers.

MDS is a multivariate statistical analysis which has been developed for analyzing of behavioral data such as personal preferences, attitudes, trends and expectations (Kurtulus 1996; Hair et al., 1998). The general purpose of MDS analysis is to present the structure of the objects as close to the original shape by as few as possible dimensions (Ozdamar 1999; Saracli et al., 2004).

There are many studies conducted by using multivariate analysis. Some of them are summarized as follows: Dornyei (2009) used this analysis in order to measure the cognitive and emotional behaviors of consumers for the beverages with different packaging and Tobler (2010) compared the differences and similarities of different kinds of 10 vegetables according to environmental friendly and life cycle assessment criteria. In their first study, Thomas and Gunden (2010) analyzed three production methods used in fresh fruit and vegetable production (conventional, sustainable and organic) with the environmental concerns, food safety, food quality, wellness and community development criteria and in their second study, they analyzed these three production methods, the distances between freshness, taste, hygiene, nutrition value and price criteria by using MDS method. As a result of MDS analysis in Bayindir district of Izmir by Sahin and Miran, the production branches were divided into the different groups in terms of labor utilization. This way, the necessary substructure allowing fewer labor data collection has been created.

2. Material and Methods

Data of this study were obtained from the household consumers living in Mavisehir. Mavisehir is a part of Karsiyaka district of Izmir province which is one of the leading cities in organic farming in Turkey. Almost 5500 households are counted there. The sample size was calculated by the formula as 118 with p=0.50 having the largest sample possible 90% confidence interval and 7.5% error (Miran, 2009). The study was carried out along with structured survey consumers current and future preferences have been classified in terms of eight organic products and eleven production features (Table 1) with 5-point Likert Scale from "never" to "always". The data were analyzed by Multidimensional Scaling Analysis (MDS) and the location and the relationships between objects were determined in a k-dimensional space.

3. Results

In this study, the multidimensional scaling analyses have been performed by using two-dimensional MDS ALSCAL statistics as and it has been also supported with the two-dimensional graphic display, in order to compare the consumers' current and future preferences with organic production features.

Table 1. Multidimensional scaling method variables codes

Variable Code	Production Features	Variable Code	Current Consumer Preferences	Variable Code	Future Consumer Preferences
X1	Production method that does not harm the environment	Y1	Bread	Z1	Bread
X2	Production method that does not harm the animals	Y2	Egg	Z2	Egg
X3	Transportation from the short distance	Y3	Fruit	Z3	Fruit
X4	Being produced by local producers	Y4	Meat	Z4	Meat
X5	Being produced by small producers	Y5	Milk	Z5	Milk
X6	Providing product from the producers getting a fair price	Y6	Vegetable	Z6	Vegetable
X7	Existence of the legal food standards	Y7	Olive oil	Z7	Olive oil
X8	Being produced by an energy saving method	Y8	Yoghurt	Z8	Yoghurt
X9	Knowing the first supplier				
X10	Availability of buying the product at a fair price				
X11	Being known locally or regionally				

Today, the consumer preferences have been classified in terms of organic product and production features with 5-point Likert Scale from “never” to “always” and the analysis results have been evaluated by using MDS method (Figure 1 and Table 2). The value of stress was 0.05670 for k=2. The desired situation from analysis solutions is the stress value to be close to zero. Based on our stress value which is 0.05<0.10, the consistency of data is considered “good” (Everitt and Dunn, 1992; Johnson and Wichern, 1992; Aytac and Bayram, 2001; Dora et al., 2004). According to Kruskal formula, it was found that R^2=0.98558 and the stress value data were clarified in 0.98558 ratio for the dimension k=2. According to these values, there is compliance in a good level between data distances and the configuration distances (Sahin et al., 2008a).

In Figure 1, the consumers’ current preferences for organic products and production features were displayed by a two-dimensional space model. In group 1, it had been found that there was a similarity between the consumer’s preference of organic fruit (Y3) and providing organic products from the short distances (X3) in the first dimension with the matrix values -2.4593/ -2.4570. In group 2, the following organic production features showed similarities: providing the product from the producers getting a fair price (X6), knowing the first supplier (X9) and the availability of buying the product at a fair price (X10) with the matrix values -1,5518/ -1.4744 in the first dimension. In group 3, bread (Y1), meat (Y4), milk (Y5), vegetable (Y6) and yoghurt (Y8) were the most similar organic products seen with the matrix values changing between 0.3190/0.4295. It was understood that they were less preferred by consumers, due to the

values close to "0". In group 4, the following organic production features showed similarity in the first dimension with the matrix values 0.8084/0.8074: organic products were produced by a method that does not harm the animals (X2) and they were produced by an energy saving method (X8) and 0.9505/0.9031 being produced by local producers (X4), being produced by small producers (X5) and being known locally or regionally (X11). In addition it seemed that these were the most prefered organic production features by the consumers today, due to the values close to "1". The consumer preferences for the following features indicated the similarity with the matrix values 0.8789/0.8763 and they were important in terms of consumers: existence of the legal food standards in organic production (X7) and organic olive oil (Y7). Finally, the following features were most similar to each other with the matrix values 0.5202/0.5737: organic eggs (Y2), the organic products were produced by a method that does not harm the environment (X1).

