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Fruit Juice Consumption Preferences in Central District of Tokat Province

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ABSTRACT: The main material of this research done in Tokat Province Central district is the survey data made in 2016. In this study, which is summarized and interpreted on the tabulated data obtained, logit analysis was used to investigate the factors affecting fruit juice consumption. According to the research results; it was determined that 10% of the consumers who participated in the survey did not consume fruit juice, and the average consumed amount of fruit juice consumption per person was 7.5 lt/month. Among the reasons for not consuming fruit juice, the first place is thought to be is being harmful. It has been determined that ready-made product consumption preference (26.01%) is low in fruit juice consumption, cherry juice is the most consumed fruit juice and orange juice is the least preferred fruit juice. While purchasing fruit juice, a significant proportion of consumers (85.64%) preferred brand and they said that tea was the most preferred drink instead of fruit juice. According to the logit analysis model results, variables affecting the likelihood of families' consumption of fruit juice are; gender, education and overconsumption. The coefficient of overconsumption variable is negative while the coefficient of gender and education variables is positive.

Keywords: *Fruit juice, Tokat Province, consumer*

1. Introduction

The ability of individuals who make up society to live a healthy life, both physically and mentally, depends on their ability to feed adequately and in a balanced manner. Adequate and balanced nutrition can be achieved by regular intake of vitamins and minerals that are needed by the body. It is, of course, a fact that proper and balanced nutrition along with training and health indicators is considered as a significant factor in term of socio-economic development (Yağmur and Güneş, 2010; Onurlubaş et al. 2015 b). It is possible to meet vitamins need for adequate nutrition by consumption of fruit and fruit juice. The elderly or children who have difficulties in consuming fruit will meet the vitamins that they need with their consumption of fruit juice. It is also known that when fresh juice is taken adequately, a significant portion of the vitamins and minerals needed for healthy nutrition can be provided alone (Anonymous 2016a). In addition, it is also stated that fruit juices are more suitable food products than fruits in terms of their digestion of bioactive compounds that protect health (Anonymous 2016b).

Vitamins and minerals are food items that are found in very low quantities in food and beverages. Due to vitamin and mineral deficiencies, the physical and mental development of more than half of the world's population is negatively affected; it has been stated that it decreases the quality of life by causing learning defects, increasing infectious diseases, slowing of mental development, low working capacity, growth and developmental delay, anemia and birth defects. Considering these reasons, consumption of nutritional resources

of vitamins and minerals seems to be of great importance as well as in fruit and fruit juices (Açkurt, 2012).

Fruit and fruit juices are among the natural antioxidant sources with disease prevention and health promoting roles. It is stated that fruit juices are easier for digestion of bioactive compounds that protect health and that they are more suitable food products than fruits (Açkurt, 2012).

The average per capita consumption of fruit juice is expressed in the sources in Turkey is lower than in EU countries. While apple juice and orange juice are the most consumed juices in EU countries, this sorting comes as peaches, apricots and cherries in Turkey (Anonymous 2016b).

The aim of this study is to determine the effect of socioeconomic variables on consumption of fruit juice and consumption of the central district households of Tokat. The logit model was used to determine the effect of socioeconomic variables on consumption in the study.

2. Material and Methods

The main material of the study is the questionnaire data of 280 consumers who were determined using the Convenience Sampling Method from the residents residing in the central district of Tokat province. This population was calculated according to the following formula (Yamane, 2001).

$$n = \frac{N * t^2 * p * q}{d^2 * (N - 1) + t^2 * p * q}$$

Where;

n = Number of household samples

N = Number of target households

p = Probability of occurrence of an event (0.50)

q = Probability of non-occurrence of the event (0.50)

t = Standard normal distribution value (1.65)

d = Sampling error (0.05).

Sample size was determined with 5% error rate using 90% confidence interval. Calculated sample size was 280. The data belong to the year 2016, November-December. The obtained data are summarized and interpreted on the tables.

In addition, the factors affecting fruit juice consumption was investigated by using statistical method (Özdamar, 1999), which is a statistical method that analyzes the tabulated or raw data sets, which makes possible to classify the estimated values of the dependent variable as probabilities and to classify them according to probability rules.

The independent variables used in the logit analysis are defined in Table 1.

Table 1. Identification of Independent Variables

Variables	Tanım
GENDER	0=Male 1=Female
EDUCATION	1 = Primary Education, 2 = Secondary education, 3= High education
INCOME	Average monthly income of household (\$/Month/Household)
READY-MADE	0=Ready-made fruit juice consumer 1= Not ready-made fruit juice consumer
OVERCONSUMPTION	0=Not overconsuming (Consumption per person per month is less than 5 lt) 1=Overconsuming (Consumption per person per month is more than 5 lt)

3. Results and Discussion

The average age of the participants was 34.7, the average income was 461.66\$ / month, and the average number of individuals in the family was 4,11. Furthermore, 62,50% of the participants were male, 37,50% were female consumers and 54,64% of them were married. When the educational status of consumers is examined; 28.93% of them were graduated from high school, 25.71% were primary school graduates and the remaining graduates had a bachelor degree (19.29%), secondary education degree (16.07%) and graduate degree (1.07%) while 8.93% were only literate. When the occupational distributions of the consumers who participated in the survey was examined, it is seen that 33.57% are self-employed and 3.57% are farmers. part from these workers (25,36%), civil servants (19,29%), tradesmen (9,64%) and retirees (3,57%) are also included.

