

## An assessment of consumer preferences on the drinking water market: today to the future

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### ABSTRACT

In the 21st century, water has become a priority issue as a vital commodity which has no substitute and has growing economic and strategic value. It is predicted that a significant part of the world population will be faced with drinking water problems in the coming years. This study was focused on the determination of consumer preference trends for drinking water. In the scope of the study, the primary data used were obtained from 965 households in Turkey. According to the study, 28.6% of households surveyed used only bottled water for drinking. Consumers' quality perception of tap water played a decisive role in the trend of bottled water consumption. Also, health anxiety and ease of consumption were important. On the other hand, it was seen that general consumption habits and lack of income were among the reasons for not consuming bottled water.

**Key words** | bottled water, consumer market, consumption tendency, tap water, Turkey

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### INTRODUCTION

Water is vital for life. A reliable and adequate water supply has become a pressing issue for 1.4 billion people (20% of the world population) in the world. According to some estimates, more than 3 billion people will be faced with water scarcity starting from 2025 onwards (WWF 2008a). Water consumption is different for each country. While the amount of water used for personal needs is increasing in many countries, it is stagnating or tending to decrease in North America. A similar situation is occurring in Western European countries and it is considered to be an important agenda item for Turkey too.

Total global water consumption is around 800 m<sup>3</sup> per capita per year for drinking and personal needs. According to the World Food and Agriculture Organization, the rates of global population living in water scarcity and in water stress will rise to 34% and 15%, respectively, in 2025 from 29% and 12%, respectively, in 1995. In addition, it is projected that the number of water-stressed countries will increase to 54 and the population expected to live in these conditions will reach 3.8 billion in 2050. This means that 40% of the global population (which is expected to be 9.4 billion in 2050) will experience water deficiency (WWF 2008a).

Globally, the agricultural sector takes up 70% of the total water used on Earth, with 20% for industry, and 10% for usage and drinking. These rates can be broken down as follows: 39% goes for irrigation, 46% for industry, 15% for drinking and usage in developed countries; 52% for irrigation, 38% for industry, 10% for drinking and usage in developing countries, and 86% for irrigation, 7% for industry and 7% for drinking and usage in less developed countries. In European countries, the rates are 33% for irrigation, 51% for industry, 16% for drinking and usage. And in Turkey, it is 72% for irrigation, 10% for industry and 18% for drinking and usage (WWF 2008a).

The healthy urban water consumption standard of a modern person is considered to be 150 liters per capita per day for the necessities including drinking, cooking, bathing and washing. Actual water consumption amounts are 266 liters per capita per day in industrialized countries, 67 liters in Africa, 143 liters in Asia, 158 liters in Arab countries and 184 liters in Latin America. In Turkey, the average per capita daily water consumption is 114 liters and domestic water consumption is expected to increase 260% by 2030 (WWF 2008b).

Current water use reflects lifestyle desires beyond just the basics (Sipos & Tóth 2007). In the rising global bottled water market, a rapid increase is observed in sales. In the period 1997–2004, per capita consumption of bottled water has increased by 60% in North America and Europe, and more than doubled in South America and Asia. Many people consume only bottled water because of quality problems with the tap water. Bottled water market sales were 91 billion dollars in 2007 and the growth rate of this market reached 5–10% in the last 10 years. The major markets are Asia (China and Japan), Europe and North America with South America, Spain and Turkey considered to show growth above the world average in this sector (Wild *et al.* 2007).

The bottled water sector is a large part of the non-alcoholic beverage market in Turkey. Bottled water products constitute the largest group at around 70%. 80% of this consumption is in the container water segment and the remainder is in the individual bottled water segment. The 19-liter container water products have the largest share of the consumption. The container water market has exceeded 5 billion liters and the individual bottled water consumption has exceeded 1 billion liters in Turkey (Aybakan *et al.* 2006). Individual bottled and container water consumption is mostly taking place in the Mediterranean, Aegean, Central Anatolia and Akdeniz regions. In Turkey, there are approximately 140 licensed container water firms (RKB 2008).

## REVIEW OF THE LITERATURE

The following studies were evaluated in the course of our investigations.

Jain (1994) focused on the market positions of the drinking water brands, the expected market developments of the brands, the socio-demographical characteristics of the consumers, the geographical distribution and the advertisement and packaging strategies of the USA's bottled water market.