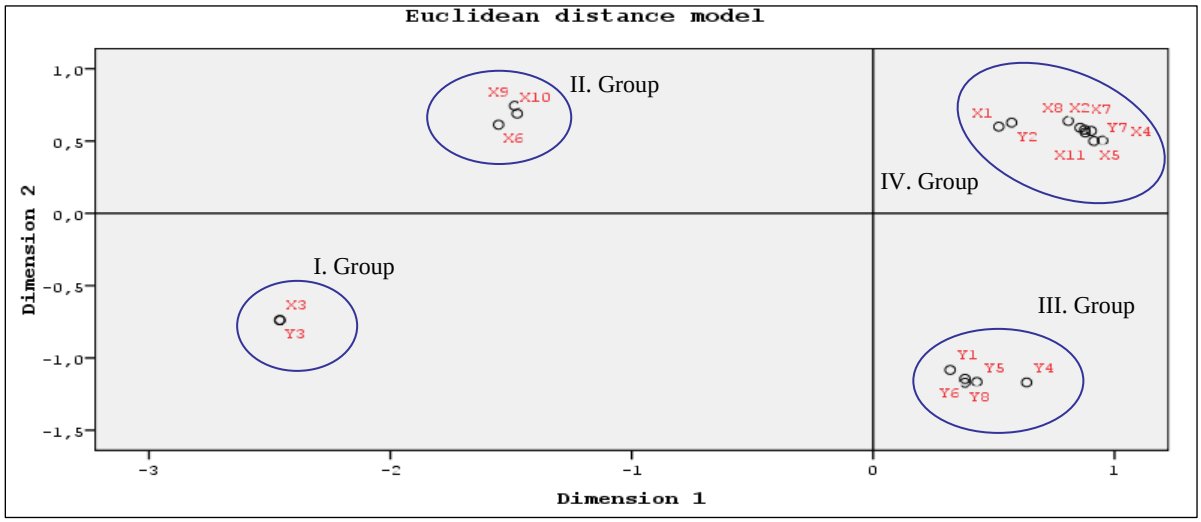

Figure 1. In the current – The perceptual map of two-dimensional similarities

Table 2. Consumers' current preferences via MDS analysis

Group 1	Group 2	Group 3	Group 4
Transportation from the short distance	Providing the product from the producers getting a fair price	Bread	Being produced by a method that Does not harm the environment
Fruit	Knowing the first supplier	Meat	Being produced by a method that Does not harm the animals
	Availability of buying the product at a fair price	Milk	Being produced by an energy saving Method
		Vegetable	Being produced by local producers
		Yoghurt	Being produced by small producers
			Being known locally or regionally
			Existence of the legal food standards
			Egg and olive oil

The consumer's future preferences were evaluated in terms of organic product and production features with MDS method, it has been displayed in Figure 2 and Table 3. Stress value is 0.03594 for k=2. Based on our stress value which is between 0.025<0.05, the consistency of data is considered "very good". According to Kruskal formula, it was found R^2=0.99577 and the stress value data were in 0.99577 ratio for the dimension k=2. According to these values, there is a compliance in a very good level between data distances and the configuration distances (Sahin et al., 2008b).

In Figure 2, a two-dimensional space model of the consumers' future preferences was displayed. In group 1, it was seen that the transportation of organic products from a short distance was the most important discriminator with the matrix value -2.3264, in the first dimension. In group 2, the features below indicated similarity with the matrix value between -1.9079/-1.8134: providing the product from the producers getting a fair price (X6), knowing the first supplier (X9), the availability of buying the product at a fair price (X10). In group 3, regarding the organic products like bread (Z1), fruit (Z3), meat (Z4), milk (Z5), vegetable (Z6) and yoghurt (Z8), with the matrix values between -1.3618/ - 1.0895. In group 4 the consumer's future preference for the following features showed the similarity with the matrix values between 0.4061/0.5559: being produced by a method that doesn't not harm the environment (X1), being produced by a method that does not harm the animals(X2), being produced by an energy saving method (X8). The following features indicated similarity with the matrix values 0.5852/0.5862: organic egg (Z2), existence of the legal food standards (X7). With the matrix values between 0.6540/0.7365, the most important variables in consumer preference of organic olive oil (Z7) were: being produced by local producers (X4), being produced by small producers (X5), being known locally or regionally (X11).

