Factors Effecting The Orange Marketing In Turkey

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ABSTRACT

One of the production sectors in which Turkey has an advantageous position in terms of agricultural production and export potential is fresh fruit and vegetable production group. Being an eye-catching product group in this sector, citrus fruit's production is being carried on by almost 145.000 enterprises. Primarily produced citrus breeds are orange, mandarin, lemon and grapefruit. Citrus fruits compose %21 of our fresh fruit and vegetable production. In our country, Citrus fruit is produced mostly in Mediterranean, Aegean and partly in Eastern Black Sea Regions. However, %90 of citrus products production is provided from Mediterranean Region. By 2010, citrus production worldwide is 123.755.750 tons. %56 of this production consists of oranges. According to 2010 data in our country, 1.710.500 tons of orange is being produced on 53.236 hectares of area. In this study, it was aimed to find the basic factors that are affecting orange producers' orange marketing. Kaiser-Mayer-Olkin (KMO) parameter of the factor analysis had been found as 0,682. Thus, it had been appropriate for data set factor analysis. As a result of the factor analysis, 7 factors had been found of which eigenvalues are higher than 1. By using Verimax rotation, the variances had been secured to be appointed to appropriate factors. Sum total of the percentage of variance of these acquired factors (Foreign Market Development, Introduction and Organizing Activity, Demand and Price Stability, Domestic Marketing Organization, Branding, Market and Marketing Knowledge, Cultivation Knowledge) is 70,660. In other words, %70,66 of the sum variation can be explained by these factors. In the examined orange producer farm holdings, dependency ratio in other words, factor loading between foreign market development factor and need to New markets such as availability and development of foreign marketing opportunities is found rather high as 0.819.

Keyword: Marketing, Orange Producers, Factor Analysis, Kaiser-Mayer-Olkin (KMO), Turkey.

INTRODUCTION

Not being able to adequately review the advantage of production in the line of domestic and foreign market provided by the ecological conditions and geographical position of our country and bringing marketing issues to the agenda make the studies about the solution of abovementioned problems important. The enthusiasm for having a further say in agricultural products in world trade shows a progress as the common purpose of countries that have similar production structure and potential. This situation brings the significance of sustainable marketing concept widespreading all over the world and acquires the review of the issue with regard to citrus products that have a significant place in terms of export revenue in the sector of fresh fruits and vegetables.

The main problem in the sector of fresh fruits and vegetables is the level of unrecords reaching up to 70%. Due to the wholesale markets without a cold storage, 25% of the products cannot be served up in the market. The commission becoming a part even in the supply to the consumer increases the prices. In this case, the producer cannot provide a real value for the product and both the producer and the consumer cannot be fully satisfied (Polat 2010). This study aims for determining the factors affecting the marketing with regard to the producers in orange marketing in Turkey. Seven explanatory factors have been found in these analyses performed for this purpose. Total variance percentage of (Foreign Market Development, Promotional and Organisational Activity, The Stability of Demand and Price, Organisation of Domestic Marketing, Branding, Market and Marketing Knowledge, Cultivation Knowledge) is 70,660. In other words 70,66% of the total variance can be explained by these factors.

MATERIALS AND METHODS

Providing nearly 93% of orange production of Turkey, Mediterranean Region has been chosen as the research area (Durmuş and Yiğit 2003). The cities of Antalya, Adana, Hatay and Mersin have been included in the research as the center of orange production in Mediterrnean Region. The counties to be included in the research have been chosen considering production areas. The counties to be included in the research have been chosen in the manner that shall represent the cities with regard to production and marketing by taking account of the contribution of these counties to city production and the opinions of the authorities in city and county directorates of Ministry of Food, Agriculture and Livestock. Thus, total 10 counties of 4 cities have been included in the sample. In choosing the sample villages, orange planted areas of the villages in the selected counties have been taken into account by using the data of Farmers Register System (FRS).