The water source preferences of households in the Philippines were investigated by Persson (2002). In this study, 769 households living in Cebu were interviewed and the effect of price, taste and household size on their

preference possibilities was noted. The time cost, considered to be the most important determinant, was determined by discrete choice model. The micro-economic decisions that affect the consumers for bottled spring water have been evaluated in the Hungarian water market by Sipos & Tóth (2007).

The reasons towards bottled water consumption (even if it is more difficult and expensive) were discussed by Doria (2006) and it was explained that the bottled water sector was developing against itself even in countries with the highest bottled water quality. The research highlights two points: health risks and dissatisfaction, especially on taste. According to this study, the socio-demographic characteristics and the differences on quality perceptions play a role in this choice.

The study by Huerta-Saenz *et al.* (2012) is an examination of the drinking water preferences of children and adolescents in urban areas, the population's drinking water preferences, quality perceptions and the knowledge level on water contents. As per the 208 surveys, 17% were tap water only consumers, 38% were bottled water only consumers and 42% preferred both. Moreover, taste, clarity, purity and reliability were noted as more significant in bottled water preferences in this investigation.

In a study of French consumers' reasons for bottled water consumption, the factors affecting and adversity to tap water consumption of 4,758 French consumers were estimated by probit model (Bontems & Nuages 2006).

For the determination of perceptions and tap water consumption habits, a methodology based on taste perception classification was performed by Teillet *et al.* (2010). For this, six different types of bottled water and six different types of tap water were presented to 389 consumers. The sensory map was found to relate with the mineralization level. Tap water was perceived to be indifferent to bottled water without a chlorination process by consumers. According to the study, the most preferred were the waters which had been subjected to mineralization at a medium level and they were perceived as unpleasant and cold.

The final study we considered related public opinion, water quality problems and possible solution proposals in the case of Turkey (800 surveys were applied), where more than 50% of people did not use tap water for drinking and they did not trust its salubrity (Celik 2005).

## METHODOLOGY

The methodologies employed in this study include the collection of data from households by face to face interviews, international literature, and some secondary sources were used. The basic material is the consumer data from 2009. Also the population data were obtained from the Turkish Statistical Institute (Tuik 2009).

Different sample sizes can be used by assuming specific confidence limits and specific population variance for different population sizes in some marketing research. When the population is divided into groups (in this study: bottled water and non-bottled water consumers), the alternative sample sizes are described as 321 for more than 100,000 populated locations; as 322 for more than 500,000 populated locations with 95% confidence limit and 0.21 ( $0.3 \times 0.7$ ) variance (Kurtulus 1998). The study sampling consisted of the households residing in Antalya, Adana and Hatay as a sample of the Mediterranean region. The survey number was stated as a total of

965 by assuming a margin of error of  $\pm 0.05$  and a bottled water consumption rate of the households as 70%. Accordingly, the standard deviation remained below 0.05. Therefore, it was stated that the confidence interval is 95% and the standard deviation of the sample size is 5% for this study. The data were analyzed using the SPSS 13.0 software program.

## RESULTS

### Profile of the sample

The socio-demographic characteristics of the households are shown in Table 1. It can be seen that the 46.7% of the respondents were male, 53.3% of them were female. Also, 17.2% of the respondents were in the 18–24 age group, and 8.9% of them were 55 years old or over. When the education levels were analyzed, it was seen that there was a high rate of both university graduates (34.85%) and high school graduates

**Table 1** | The socio-demographic characteristics of the population

Variables	Frequency	%	Variables	Frequency	%
<b>Gender</b>			<b>Mother's Employment Status</b>		
Female	514	53.3	Working mothers	358	37.1
Male	451	46.7	Non-working mothers	607	62.9
<b>TOTAL</b>	<b>965</b>	<b>100.0</b>	<b>TOTAL</b>	<b>965</b>	<b>100.0</b>
<b>Age Groups</b>			<b>Household Size</b>		
18–24	166	17.2	1	60	6.2
25–34	315	32.6	2	177	18.3
35–44	238	24.7	3	254	26.3
45–54	160	16.6	4	265	27.5
55 +	86	8.9	5 and over	209	21.7
<b>TOTAL</b>	<b>965</b>	<b>100.0</b>	<b>TOTAL</b>	<b>965</b>	<b>100.0</b>
<b>Educational Level</b>			<b>Household Income (Euro<sup>a</sup>/month)</b>		
Literates	19	2.0	≤323 €	207	21.4
Primary school	136	14.1	324–646€	331	34.3
Secondary school	83	8.6	647–969€	180	18.7
High school	318	32.9	970–1291€	137	14.2
University	336	34.8	1292€	110	11.4
Master-PhD	73	7.6	<b>TOTAL</b>	<b>965</b>	<b>100.0</b>
<b>TOTAL</b>	<b>965</b>	<b>100.0</b>			

