

# Determining Consumers' Preferences for Energy Drinks Consumption with Conjoint Analysis: A Cross Section Study from East Mediterranean, Turkey

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## Abstract

**Purpose:** This study aimed to determine profile and purchasing preferences of a target consumer group who prefer and purchase energy drinks marketed under different names. The study was carried out in Adana province, which is one of the largest cities of Eastern Mediterranean Region of Turkey.

**Design/methodology/approach:** Results of questionnaires administered to a total of 300 consumers through face-to-face interviews were evaluated in the study. Conjoint Analysis was used for data analysis. Conjoint analysis is a multivariate analysis technique commonly used in marketing research. Conjoint Analysis is a method for systematic evaluation and prediction of limited number of alternative choices of a consumer or decision-maker.

**Findings:** It was found that the majority of the consumers consuming energy drinks were males in 18-24 age group. According to the results, packaging was the most influential factor affecting the consumers' choices and preferences for energy drinks, and accounted for 31.78% of purchasing decisions. Other factors in purchasing decisions were price, the amount of caffeine and brand, respectively.

**Originality/value:** Determining Consumers' Preferences for Energy Drinks Consumption with Conjoint Analysis.

**Keywords:** Energy drinks; Consumption; Consumers; Conjoint Analysis

## Introduction

Today individuals trying to fulfill their needs under changing living conditions have to continue their lives under more stressful conditions. The emergence of totally different lifestyles results in significant differences in consumers' tastes and preferences and necessitates the production of goods and services to satisfy these needs. The "Energy Drinks" sector is an example of a market sector which emerged to meet such needs and expectations. This sector made a significant progress to be a large sector.

Reducing soda sales oriented beverage companies to the energy drink sector. The target groups in the energy drink market constitute a significant part of society including individuals who are fond of vegetables and vitamins, wealthy people and young people, constituting different groups of society. This encourages companies to enter this market [1]. The energy drinks market is experiencing a rapid global growth and new opportunities are offered to companies investing in this market. The average growth within the sector is thought to be 50% in the last six years [2,3]. While the consumption of energy drinks is common in Asia and North America, sharp increases of up to 130% have been seen in European, North African and Middle Eastern regions [4].

The size of the energy drink market has reached 2 billion cans [3,5]. The Red Bull brand, which entered the energy drink market in 1987, holds a significant market share. The reason why drinks companies place such importance on the energy drinks category is that although fizzy drink market grows by approximately 2% on average, the global energy drink market showed 15% growth [5,6].

Energy drinks expanded their market share through legal regulations after discussions, some of which ended up in courts. Sales

strategies targeting the Middle East are planned by considering Turkey as a bridge. While one of the international brands, Red Bull, entered the sector by getting import permit again thanks to the new regulation, Tiger Shot, an Italian brand, decided to make Turkey the energy base of the Middle East [5].

New branded products are introduced to the market every day. The market in Turkey includes 26 different brands, 15 of which are local and 11 of which are foreign. It is estimated that annual consumption in Turkey, which was 2 million liters at the beginning of 2003, reached 3 million liters by the end of the year. According to unofficial data, the consumption of energy drinks reaching one billion cans globally, of which ten million cans are consumed in Turkey [5]. However, it is reported that this may reach 50 million cans through illegal products.

Energy drinks consist of caffeine, which is the main active substance, and other herbal stimulants (guarana, yerba mate, e.g.), simple sugars (glucose, fructose, e.g.), naturally formed glucose metabolite (glucuronolactone), amino acids (taurine, carnitine, creatine, e.g.), herbs (gingko biloba, ginseng e.g.) and vitamins [1]. The

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**Received** September 10, 2014; **Accepted** October 16, 2014; **Published** October 18, 2014

**Citation:** Beşir KOÇ, Aykut GÜL, M. Göksel AKPINAR, Yılmaz H (2014) Determining Consumers' Preferences for Energy Drinks Consumption with Conjoint Analysis: A Cross Section Study from East Mediterranean, Turkey. J Nutr Food Sci 4: 324. doi: [10.4172/2155-9600.1000324](https://doi.org/10.4172/2155-9600.1000324)

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effects of energy drinks on human health are disputed due to taurine and high caffeine content. These products, whose negative effects on high risk groups such as pregnant women, children and sportsmen and the general society are disputed, cause serious incidents including death when consumed with alcohol. Therefore, the sale of such products is forbidden in countries like France, Denmark, Norway, and Malaysia. U.S. Food Administration, UK Food Standards Agency and National Food Administration of Sweden warn consumers to be cautious when consuming these types of products [5,7].