According to this, the villages having orange planted areas of more than 80 decare have been included in the sample. By performing "Stratified Sampling Method" into the acquired sample village frame, the number of villages

in which a survey shall be conducted has been calculated 15 with the help of the belowmentioned formula.

Neyman formula (Yamane 2001),

In this formula,
n   : sample size
N   : total population size
Nh   : h. Sample size for stratum
Sh2   : h. Variance of stratum
Sh   : h. Standart deviation of stratum
d   : amount of errors allowed from the population average
z   : reliability coeefficient
D2   : (d /z)2.

Allocation of the sample villages according to stratums has been performed by the "Neyman Method". The formula of the method is given below (Çiçek and Erkan 1996).

$$n= \frac{(\Sigma N_h S_h)^2}{N^2 D^2 + \Sigma N_h (S_h)^2}$$

According to this, a survey has been conducted in 15 villages and towns in 10 counties of 4 cities composing the research area. In the frame list acquired by making complete inventory of agricultural enterprises producing orange in determined 15 allocation units, the number of sample enterprise is calculated at least 91 with the confidence level of 95% and deviation of 5% from the average. The allocation of the surveys into the counties and villages in the amount of orange production is performed by taking the planted areas into account (since there is no data of production amount in register) and this is shown in Table 1. In this context, total 145 surveys has been performed (17 in Hatay, 21 in Mersin, 51 in Antalya and 56 in Adana) and 3 surveys at fault were not included in the analysis and the analysis has been conducted over 142 surveys.

Table 1. Allocation of sample enterprises according to cities and counties

County	Town	Villages	Number of Survey
Adana	Seyhan	- Hadırlı	29
		- Camuzcu	
		-Büyük-Küçük Yalmanlı	
	Kozan	- Tufanlı	18
	Yüreğir	- Havutlu	8
Total			**55**
Antalya	Kumluca	- Merkez	11
	Finike	- Hasyurt	35
		- Yeşilyurt	
	Alanya	- Türkler	3
Total			**49**
Mersin	Akdeniz	- Dikilitaş	16
		- Sarıibrahimli	
		- Yakaköy	
	Tarsus	- Özbek	5
Total			**21**
Hatay	Dörtyol	- Yeşilköy	11
	Erzin	- Yukarıburnaz	6
Total			**17**
Grand Total			**142**

Factor analysis

In this study, analysis has been made using 22 variables. A general rule stating that the number of variables to be analyzed must be one fourth or fifth of the number of observations is among the considered criteria (Joseph et al., 1992). 22 criteria selected about the marketing issues of the analysed enterprises are given on Table 2.

Table 2. List of the variables used

X1	Having enough knowledge on the market of the product.
X2	Having enough knowledge on the marketing process of the product.
X3	The price stability of the product.
X4	The price level of the product.
X5	Adequacy (availability) of the market and purchasers.
X6	Cooperation between the producers in the marketing process.
X7	Adequacy of domestic marketing opportunities.
X8	Development of domestic marketing opportunities.
X9	Adequacy of foreign marketing opportunities.
X10	Development of foreign marketing opportunities.
X11	Export incentives.
X12	Activities with regard to orange promotion.
X13	Practice promoting orange consumption.
X14	Medicine remnants on the product.
X15	Availability of marketing organizations supporting the producers.
X16	Harvesting the product prematurely.
X17	The idea that out of season product will remain unsold.
X18	Geographical indication on the product.
X19	Caring about the product variety.
X20	Variety/type preference relevant to market requirement.
X21	Shipment of the product (transportation facilities)
X22	The level of producer organization (Cooperatives Manufacturers Association etc.)