<sup>a</sup>Ratio of exchange (1st May 2012) 1€ = 2.32 Turkish Liras.

(32.9%). The rate of married consumers was 67.5% and single consumers was 28.4%. The majority was seen in four people households. The rate of households with infants was 17.1%, and those with working mothers was 37.1%. In terms of economic status, it was observed that 21.4% of respondents were in the lowest income level ( $\leq 323$  € per month), 11.4% were in highest (1,292 € +) level (Table 1).

### Consumer preferences for drinking water

According to the results, 71.4% of the households consume tap water. The regular consumption rate is 55.7% for container water and 60.2% for individual bottled water. Here, it can be seen that 28.6% consume only bottled water (Figure 1).

Furthermore, the reasons for bottled water consumption orientation were observed in this study. According to Table 2, the reasons to consume bottled water are as follows: finding these products to be of acceptable quality (3.78), finding them more delicious (3.73), finding them more healthy (3.68), avoiding the lead and chlorine which is found in tap water (3.64), finding them more pure (3.62), the source of water (3.58), easy accessibility (3.43), easy transportation and storage (3.43). Water quality includes many factors including the risks from the water source; for example, it is important to know the risk of the water carrying infectious diseases, the quality of the bottles or cans used in packaging, and the chemical content which can also affect the quality of the drinking water.

Along with these assessments, the reasons for non-consumption of bottled water are also mentioned. These reasons are tap water consumption habits (49.9%), lack of income (29.2%), finding tap water of acceptable quality (20.9%) and finding tap water safe for health (16.3%) (Figure 2).

One of the factors affecting consumers' drinking water preferences was news relating to unhealthy tap water. According to findings, 10% of households have given up consuming tap water, and 26.8% of them have reduced

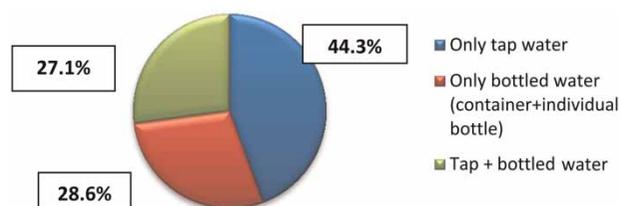


Figure 1 | Consumption levels of tap water and bottled water ( $n = 965$ ).

Table 2 | The reasons for bottled water consumption orientation ( $n = 965$ )

	Mean <sup>a</sup>	Standard Deviation
Finding them more healthy	3.68	1.179
The source of water	3.58	1.155
Finding them more pure	3.62	1.134
Finding them more delicious	3.73	1.139
Avoiding the lead and chlorine which is found in tap water	3.64	1.206
Finding them to be of acceptable quality	3.78	1.121
Easy accessibility	3.43	1.240
Easy transportation and storage	3.43	1.226
Having label and content information	3.33	1.240
Appropriateness of the price	2.88	1.295
Advice	2.59	1.332
Due to the health problems	2.95	1.477
Consumption habits	3.09	1.353

<sup>a</sup>Likert scale – 1: not effective; 2: slightly effective; 3: moderately effective; 4: highly effective; 5: very effective.

their consumption of tap water after this news. However, a significant majority of 63.2% were observed to continue to consume at the same rate. When relating news of unhealthy tap water to a move to bottled water consumption, and it was seen that 54.2% of households increased their container water consumption and 39.1% increased their individual bottled water consumption (Figure 3).

The study also investigated the level of effectiveness of promotion tools to consumer preferences on drinking water. According to the general findings, the effects of price reductions and TV advertisements to the consumption preferences was obvious (Table 3).