The production and import of energy drinks in Turkey are evaluated by The Ministry of Agriculture and Rural Affairs. These products are regulated as per the draft regulation regarding Sportsman and Energy Drinks of the Codex Alimentarius Commission, accepted as the Turkey Food Codex Regulation and International Food Codex. However, in a meeting titled “Foodstuffs Intended for Particular Nutritional Uses and Nutrition” held in Germany in November 2011 by the Codex Alimentarius Commission (CAC) within United Nations Food and Agriculture Organization (FAO), criteria regarding energy drinks are under the initiatives of countries [5,7].

As per the Turkish Food Codex Energy Drinks Communiqué no 26309 (numbered 2006/47), in Turkey the amount of caffeine in energy drinks is limited to 150 mg/L, the amount of glucuronolactone (a kind of sugar) is limited to 20 mg/L, the amount of taurine is limited to 800 mg/L and the amount of inositol is limited to 100 mg/L [8]. These levels are the limits suggested by the World Trade Organization.

The main aim of the study is to determine the profile and purchasing preferences of the target consumers who prefer and purchase energy drinks entering the market. The literature contains a limited body of scientific research on this subject, both in Turkey and the world. It can be said that this study will contribute to the related literature; will serve as an example for future studies in the same field and provide important support for energy drink companies in determining their future marketing strategies.

## Material and Methods

### Determining the sample size data and retrieving the data

The study was carried out in urban areas of Adana province, which is one of the largest cities of the Eastern Mediterranean Region of Turkey. Data collected from face-to-face interviews was evaluated in the study. Since the study aimed to determine the profile and behaviors of the consumers of energy drinks, participants were randomly selected.

According to following formula [9], a sample size required to represent the study was determined as 300 questionnaires [9].

$$n = t^2 [1 + (0,02) * (b - 1)] * p * q / e^2$$

When  $b = 1$ , the equation takes the following form:

$$n = (t^2 / e)^2 * p * q$$

Where  $n$ : sample size,  $t$ : confidence interval (95%),  $b$ : sampling process,  $p$ : realization probability of the analyzed unit in the population,  $q$ : non-realization probability of the analyzed unit in the population and  $e$ : error. It was calculated according to  $e = \sqrt{t^2 * p * q}$  [10,11] formula. To reach maximum sampling volume in the study,  $p$  and  $q$  values were taken as 50%.

### Analysis and the evaluation of the data

Conjoint Analysis, which is a multivariate analysis technique commonly used in marketing research, was used to analyze the data.

Conjoint Analysis is defined as a method for systematic evaluation and prediction of limited number of alternative choices of a consumer or decision-maker [12-22].

The origin of conjoint analysis is based on total worth theory. According to this, it can be stated that total worth is a function of the worth of both price and quality [22].

$$\text{Total worth} = w (\text{price worth} + \text{quality worth})$$

In the additive part-worth model, the partial worth of each feature level about the produce is independent from each other and the sum of partial worth of the feature levels in question forms the total worth. General evaluation of consumer goods or services, and therefore the contribution of each feature level to these preferences, is determined by combining the part-worths. The theoretical explanation of additive part-worth model commonly used in conjoint analysis is as follows: [22]:

$$\text{Pref}_{ijk1} = a_i + b_j + c_k + d_l$$

Where;

$\text{Pref}_{ijk1}$  = Consumer's preference or total worth

$a_i$  = Part-worth of product feature-A at  $i$  level

$b_j$  = Part-worth of product feature-B at  $j$  level

$c_k$  = Part-worth of product feature-C at  $k$  level

$d_l$  = Part-worth of product feature-D at  $l$  level

Five main factors that might be effective in consumers' preference in energy drinks consumption were determined as follows: Brand, Packaging, Selling Point and Price. Factor levels were determined as follows: two energy drinks (R and B) for brand a UHT tin-can in different sizes for packaging; Markets- Bars and Night Clubs for selling points; three different levels (low, medium, high) for price; and three different levels (low, medium, high), as indicated in Table 1, for the amount of caffeine, which is the fifth factor in consumer choices. In the study, the number of potential combinations of factors was  $2 \times 4 \times 2 \times 3 \times 3 = 144$ . The first 16 combinations were chosen to achieve a more reliable consumer evaluation.