In this study, factor analysis method is performed and a decision is given whether the factor analysis will be performed or not as a result of Kaiser-Mayer-Olkin (KMO). Bartlett Test of Sphericity is also used for the applicability of the factor analysis. Factor analysis is a multi variant statistical technique that is used for obtaining a few unrelated variables by gathering related variables on many data. In factor analysis, primarily inter variable correlations are taken into account since many observed variables are tried to explained with a few factors. (Johnson and Wichern 1992, Çelik 2012). Factor analysis is performed in four main phases: assessing the relevancy of the data for the factor analysis, obtaining the factors, rotation of factors and naming the factors. In order to assess the relevancy of the data set, three methods are used: forming correlation matrix, Kaiser-Meyer-Olkin (KMO) and Bartlett tests (Akgül and Çevik 2003). In calculating the correlation matrix, a high correlation between the variables are asked. The variables having a very strong correlation inbetween will generally be in the same factor (Nakip 2003, Çelik 2012). Kaiser-Mayer-Olkin (KMO) Test is calculated by comparing the simple correlation coefficients to partial correlation coefficients as shown in the formula below. The value of the test varies between 0 and 1 (Norusis and SPSS Inc 1994).

$$KMO = \frac{\sum_{i \neq j} \sum r_{ij}^2}{\sum_{i \neq j} \sum r_{ij}^2 + \sum_{i \neq j} \sum a_{ij}^2}$$

Here is shown:

KMO: Kaiser-Mayer-Olkin sample relevancy test; r ij: correlation coefficient between variables i and j; aij, rij: partial correlation coefficient between variables i and j. If the value in KMO test is below 0,50, it is unacceptable, 0,50 weak, 0,60 medium, 0,70 good, 0,80 very good, 0,90 perfect (Sharma 1996, Çelik 2012). Bartlett Test of Sphericity is used to test whether the correlation matrix is unit matrix of which all diagonal terms are 1 and the terms out of the diagon are 0. This test requires that the data comes from multi normal allocation (Hair et al. 1998, Çelik 2012). In determining the number of factors, mostly the eigenvalues and scree test graphics are used. In determining according to Eigenvalues, the factors of which the eigenvalue is more than 1 are derived (Mucuk 1978, Çelik 2012). In Scatter (Screet) test method, the graphics of eigenvalues are examined and all factors till where the vertical line becomes horizontal are included in the solution (Lewis 1994, Çelik 2012). In order to better interpret the factors, vertical rotating methods such as Varimax, Quartimax, Orthomax, Biquartimax, Equamax and inclined rotating methods such as Oblimax, Quartimin, Oblimin are used (Özdamar 1999, Çelik 2012). In commonly held method of Varimax, some factor loadings in each column are approached to 1 and many values of the rest are approached to 0. In this method suggested by Kaiser, rotation is made in order to make factor variances maximum (Çokluk et al 2010, Çelik 2012).

In this study, factor analysis is performed in three stages. In the first step, the number of factors relevant to principal companent is determined. In determining the factor number, the factors of which eigenvalue is more than 1 are chosen. According to this, 22 components of the likely problems of the producers in orange marketing are reduced to 7 factors. In the second step, it is clarified which variables are included by the determined factors and from which variables are formed. At this stage, Varimax rotation solution technique is used. İn determining each factor, the variables of which the factor loading is more than 0,40 is taken into account according to varimax rotation solution results. In the third and last step, the factors are interpreted. As is known, Kaiser-Meyer- Olkin (KMO) test measures to what extent the explanatory variables in factor analysis are relevant to analysis. In factor analysis performed, the value of Kaiser-Meyer- Olkin (KMO) is 0,682/ According to this, the data are relevant to factor analysis.

RESULTS AND DISCUSSION

The findings and discussion

Within the scope of the study, it is researched which factors affect the orange marketing with regard to the producers. In determining these factors, one of the most common multi variant analysis techniques, factor analysis is used. At this stage, first of all, correlation matrix is formed. And then, KMO criterion comparing correlation coefficient importances to partial correlation coefficient importances is examined and factor analysis is found to be relevant since the significance of the test is important according to this cri-

terion. In other words, the result is good since KMO coefficient is 0,682. Therefore, sample importance is adequate in this research. Table 3 shows that the significancy level value of Bartlett test is 0.000. H0 hypothesis is denied since this value is lower than the error margin of 5%. In other words, Bartlett Test of Sphericity is significant (c^2=1587, 353; p<0,05). In this case, high correlations between the variables are available and it means that the data comes from multi normal allocation. In other words, the data set is relevant to factor analysis.