Drinking water consumption propensity was determined as a comparison of tap water and bottled water. According to this, three in every 10 households said that they would give up consuming tap water, five were seen as able to consume it and two were ambivalent. On the other hand, two in every 10 households said that they would not consume container water, five were seen able to consume it and three were ambivalent. Moreover, for individual bottled water, only one in every 10 households would give up consuming, seven have had a propensity for continuing the consumption and again two were ambivalent (Figure 4).

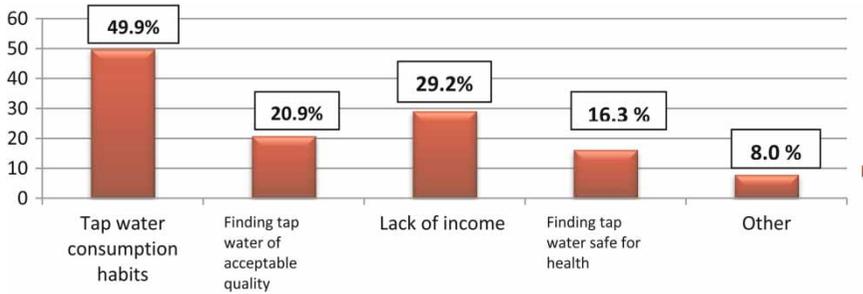


Figure 2 | The reasons for non-consumption of bottled water (n = 965) (population gave more than one answer).

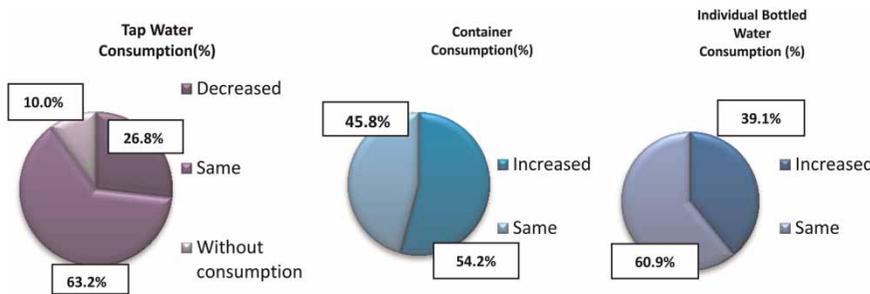


Figure 3 | Reflection relating news of unhealthy tap water to drinking water consumption (n = 965).

Table 3 | The level of effectiveness of the promotion tools to consumer preferences on drinking water (%) (n = 965)

	Low	Moderate	High
TV advertisements	26.8	49.2	24.0
Newspaper advertisements	35.8	49.4	14.8
Magazine advertisements	43.5	45.8	10.7
Radio advertisements	43.4	45.0	11.6
Leaflets	34.0	49.5	16.5
Promotional sales	32.8	45.8	21.5
Price reductions	26.8	43.8	29.4

In addition, drinking water consumption propensity is associated with some socio-demographic indicators (Table 4). According to the results, the drinking water consumption propensity levels are seen to be higher in the following masses: females, youths and the elderly, highly educated population, high income groups, nuclear families and working-mother households. This situation can associate the population’s socio-demographic structural changes to the consumption in the countries which are in the process of economic growth and development. The obtained data support the development potential of the bottled water market.

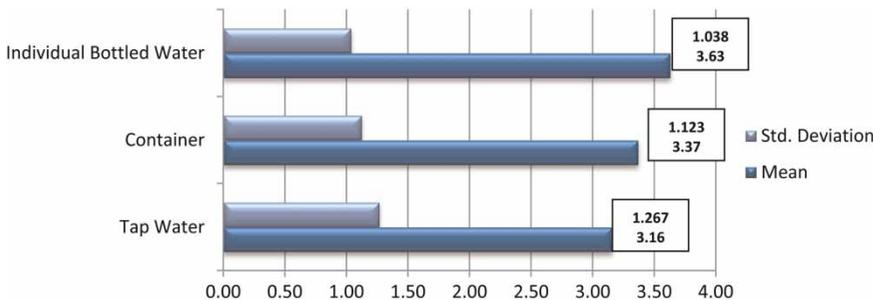


Figure 4 | Future consumption propensities for drinking water (n = 965).