## Results and Discussion

### Socio-economic profile of consumers

It was found that majority of energy drink consumers were

1.Brand	1. R 2. B
2.Packaging	1.UHT Bottle (250 ml) 2. UHT Bottle (225 ml) 3. UHT Bottle (200 ml) 4. Can (250 ml)
3. Selling Point	1. Markets 2. Bars and Night Clubs
4. Price	1. 2.68 TL (High) 2. 2.40 TL (Medium) 3. 2.00 TL (Low)
5. Caffeine Amount	1. 300- 350 mg (High) 2. 250 mg (Medium) 3. 150 mg (Low)

Table 1: Factors and factor levels subjected to conjoint analysis.

males between the ages of 18 and 24. 70% of the consumers were high school graduates and defined their lifestyles as safe and regular. It was found that the proportion of consumers who defined their lives as crazy was approximately 25%. Consumers generally defined their social and economic status as above average and as working class. Family size was approximately 4.78 persons and their monthly income was approximately 1.500 Turkish Liras. About 27% of the consumers listened to pop music, followed by Rock and Turkish Folk Music (Table 2).

Consumer's Features	Frequency	%
<b>Gender:</b>		
Male	209	69.77
Female	91	30.23
<b>Age:</b>		
Under 18	4	1.37
18-24	204	68.03
25-35	81	27.03
35-50	9	3.07
50+	2	0.53
<b>Educational Background:</b>		
Literate	5	1.67
Illiterate	0	0
Primary School	2	0.53
Elementary School	8	2.67
High School	210	70.13
University	75	25
<b>Life Style:</b>		
Safe and regular	149	49.8
Crazy	75	24.93
Academic	19	6.4
Others	57	18.9
<b>Socio- economic status in society</b>		
Highest	13	4.17
Higher	39	12.83
Upper average	122	40.67
Working class	107	35.63
Lower	16	5.27
Lowest	4	1.43
<b>Music Preferences:</b>		
Pop	81	26.93
Jazz	12	3.83
Turkish Art Music	19	6.4
Turkish Folk Music	34	11.23
Hip hop	16	5.23
Arabesque	23	7.73
Rock	41	13.57
Extravaganza	13	4.23
Turkish Protest Music	23	7.6
Classical	18	5.87
Foreign Music	22	7.33
<b>Family Indicators:</b>		
Approximate Size of Family (Number of individuals)	4.87	
Approximate Monthly Income of Family (NTL)	1,500	
Approximate Monthly Food Budget (NTL)	364.63	

**Table 2:** Socio- economic profile of energy drink consumers (n=300).

## Determination of consumers' preferences in energy drink consumption

Analysis of the results of conjoint analysis showed that, the most significant factor in consumers' preference and purchasing of energy drinks was "packaging", which accounted for 31.78% of consumer choice. The second most significant factor after packaging was "price" (23.84%). The third most significant factor affecting purchasing decision was "caffeine amount" (20.59%). The fourth factor affecting consumer decisions was "brand" (16.39%). The last factor affecting consumer purchasing decisions was the selling point of the product (7.40%).

According to the results of the conjoint analysis, it can be stated that the two most important factors in optimum product compound providing the highest total benefit to energy drink consumers group and with the greatest influence on consumers' preferences are packaging and price. It is significant that consumers attach importance to packaging in terms of ease of use and attraction of the product. According to the findings, consumers established a direct correlation between the size of packaging and price. It can be stated that this relationship is important for consumers, because they desire to purchase the size of the packaging and the image presented by the package at an affordable price.

The part- worth value of each factor level indicates importance level of the mentioned levels in consumer's preference. The sub-factor level with the highest part- worth value is the option most preferred by consumers. In the present study, the sub- factor level with the highest part- worth value within the packaging factor was the bottle size (225 ml), with a value of 0.1768. The part- worth value of the canned package with 225 ml was 0.0113. The part- worth value of a 250 ml bottled package was relatively lower (-0.0971). Part- worth values show that consumers' package preference is primarily for a 225 ml bottle packaging. However, consumers do not ignore the canned package of the same size.