The average consumption of fruit juice was calculated as 7.5 l / month per person. In a research made by Babayiğit *et al.* (2006), the amount of weekly fruit juice consumption was determined as 0.7-1.2 l / week. Özdeş *et al.* (1999) found that the amount of concentrated fruit juice consumed per person per year was 2.3 liters.

It was determined that 10% of consumers in the study did not consume fruit juice. The reasons for not consuming were found to be harmful (35,71%), disliking (28,57%), absence of purchasing power (21,43%) and lack of familiarity (14,29%). Özdeş *et al.* (1999) found that 68.4% of consumers surveyed did not consume concentrated fruit juice. The reasons for not consuming were disliking (55.8%), expensive product (28.6%) and harmfulness to health (5.2%).

Of the 252 consumers consuming fruit juice, 73.99% preferred ready and 26.01% preferred home-made products. When the causes of consumption of ready-made products were examined, the most commonly given answer with 64.85% was the participants telling it was habit, followed by ease of availability (32.18%), being economical (1.98%) and palatal delight (0,99%) respectively. In the survey conducted by Yılmaz and Özkan (2007), it was determined that 7,4% of the students who participated in the survey did not consume fruit juice at all.

When the reasons for consuming the home-made fruit juice are examined; it is in the first place that it is healthier (Table 2).

Table 2. Reasons of Consumption by Home-Made Product Consumers*

	Frequency	%
I find it healthier	28	39,44
Habit	8	11,27
Being economical	18	25,35
Palatal delight	10	14,08
Fruit producer	7	9,86

*The total exceeds 100% due to multiple answers.

It has been determined that more than half of those who prefer to consume home-made product supply fruit from the market (57,75%) while the rest supply from their own vineyard (33,80%) and grocery stores (8,45%).

Consumers are not very conscious when examining their attentions to packaging when buying fruit juice and it is determined that almost half (48.57%) are not paying attention to the packaging of the product.

When the packaging preferences of consumers participating in the survey are examined, it is determined that 43.06% of the consumers prefer tetrapak, 11.81% prefer tinplate packaging and 38.19% prefer glass packaging.

Consumers' 43,07% sometimes read the label information and 26,24% do not read it. According to these findings, it can be said that only 26,24% of the consumers are in conscious consumer behavior.

Label information taken into consideration by consumers consuming ready-made products and reading product label information is given at Table 3.

Table 3. Label Information taken into Consideration by Consumers that Pay Attention to Label Information

	Frequency	%
Expiration date	58	41,43
Production date	11	7,86
Production and expiry date	40	28,57
Nutritive value	4	2,86
Company name	14	10,00
Additives	5	3,57
All	8	5,71
TOTAL	140	100,00

It is observed that 41.43% of the consumers pay attention to the expiry date and 2.86% pay attention to the nutritional value.

47,03% of the consumers who participated in the survey were engaged in promotional advertising, etc. on fruit juice consumption. But 52.97% stated that they affect the consumption of these types of visual advertisements. 42.86% of the consumers find fruit juice prices high.

It was found that consumers consume fruit juice in all seasons but consumption of fruit juice is preferred in summer (41.67%) more than in other seasons. It was determined that 32,97% of the consumers consume fruit juice in winter, 19,93% in spring and 5,43% in the autumn. 61.79% of the consumers participated in the survey stated that they had no information about benefits of fruit juice.

Consumers' Information about the Benefits of Fruit Juice is given in Table 4.

Table 4. Consumers' Information about the Benefits of Fruit Juice

	Frequency	%
Good for chronic diseases	6	5,61
Delays aging	4	3,74
Strengthens the immune system	31	28,97
Meets your body's vitamin needs	63	58,88
Helps digestion	3	2,80
TOTAL	107	100,00

58,88% of the consumers think that fruit juice meets the vitamin need of the body and 2.80% think that it facilitates digestion.

Table 5 lists the most preferred fruit juice varieties. It has been determined that the most consumed fruit juice of the consumers is cherry juice with 35.71% and the least preferred is orange with 4.76%.

