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Consumer attitudes, perceptions and motivations on innovative non-alcoholic drinks in Italy and Turkey

Ph.D. Thesis of: Advisor:

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Abstract

The main aim of the thesis was to help designing a marketing strategy to position an innovative drink – organic sparkling grape juice – in Italy and Turkey by focusing on packaging designs and branding. To achieve this goal, the thesis is constructed upon four independent but interrelated studies: (i) a general overview of the beverages sector in Turkey, (ii) the role of morphology in the bottle perception of the consumer; (iii) appropriate brand name, bottle and label shapes for Italian and Turkish markets; (iv) impact of packaging features on visual behaviour of consumers and their emotional responses to product tasting.

The first study suggests that occasional alcoholic drinks consumption, increasing awareness about healthy drinks as the main concerns of consumers and high taxes and restrictions with laws on the sale of alcoholic products as current sector issues, innovative non-alcoholic drinks might have a chance in the Turkish market.

Overall results of the following three packaging studies suggest that the different parts that make up the bottle morphology are not equally relevant, and in the labelling and packaging of a drink, much more attention should be given to the shoulder which represents the middle part. Round shaped bottle and label are more adapted for organic sparkling grape juice according to both Italian and Turkish consumers. However, different approaches of two populations towards brand names should be considered while entering into these markets. The bottle shape has a strong impact on capturing the attention of the consumer but its interaction with label shape and the product name is more significant. With reference to emotional expressions of the consumers, product disliking has more impact than liking. Considering these results of packaging studies, optimisation of the packaging features might allow to better capture the attention of the consumer as it is the overall first impression that a consumer has about a drink exposed on a shelf.

Riassunto

L'obiettivo principale della tesi è stato quello di ideare una strategia di marketing per il posizionamento di una bevanda innovativa - succo d'uva frizzante biologico - in Italia ed in Turchia, basata sullo studio del packaging e del nome del brand. Per raggiungere questo obiettivo, la tesi è stata sviluppata in quattro studi indipendenti ma correlati tra di loro: (i) una panoramica generale del settore delle bevande in Turchia, (ii) il ruolo della morfologia della bottiglia nella percezione del consumatore; (ii) lo studio di marche, forme di bottiglia e di etichette appropriate per i mercati italiani e turchi; (iv) l'impatto di specifici imballaggi sul comportamento visivo dei consumatori e delle loro risposte emotive all'assaggio del prodotto.

Il primo studio suggerisce che, il consumo occasionale di bevande alcoliche, il crescente interesse nei confronti di bevande sane sono le principali preoccupazioni dei consumatori, mentre le elevate imposte, le restrizioni e le leggi sulla vendita di prodotti alcolici rappresentano le problematiche attuali del settore, di conseguenza nuove bevande analcoliche potrebbero avere una possibilità nel mercato turco .

I risultati complessivi delle seguenti tre studi sul packaging suggeriscono che le varie parti che compongono la morfologia di bottiglia non sono ugualmente rilevanti, e sia nella etichettatura e che nell'imballo di una bevanda, molta più attenzione dovrebbe essere data alla spalla della bottiglia che che rappresenta la parte centrale. Forme rotonde per bottiglia ed etichetta sono le più adatte per il succo d'uva spumantizzato biologico secondo sia per i consumatori italiani che per quelli turchi però diversi approcci di due popolazioni verso i nomi di marca deve essere considerata durante l'inserimento in questi mercati. La forma della bottiglia ha un forte impatto nel catturare l'attenzione del consumatore, ma la sua interazione con la forma della etichetta e il nome del prodotto è ancora più significativo. Per quanto riguarda l'analisi delle espressioni emotive dei partecipanti, si rileva un impatto maggiore verso le caratteristiche sgradite del prodotto piuttosto che per quelle gradite. Considerando questi risultati dei studi sul

packaging, l'ottimizzazione delle caratteristiche di confezionamento di un prodotto potrebbe consentire di catturare meglio l'attenzione del consumatore dato che questa rappresenta la prima impressione per qualunque consumatore del prodotto esposto su uno scaffale.