Analysis of part- worth values of price factor, which is the second important factor in consumers purchasing decisions, showed that, the factor level with the highest part- worth value was 0845, which had the lowest price of 2.00 NTL. The factor level having the lowest part- worth value was -0.1399, which had a moderate price of 2.40 NTL. According to this, it can be stated that consumers prefer the most affordable product. Consumers' primary preference about the caffeine content, which is the third factor effective in consumption preferences, focused on the option including the lowest caffeine amount (150 mg) with a part- worth value of 0.0543. While consumers also showed a tendency of purchasing moderate levels of caffeine (part- worth value: 0.0445), it was found that they did not prefer energy drinks with high levels of caffeine.

Consumers mainly preferred  $EI_2$  among energy drink brands. The least preferred option was  $EI_1$ , with a part- worth score of -0.0702. Consumers primarily preferred bars and nightclubs as selling points (Table 3).

Total worth value consists of the sum of factor level values. The combination with the highest total worth value can be defined as the product card providing the optimum benefit to consumers. In other words, factors and factor levels having the highest total worth value are the option most preferred by consumers. The combination with the lowest total worth value is the least preferred product. In this case, optimum product pattern providing the maximum benefit to consumer is the card which is in the first position in preferences with a total worth value of 3883. The product preferred by consumers the least is presented

Factor	Part worth level	Significance levels (%)
<b>Brand</b>		
R	-0.0702	16.39
B	0.0702	
<b>Packing</b>		
Bottle (225 ml)	0.0113	31.78
Bottle (250 ml)	-0.0911	
Can (225 ml)	0.1768	
Can (250 ml)	-0.0971	
<b>Selling Point</b>		
Markets	0-.0023	7.40
Bars and Night Clubs	0.0023	
<b>Price</b>		
2.00 NTL	0.0845	23.84
2.40 NTL	0-.1399	
2.68 NTL	0.0555	
<b>CAFFEINE AMOUNT</b>		
Low (150 mg)	0.0543	20.59
Medium (250 mg)	0.0445	
High (320 mg)	-0.0988	
Constant	2.8243	
Total		100.00
Pearson's R= 0,763 Significance = 0,0003		
Kendall's tau= 0.617 Significance= 0.0004		

Table 3: Results of conjoint analysis.

Brand	Packing	Selling Points	Price (TL)	Caffeine Amount	Total Worth	Preference Order
B	Bottle (225 ml)	Bars and Night Clubs	2.00	Low (150 mg)	.3883	1
R	Bottle (250 ml)	Markets	2.40	High (320 mg)	-.4083	The least preference

Table 4: Approximate and total worth values of combinations in conjoint analysis.

in the second line in the chart. According to this, consumers demand the energy drink brand, which is well-known in market and coded as E1<sub>2</sub>, by attaching importance primarily to its packaging and then its low price and low amount of caffeine (Table 4).

## Discussion

This study examined the factors affecting consumer decisions to purchase energy drinks. The results indicated that packaging affected the purchasing decisions of consumers most. The second factor was price and the third was caffeine content. In another study in Turkey, it was found that consumers regarded brand, price and taste as the most significant product qualification, rather than caffeine or carbohydrate levels [23]. In a study conducted in the USA, 67% of consumers stated that they used energy drinks to have a better sleep, 65% of them to be more energetic and 54% of them consumed it with alcohol at parties [24]. The negative effects of energy drinks on users were emphasized in recent studies. In a study of 697 individuals about the consumption of energy drinks with alcohol, it was determined that they were mostly consumed by males, sportsmen, people who are honored by a toast, friend groups and young people. It was determined that energy drinks mixed with alcohol doubles the alcohol consumption. Also, the consequences of consuming energy drinks with alcohol are very

common, such as drunk driving, physical injury or damaging and situations requiring medical treatment [1].

## Conclusion

The issue of energy drinks is of great importance for Turkey due to its geopolitical location, its being an investment base for the firms and employment opportunities as well as the large market it offers due to its young population. The present study determined that energy drinks were generally preferred by young people aged between 18 and 24 and this group generally preferred pop music.

It was found that packaging was the most efficient factor affecting consumers purchasing behavior and preferences. The optimum product compound, providing the highest total worth to the consumer, was again provided by packaging and price factors, as the consumer associated the size of the package with its price.