Table 3. Kaiser-Mayer-Olkin (KMO) and Barlet test.

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Eligibility Criteria		0,682
Bartlett's Sphericity Test	About Chi-Square	1587,353
	Degree of freedom (df)	231
	Significance	0

In scattergraph in Figure 1, 7 factors of which the eigenvalue is more than 1 ($l >1$) will be chosen. As can be seen in both Table 1 and Figure 1, it is initially explained that total variance with 7 factors instead of 22 variances is 70,660%. In order to interpret the factors, factor rotation is performed. In performing factor rotation, Varimax method is preferred (Albayrak 2006). As a result of this, Table 4 shows alternate factor loadings matrix obtained from 22 criteria and 7 factors.
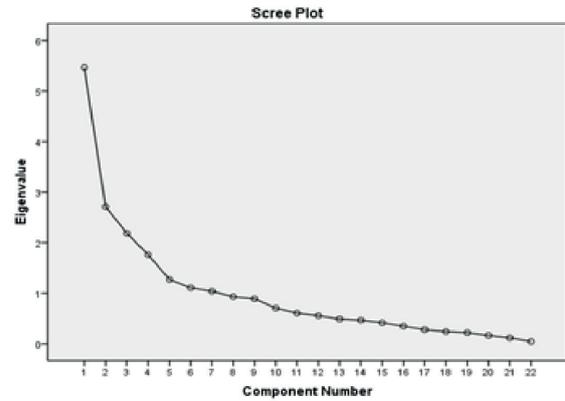
Figure 6. Showing the eigenvalues on Screet graphics

Table 4 determines whether factors are significant by examining that the eigenvalues of correlation matrix is more than 1. Total variance explaining the variance explanatory percentages of these factors provides the eigenvalues before and after the rotation and shows that 7 factors has come up. The first factor explains 24,856% of the total variance, the second variance explains 12,328% of it, the third variance 9,932% of it, the fourth variance explains 8,008% of it, the fifth variance explains 5,784% of it, the sixth variance explains 5,034% of it and the seventh variance explains 4,719% of it. The cumulative variance amount explained by the eigenvalues is 70,660% of total variance. The primary factor out of the factors determining the effects of the producers on orange marketing is defined as foreign marketing development. This factor explains 24%87 of the total variance. The expectations of the producers with regard to develop-

Table 4. Total variance and variance explanatory percentages of factors

Factors	First eigenvalues			Translated Squared Weight Total		
	Total	Variance (%)	Cumulative (%)	Total	Variance (%)	Cumulative (%)
X1	5,468	24,856	24,856	5,468	24,856	24,856
X2	2,712	12,328	37,184	2,712	12,328	37,184
X3	2,185	9,932	47,116	2,185	9,932	47,116
X4	1,762	8,008	55,124	1,762	8,008	55,124
X5	1,272	5,784	60,908	1,272	5,784	60,908
X6	1,107	5,034	65,942	1,107	5,034	65,942
X7	1,038	4,719	70,66	1,038	4,719	70,66
X8	0,931	4,23	74,891			
X9	0,89	4,046	78,937			
X10	0,704	3,199	82,136			
X11	0,604	2,747	84,882			
X12	0,554	2,519	87,402			
X13	0,488	2,216	89,618			
X14	0,465	2,113	91,731			
X15	0,415	1,885	93,616			
X16	0,347	1,575	95,191			
X17	0,277	1,26	96,451			
X18	0,239	1,085	97,536			
X19	0,219	0,996	98,532			
X20	0,163	0,74	99,272			
X21	0,116	0,525	99,797			
X22	0,045	0,203	100			