Contents

1   Introduction

1.1   Motivations

The main objective of marketing is to match products with people by guiding the design and presentation of products (Ariely & Berns, 2010). In order to achieve this objective, consumer decision-making and how consumers assess various product alternatives are the main questions of the marketing researches (Solnais, Andreu-Perez, Sanchez-Fernandez, & Andreu-Abela, 2013). Product-innovation is distinguished as one of the major issues. Since the consumers become "better educated, more demanding, less predictable in terms of purchase behaviour and more conscious about health aspects" than in the past, the main challenge for the food industry is to adapt to an evolving consumer profile (Linnemann, Meerdink, Meulenberg, & Jongen, 1998). In addition, increasing intensity of international competition stemmed from globalization has been forcing companies to develop different approaches in order to market their products successfully on a world-wide basis (Calabrese, Capece & Costa, 2015). The ability of offering consumers new products with special attributes gives competitive advantages in the global food market (Russo, Cardillo, & Perito, 2003). World Innovation Panorama analyses the prominent trends in food innovation worldwide and summarizes five main concepts of innovation based on overall consumer expectations. These concepts are pleasure, health, physical aspects, convenience, and ethics. Pleasure includes trends of sophistication, a variety of senses, fun, and exoticism. Health concept is related to if food is natural, vegetal or medical. Slimness, cosmetics, and energy well-being trends are classified under physical aspects while trends of easiness to handle, time-saving and nomadism are evaluated as the parts of convenience concept. Lastly, solidarity and ecology trends are given under ethics.

"Organic sparkling grape juice" has been chosen as a subject of this research considering these trends of innovation. First, this drink is non-alcoholic where alcoholic beverages and their impacts on health is gaining importance academically, as well as socially, year by

year. In 2007, the International Agency for Research on Cancer concluded that there is sufficient evidence on the contribution of alcohol consumption to cancer (Baraan et al., 2007). Many other national and international organizations have reported harms of alcohol consumption (e.g. World Health Organization, 2014). Therefore, innovative non-alcoholic drinks may attain more importance for the consumers seeking healthy alternative products. Second, organic production is connected to various innovation concepts since health, ecology, fairness and care constitute basic principles of organic farming (International Federation of Organic Agriculture Movements, 2016). In addition, consumption of organic products is still relatively new for many consumers and these products can be considered still an innovation in the food industry as well (Marchese, Masotti, Sidali, & Dörr, 2014; Vanhonacker et al., 2013).

In the competitive area, not only creating innovative products according to consumer expectations but also how to convey this product with them bears a great importance. Hence, packaging has a crucial role in capturing consumers' attention and delivering the product's content (Wang & Chou, 2010) since it is a direct communication tool to the consumers and works as a very critical factor in their decision-making process (Estiri, Hasangholipour, Yazdani, Nejad, & Rayeh, 2010). Today more than 75% of consumers make purchase decision in-store (POPAI, 2016). Clement, (2007) stated that "people simply choose with their eyes". In this context, understanding how and to what extent the packaging elements are influencing consumers' decision is essential for successful packaging designs. Thus, competitive advantage is provided to the product compared to the other products by physical form or design of the packaging (Bloch, 1995).

Taking into consideration importance of product innovation and role of packaging in consumer decision process at the point of purchase, the overall aim of the present PhD research has been determined as "to help designing a marketing strategy to position an innovative non-alcoholic drink – organic sparkling grape juice – in Italy and Turkey by focusing on packaging design and branding".

Italy and Turkey are chosen as areas of research because "organic sparkling grape juice" is a quite innovation for both countries in terms of both production and consumption. Grape is mostly used for wine production in Italy, whereas the vast majority of Turkish production is for table grape and raisins. "Organic sparkling grape juice" can be an alternative product particularly for the companies which are seeking innovation to diversify production and added value to grapes which are used for table wine. Obtained insights from this thesis may contribute to generating ideas for innovative products and for packaging researches of the companies.

1.2 Structure of the thesis

The introductive part of the thesis gives the motivations behind the research subject and makes a contextual explanation.

The body of the thesis includes four independent, but interrelated articles based on researches realized during the period of Ph.D.

The first article includes the results of a qualitative survey which has been held in Turkey in order to find out and demonstrate the general view of Turkish beverage sector in terms of production and consumption.

Following three articles were written on consumer researches which are conducted in order to find out the possible packaging styles for "non-alcoholic organic grape juice".

The final chapter contains conclusive remarks on findings obtained by the conducted researches.