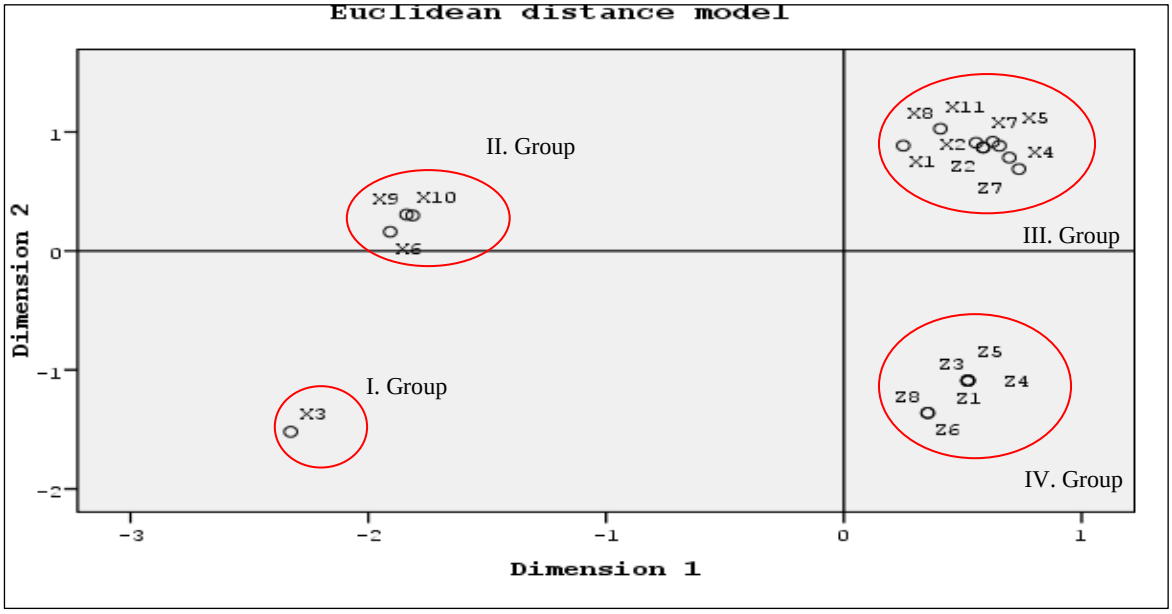

Figure 2. In the future – The perceptual map of two-dimensional similarities

Table 3. Consumers' future preferences via MDS analysis,

Group 1	Group 2	Group 3	Group 4
Transportation From the short distance	Providing the product from the producers getting a fair price	Bread	Being produced by a method that does not harm the environment
	Knowing the first supplier	Fruit	Being produced by a method that does not harm the animals
	Availability of buying the product at a fair price	Meat	Being produced by an energy saving method
		Milk	Being produced by local producers
		Vegetable	Being produced by small producers
		Yoghurt	Being known locally or regionally
			Existence of the legal food standards
			Egg and olive oil

4. Discussion and Conclusion

This study that compared the consumers' current and future preferences of organic products with production features has been scaled with MDS analysis as two dimensional. Similarities and the differences of organic products and production features were visualized through the MDS analysis.

The analysis revealed that the consumers' current and future preferences of organic product and production features showing similarities have been divided into four groups in Table 2 and Table 3. In the first group, while today the consumers prefer supplying the organic fruits by transportation from the short distances, in the future supplying from short distances has no importance in terms of consumer preferences. This points out that the consumers think the transportation conditions today are not convenient but this problem will become insignificant in the future with the advancement of the technology. In the 2nd group, the consumer preferences of organic product features show similarity in today and in the future. The features of "supplying the products from producers getting a fair price, knowing the first supplier and the buying availability at a fair price for the consumers" are not important in consumer preferences, neither today nor in the future.

In the 3rd group, the different organic foods preferred today by the consumers which are bread, meat, milk, vegetable and yoghurt, show similarity. And in the future preferences of the consumers, there is "organic fruit" as addition to these products. However, when the analysis values were examined, it seems the consumer preferences for these products are quite low both now and in the future.

The organic products and production features in the 4th group are preferred by the consumers significantly. Many production features in this group are similar to each other both today and in the future. Today the similarity between the features of "organic olive oil preference and existence of the legal food standards" may mean that the consumers prefer the packaged organic olive oil with registration, instead of a no name olive oil without a production permit. And in the future, it seems that regarding the organic olive oil preference, consumers would prefer the olive oils with features of "being produced by local and small producers and being known locally or regionally", in other words they would prefer the olive oils having a country of origin, as well as "the legal food standard" feature.

Today, the organic egg shows similarity mostly with the feature of "being produced by a method that does not harm the environment". Unlike the

conventional eggs, organic eggs are obtained from the chickens walking freely in the open field. For this reason, it seems that the organic eggs that are produced without causing environmental pollution are preferred by the consumers, and in the future, the consumers will prefer mostly the registered eggs conforming the legal food standards and not sold openly. Additionally, for the organic products, "being produced with a method without harming the animals and been produced with an energy saving method" are the other features which are always preferred by the consumers both today and in the future.

The main conclusion of the study is that consumers' current and future preferences toward organic products often indicate similarities. Therefore, today's preferences may be taken as noteworthy signs to foresee and project the future of organic products by taking into account the current preferences of the consumers toward organic products.

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