**Table 4** | Drinking water consumption propensity with some socio-demographic indicators

Variables	Tap Water		Container Water		Individual Bottled Water	
	Mean	Std. D.	Mean	Std. D.	Mean	Std. D.
<b>Gender</b>						
Female	3.16	1.281	3.41	1.083	3.73	0.986
Male	3.19	1.247	3.33	1.170	3.59	1.087
<b>Age Groups</b>						
18–24	2.99	1.256	3.43	1.079	3.79	1.030
25–34	3.16	1.219	3.48	1.083	3.67	0.997
35–44	3.19	1.275	3.39	1.085	3.65	0.989
45–54	3.34	1.329	3.09	1.262	3.34	1.180
55 +	3.22	1.302	3.41	1.109	3.71	0.963
<b>Educational Level</b>						
Literates	3.60	1.183	2.75	1.356	3.00	1.206
Primary school	3.43	1.383	3.08	1.154	3.40	1.146
Secondary school	3.48	1.168	2.97	1.201	3.44	1.167
High school	3.29	1.191	3.19	1.108	3.56	0.974
University	3.02	1.268	3.61	1.039	3.81	0.975
Master-PhD	2.46	1.214	3.99	0.911	3.81	1.088
<b>Mother's Employment Status</b>						
Working mothers	3.01	1.284	3.64	0.959	3.85	0.907
Non-working mothers	3.27	1.249	3.21	1.186	3.50	1.091
<b>Household Size</b>						
1	2.69	1.274	3.53	1.158	3.59	1.206
2	3.05	1.300	3.39	1.191	3.57	1.116
3	3.18	1.219	3.41	1.104	3.69	0.992
4	3.19	1.270	3.44	1.104	3.77	0.965
5 and over	3.37	1.244	3.22	1.070	3.49	1.040
<b>Household Income (Euro<sup>a</sup>/month)</b>						
≤323 €	3.44	1.210	2.85	1.207	3.28	1.154
324–646€	3.28	1.251	3.27	1.112	3.51	1.035
647–969€	3.12	1.309	3.49	1.052	3.80	0.956
970–1291€	2.97	1.279	3.67	1.021	3.88	0.950
1292€	2.81	1.272	3.86	0.887	3.98	0.811

<sup>a</sup>Ratio of exchange (1st May 2012) 1€ = 2.32 Turkish Liras.

## CONCLUSION

In this study, the drinking water preferences and consumption trends are reflected for Turkey as a regional sample in terms of

urban life by cross-sectional study. The orientation towards bottled water consumption, which has begun to displace tap water with healthy consumption trends, has also been observed. The findings, which will concern both producers and retailers, are that consumers find these products to be of a higher quality than tap water, and find them more healthy and delicious. Of course, income level has an impact on this orientation. In addition, it is known that news about unhealthy tap water is very effective in consumer perception. In such a case, the community is affected by public disclosures and as such they should be correctly informed.

According to the results of the study, the reasons for non-consumption of bottled water depends on tap water consumption habits, finding the tap water quality to be good and a lack of income. This situation creates the idea that households are consuming drinking water excessively. Also, it is known that there are some healthy water sources and that filtration applications exist. At this point, the need for clear and accurate information is obvious. Moreover, the review of pricing can be a good way of keeping households from dangerous excessive drinking water consumption.

Another thing to be considered is the effect of the promotional tools on bottled water consumption. The answers of the consumers show that discounts, TV advertisements, promotional sales and sales brochures are the most effective tools for this trend. Developing this kind of organization might be useful and can increase customer satisfaction.

When we look at the ever-changing consumption patterns, the future trends can be evaluated as well as current consumption patterns. Three out of 10 respondents are in a decreasing tap water consumption trend. In the trend of consumption continuation, individual bottled and container water are coming to the fore. These results indicate that the bottled water sector will continue to grow, but the need to provide efficient healthy water sources must be emphasised here again.

As a result, the ownership of drinkable and usable water sources, which is of increasing strategic importance, is on the agenda for each country. In this process, the public awareness improvement studies on consumption and use of the water in scarcity can be assessed as a common problem of whole countries. Moreover, it can be said that tap water quality and health reliability perception play a decisive role for the development of the bottled water market.

More investment is necessary to improve tap water quality, but bottled water use will always be significant in developing countries.

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