## References

- O'Brien MC, McCoy TP, Rhodes SD, Wagoner A (2008) Caffeinated Cocktail: Energy Drink Consumption, High-risk Drinking, and Alcohol-related Consequences among College Students. *Acad Emerg Med* 15: 1-8.
- Jones C (2004) Energy Drink Growth Slows, But Continues.
- Özçelik B, Yüksel Ö, Karaali A (2005) Enerji İçecekleri, Dünya Gıda Dergisi. Şubat Sayısı S 77-88.
- Anonymous (2004c) Sports and Energy Drink Market. *Euromonitor international*.
- Koç B, Gül A, Işık H, Akpınar MG (2008) Energy Drink Markets In The World And Turkey. The Third Business and Economy International Workshop, Giresun-Turkey 26-27.
- Tüzün H (2004) Yaza "enerjik" Girilecek. *Tarihli Radikal Gazetesi/Haber*.
- Anonymous (2002) Tarım ve Köyişleri Bakanının enerji içecekleri ile ilgili basın açıklaması. ([www.tarim.gov.tr](http://www.tarim.gov.tr)).
- Anonymous (2007) Türk Gıda Kodeksi Enerji İçecekleri Tebliği (Tebliğ No: 2006/47) (4.10.2006 t. 26309 s. Resmî Gazete).
- Collins M (1986) Sampling (Editör: R. Worcester ve ark., 1986) *Consumer Market Research Handbook*. Elsevier Science Publishing Company Inc.
- Laajami A, Briz JE (1992) Analisis del consume de la carne de ovino en Espana. *Revista de Estudios Agro-Sociales*, Ministerio De Agricultura, Pesca Y Alimentacion, Espana.
- Şengül S, Emekşiz F, Yurdakul O (1998) *DIE Research Papers Sempozyumu'98*, 23-25 November, Ankara. (Turkish).
- Misra S, Huang C, Ott S (1991) Consumer willingness to pay for pesticide-free fresh produce. *West J Agric Econ* 16: 218-227.
- Alvensleben R, Schrader S (1999) Consumer attitudes towards regional food products: a case study for Northern Germany. *AIR-CAT Meeting Reports: Consumer Attitudes towards Typical Foods*. The European Food Consumer, As, Norway 5: 10-19.
- Govindasamy R, Italia J (1999) Predicting willingness to pay a Premium for organically grown fresh produce. *J Food Dist Res* 30: 44-53.
- Jolly D (1999) Home made" the paradigms and paradoxes of changing consumer preferences: Implications for Direct Marketing. *Agricultural Outlook Forum*, Arlington Virginia, USA.
- Grannis J, Hooker N, Thilmany D (2000) Consumer preferences for specific attributes in natural beef products. *Western Agricultural Economics Association, Annual Meeting*, Vancouver, British Columbia 13.
- Cowan C, Riordan N, McCarty M (2000) Irish consumers' willingness to pay for safe beef. *The National Food Centre*, Dublin, Ireland.
- Grannis J, Hine S, Thilmany D (2001) Marketing premium food products in emerging economies: the case of Macedonian cheese. *Western Agricultural Economics Association 1999 Annual Meeting*, Fargo, ND.
- Joel WH (2002) Conjoint Analysis in Pharmaceutical Research. *Journal of Managed Care Pharmacy* 8: 206-208.

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20. Loureiro M, Umberger W (2003) Estimating consumer willingness to pay for country of origin labeling. *J Agric Resource Econ* 28: 287-301.
21. Villalobos P (2005) Bienestar animal como atributo de diferenciación en la decisión de compra de los consumidores. In: Gonzalez, G. et al. (Ed). *Actas del Seminario La institucionalidad del bienestar animal, un requisito para su desarrollo normativo, científico y productivo*, Santiago, Chile. Nov. 11-12. Servicio Agrícola y Ganadero, Santiago, Chile 139-147.
22. Akpınar MG, Dagistan E, Mazlum Y, Gül M (2009) Determining Household Preferences for Fish Consumption with Conjoint Analysis in Turkey. *Journal of Animal and Veterinary Advances* 8: 2215-2222.
23. Dolekoglu OC, Kara A, Erel G, Dehields OW (2010) A Conjoint analysis of Turkish consumer preferences for energy drinks. *The Journal of İktisat İşletme ve Finans (İİF)* 25: 89-108.
24. Malinauskas BM, Aeby VG, Overton RF, Aeby TC, Heidal KB (2007) A Survey of Energy Drink Consumption Patterns Among College Students. *Nutrition Journal* 6: 35.