Tablo 5. Solution of the problems with regard to orange marketing

Variables	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Dependence Communalitiy (h2)
Adequacy of foreign marketing opportunities.	0,833							0,836
Development of foreign marketing opportunities.	0,806							0,829
Export incentives.	0,647							0,615
Activities with regard to orange promotion.		0,674						0,698
Practice promoting orange consumption.		0,762						0,783
Availability of marketing organizations supporting the producers.		0,763						0,683
Harvesting the product prematurely.		0,630						0,598
The price stability of the product.			0,775					0,736
The price level of the product.			0,843					0,797
Adequacy (availability) of the market and purchasers.			0,514					0,666
Cooperation between the producers in the marketing process.				0,501				0,72
Adequacy of domestic marketing opportunities.				0,831				0,82
Development of domestic marketing opportunities.				0,718				0,817
Geographical indication on the product.					0,608			0,58
Caring about the product variety.					0,869			0,787
Variety/type preference relevant to market requirement.					0,710			0,605
Having enough knowledge on the market of the product.						0,891		0,852
Having enough knowledge on the marketing process of the product.						0,896		0,85
Medicine remnants on the product.							0,414	0,449
Harvesting the product prematurely.							0,668	0,655
The idea that out of season product will remain unsold.							0,812	0,736
Shipment of the product (transportation facilities)							0,435	0,435
Eigenvalues	5,468	2,712	2,185	1,762	1,272	1,107	1,038	
Variance	24,856	12,328	9,932	8,008	5,784	5,034	4,719	
Incremental variance	24,856	37,184	47,116	55,124	60,908	65,942	70,66	
KMO Value*	0,682							

ment of new market opportunities may be interpreted as the main effect. As is known, the development of new market opportunities is an efficient criteria for the producers to find the values of the products. The second important factor is promotional and organizational activity with regard to consumption of factor product. This factor explains 12,33% of total variance. In terms of consumption of the products by the producers, the promotional activities, advertising campaigns and organizational culture will create an opportunity for the product to attain its real value and contribute to the producers. The third important factor is the stability of demand and price. In order for the producers to make their income permanent and produce a quality and standard product, it requires that the product has a stability of demand and price and is sold worth. Therefore, the problems of the producers about the price level of the product affect the production and the product sale. The fourth important factor is defined as domestic marketing organization. The development of domestic market opportunities prevents the idea that the product will remain unsold and creates an opportunity for the product to be sold exactly worth and on time. The fifth important factor is branding. Forming product variety relevant to market demand and providing branding enable both to create a brand value and to produce products relevant to market demands and needs. The sixth important factor is for the producers to have enough knowledge about market and marketing. This situation enables the product to be properly valued. The seventh important factor defined as the knowledge of cultivation. Having enough knowledge on the cultivation of the product enables for the producer to make a proper decision at the stage of production and sale.

Results And Recommendations

In orange production enterprises, the dependency rate, i.e. factor loading between foreign market development and the need for new markets such as the adequacy of foreign market opportunities and development of foreign market opportunities is quite high, 0,819.

The effects of the producers on orange marketing are collected under 7 factors. The determined 7 factors explains 70,66% of total variance. These factors are"Foreign Market Development", "Promotional and Organizational Activity", "The Stability of Demand and Price", "Domestic Marketing Organization", "Branding", "Knowledge of Market and Marketing".

The factor defined as "Foreign Market Development" explains 24,87% of total variance. The expectations of the producers with regard to development of new market opportunities may be considered as the main factor. As is known, development of new market opportunities is an efficient criteria for the producers to find a value.

In agricultural products, marketing activities should be led from functional marketing approach to administrative marketing approach. In order to perform this, a marketing substructure should be developped. Furthermore, in studies in terms of promotion and marketing of our products, the image of "Made in Turkey" should be featured and gone for a branding process. For this, geographical indication system should be used.

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