Table 5. Consumers' Most Consumed Fruit Juice Type

	Frequency	%
Peach	70	27,78
Apricot	44	17,46
Cherry	90	35,71
Apple	16	6,35
Orange	12	4,76
Mixed	20	7,94
TOTAL	252	100,00

When the research made by Özdeş *et al.* (1999) was examined, it was determined that peach, orange and apricot juice were the most preferred fruit juice after cherry juice respectively. In both studies, cherry juice was found out to be the most preferred fruit juice. Onurlubaş *at al.* (2015a) was examined, in the juice consumption by product type has been found that mostly cherries (75 %).

It was determined that the consumers who participated in the survey preferred to consume fruit juice as neat (38,82%), appetiser (37,94%), with food (20,59%) and with alcohol (2,65%).

It has been determined that a significant part of consumers (85,64%) prefer brand when they buy fruit juice. Furthermore, 28.93% of the consumers who participated in the survey stated that they prefer fresh fruit consumption to fruit juice.

Consumers have different consumption preferences for beverages. These types of beverages are given in Table 6.

Consumers' most preferred beverage is tea, while the least preferred beverage instead of fruit juice is turnip juice. Türk et al. (2007) found that the three drinks, which were found to be nutritious by the majority, buttermilk, ready-made fruit juice and tea; while Babayiğit et al. (2006) examined the presence of beverages in the refrigerators of families and found that the highest amount was found to be milk (68.9%), followed by ayran (55.8%), cola (54.4%), fruit juice (42.2%), Fanta-Yedigün (19.6%), simple soda (8%), energy drink (4%) and diet cola (1.5%). Selçuk et al. (2003) stated that the consumers who participated in the survey prefer fruit juice after the buttermilk.

Table 6. Drinking Preference of Consumers Substituting Fruit Juice

	Frequency	%
Tea	95	33,93
Coffee	25	8,93
Buttermilk	55	19,64
Mineral water	17	6,07
Energy drink	10	3,57
Coke	68	24,29
Soda	6	2,14
Turnip juice	4	1,43
TOTAL	280	100,00

In addition, considering that many factors may affect the consumption of fruit juice by consumers, Logit analysis, which is an econometric model, is applied to determine these factors. For the variables defined in the study to determine the appropriate model, different model experiments were performed and it was tested whether these variables were statistically significant. Gender, education and overconsumption variables were found statistically significant in multiple model. Income and ready consumption preference variables were not statistically significant.

Model was formed as;

$$\text{Fruit Juice Consumption} = \beta_0 + \beta_1 \text{ Gender} + \beta_2 \text{ Education} + \beta_3 \text{ Income} + \beta_4 \text{ Ready consumption} + \beta_5 \text{ Overconsumption}$$

Model F is statistically significant at the 1% level of the likelihood statistic, which is the co-value of the test statistic in logit model. The McFadden R-square, which expresses the model's power of argument, is set at 0.169903. This value suggests that the variables included in the model are sufficient to explain the preference possibilities of individuals for their consumption of fruit juices.

Table 7. Logit Model Results

	Coefficient	Std. Error	z-Statistic	Probability (P)
Gender	1.066486	0.408579	2.610234	0.0090
Education	0.354462	0.212569	1.667512	0.0954
Income	0.554538	0.380630	1.456896	0.1451
Ready consumption	-0.470332	0.456582	-1.030115	0.3030
Overconsumption	-1.220280	0.424376	-2.875468	0.0040
C	-3.559975	1.652690	-2.154049	0.0312
Loglikelihood : -86.04476;Restr. loglikelihood : -103.6563; McFadden R-squared : 0.169903; Probability(LR stat) : 0.000001				

According to the model results, variables that affect the likelihood of families to consume fruit juice are; gender, education and overconsumption. The coefficient of overconsumption variable is negative, and the coefficients of gender and education variables are positive.

The Logit modal slope coefficients are checked to measure the logit change versus a unit change in the independent variables.

4. Conclusion

When all the findings of the study are examined in general, the fact that Tokat province has an important place in terms of agricultural production and the presence of a company that produces fruit juice in the region makes an influence on the consumption of fruit juice positively.

Fruit juice consumption is in two different forms, being ready and homemade. In the survey, it is seen that consumption of homemade products is lower than other consumption preferences of participants. In fact, since the individuals do not perceive the composite consumption that we have in our culture as fruit juice consumption and these consumptions are not recorded, both home-made and generally fruit juice consumption amounts are low.

It has been determined that consumers prefer tetrapak mostly for the packaging. It should be explained to the consumers that tetrapak, plastic, tin packaging disrupt the taste of the products, affects the human health negatively since they contain some chemical additives and the glass packaging is the healthiest packaging in terms of the friendliness of the nature and the importance given to nature. It should also be encouraged that consumers can easily see their products while taking them and that they are the most appropriate packaging for recycling.

Fruit juice consumption, however, only intensifies during the summer and winter months. Consumers should be encouraged in this direction as these are sources of nutrients that should be consumed in a balanced manner in all seasons of the year instead of the perception of consumption in the winter months against diseases and only in the summer months in order to get rid of thirst.

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