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

Beşir KOÇ*, Aykut GÜL1, M. Göksel AKPINAR1 and Hilal Yılmaz1

1Bingöl University, Faculty of Economics and Administrative Sciences, Department of Economics, Bingöl/Turkey
2Cukurova University, Faculty of Agricultural, Department of Agricultural Economics, Adana/Turkey
3Amed University, Faculty of Agricultural, Department of Agricultural Economics, Antalya/Turkey
4Cukurova Agricultural Research Institute, Adana/Turkey

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 begging 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

*Corresponding author: Beşir KOÇ, Bingöl University, Faculty of Economics and Administrative Sciences, Department of Economics, Bingöl/Turkey, Tel: 90 426 216 0012; E-mail: dr_besirkoc@yahoo.com

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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 Communiciqué 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].

\[ n = t^2 \left[ 1 + (0.02) \left( \frac{b}{1-b} \right) \right] \frac{p \cdot q}{e^2} \]

When \( b = 1 \), the equation takes the following form:

\[ n = \left( \frac{t^2}{e^2} \right) \cdot p \cdot q \]

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 \( e = \sqrt{\frac{p \cdot q}{2}} [10,11] \) 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].

\[ \text{Total worth} = w \left( \text{price worth} + \text{quality worth} \right) \]

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]:

\[ \text{Pref}_i = a_i + b_j + c_k + d_l \]

Where;

\[ \text{Pref}_i = \text{Consumer’s preference or total worth} \]

\[ a_i = \text{Part- worth of product feature-A at i level} \]

\[ b_j = \text{Part- worth of product feature-B at j level} \]

\[ c_k = \text{Part- worth of product feature-C at k level} \]

\[ d_l = \text{Part- worth of product feature-D at l level} \]

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

<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>1. R</td>
<td>1. UHT Bottle (250 ml)</td>
<td>1. Markets</td>
<td>1. 2.68 TL (High)</td>
<td>1. 300- 350 mg (High)</td>
</tr>
<tr>
<td>2. B</td>
<td>2. UHT Bottle (225 ml)</td>
<td>2. Bars and Night Clubs</td>
<td>2. 2.40 TL (Medium)</td>
<td>2. 250 mg (Medium)</td>
</tr>
<tr>
<td></td>
<td>3. UHT Bottle (200 ml)</td>
<td></td>
<td>3. 2.00 TL (Low)</td>
<td>3. 150 mg (Low)</td>
</tr>
<tr>
<td></td>
<td>4. Can (250 ml)</td>
<td></td>
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</tbody>
</table>

Table 1: Factors and factor levels subjected to conjoint analysis.
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 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 0.3883. The product preferred by consumers the least is presented (Table 3).

Consumers primarily preferred bars and nightclubs as selling points for the product. The least preferred option was Eİ 1, with a part- worth score of -0.0702. Consumers mainly preferred Eİ2 among energy drink brands. The combination with the highest total worth value can be defined as the optimum product pattern providing the maximum benefit to consumers. In other words, the product preferred by consumers the least is presented (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, the product preferred by consumers the least is presented (Table 3).
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 EI2, 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 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**


**Table 3:** Results of conjoint analysis.

<table>
<thead>
<tr>
<th>Factor</th>
<th>Part worth level</th>
<th>Significance</th>
<th>Significance levels (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>R</td>
<td>-0.0702</td>
<td></td>
<td>16.39</td>
</tr>
<tr>
<td>B</td>
<td>0.0702</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Selling Point</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Markets</td>
<td>0.0023</td>
<td></td>
<td>7.40</td>
</tr>
<tr>
<td>Bars and Night Clubs</td>
<td>0.0023</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.00 NTL</td>
<td>0.0845</td>
<td></td>
<td>23.84</td>
</tr>
<tr>
<td>2.40 NTL</td>
<td>-0.1399</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2.68 NTL</td>
<td>0.0555</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CAFFEINE AMOUNT</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Low (150 mg)</td>
<td>0.0543</td>
<td></td>
<td>20.59</td>
</tr>
<tr>
<td>Medium (250 mg)</td>
<td>0.0445</td>
<td></td>
<td></td>
</tr>
<tr>
<td>High (320 mg)</td>
<td>-0.0988</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Constant</td>
<td>2.8243</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>100.00</td>
<td></td>
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</table>

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

<table>
<thead>
<tr>
<th>Brand</th>
<th>Selling Points</th>
<th>Price (TL)</th>
<th>Caffeine Amount</th>
<th>Total Worth</th>
<th>Preference Order</th>
</tr>
</thead>
</table>
| B     | Bottle (225 ml) | Bars and Night Clubs | Low (150 mg) | .3883 | 1  
| R     | Bottle (250 ml) | Markets | High (320 mg) | - .4083 | The least preference |