References

Calabrese, A, Capece, G., & Costa, R. (2015). Global Market and Commercials: Understanding Cultural Diversities. *Knowledge and Process Management*, *22*(3), 167–179. http://doi.org/10.1002/kpm

Ariely, D., & Berns, G. S. (2010). Neuromarketing: the hope and hype of neuroimaging in business. *Nature Reviews. Neuroscience*, *11*(4), 284–92. http://doi.org/10.1038/nrn2795

Bloch, P. H. (1995). Seeking the Ideal Form: Product Design and Consumer Response. *Journal of Marketing*, *59*(3), 16. http://doi.org/10.2307/1252116

Clement, J. (2007). Visual influence on in-store buying decisions: an eye-track experiment on the visual influence of packaging design. *Journal of Marketing Management*, *23*(9-10), 917–928. http://doi.org/10.1362/026725707X250395

Estiri, M., Hasangholipour, T., Yazdani, H., Nejad, H. J., Rayeh, H. (2010). Food products consumer behaviors: The role of packaging elements. Journal of Applied Sciences 10(7).

Linnemann, A. R., Meerdink, G., Meulenberg, M. T. G., & Jongen, W. M. F. (1998). Consumer-oriented technology development. *Trends in Food Science and Technology*, *9*(11-12), 409–414. http://doi.org/10.1016/S0924-2244(99)00006-0

Marchese, A., Masotti, M., Sidali, K. L., & Dörr, A. C. (2014). the Consumer Behaviour and New Brand Management Policies of Organic Food in Italy: the Case Study of "Vivi Verde Coop." *Ciência E Natura*, *36*(1), 11–17. http://doi.org/10.5902/2179460X11269

Russo, C., Cardillo, C., & Perito, M. A. (2003). Product innovation and imperfect competition in the Italian fruit-drink industry. *International Food and Agribusiness Management Review*, *6*(1),

70–83.

Solnais, C., Andreu-Perez, J., Sanchez-Fernandez, J., & Andreu-Abela, J. (2013). The contribution of neuroscience to consumer research: A conceptual framework and empirical review. *Journal of Economic Psychology*, *36*, 68–81. http://doi.org/10.1016/j.joep.2013.02.011

Vanhonacker, F., Kühne, B., Gellynck, X., Guerrero, L., Hersleth, M., & Verbeke, W. (2013). Innovations in traditional foods: Impact on perceived traditional character and consumer acceptance. *Food Research International*, *54*(2), 1828–1835. http://doi.org/10.1016/j.foodres.2013.10.027

Wang, R. W. Y., & Chou, M. C. (2010). Differentiation in the arched surface of packaging: Its influence on the findability of logo typography displays. *Displays*, *32*(1), 24–34. http://doi.org/10.1016/j.displa.2010.09.006

POPAI (2016). 2012 Shopper Engagement Study, Media Topline Report. http://www.popai.fr/textes/Shopper_Engagement_Study.pdf

World Health Organization, 2014. Global status report on alcohol and health, 2014 Ed. Luxembourg : WHO Press.

International Federation of Organic Agriculture Movements, 2016. http://www.ifoam.bio/en/organic-landmarks/principles-organic-agriculture

2 The Alcoholic and Non-alcoholic Beverages Sectors and Consumption Patterns in Turkey: A Qualitative Survey

2.1 Introduction

The global per capita consumption of beverages was 240 litres in 2008, and this then reached 265 litres in 2013. The main engines of this growth have been non-alcoholic drinks (i.e., water in packs, hot tea and milk and milk-based drinks). The drink most consumed worldwide is hot tea, followed by milk and milk-based drinks, soft drinks, water, beer, coffee and alcoholic drinks (Bever Foods, 2014). With respect to global alcoholic beverages consumption today, 50.1% of the total recorded alcohol is consumed in the form of spirits. The second most consumed beverage type is beer, which accounts for 34.8% of all recorded alcohol consumed across the world (World Health Organisation, 2014).

Turkey has a fast growing population that reached 77.6 million in 2014, of which 24.3% are <14 years old and 67.8% are between 15-64 years old. In the Turkish economy, the food and beverages sector represents 18.9% of the gross national product. The Turkish population is a mixture of different cultures, and therefore it includes both diverse food and beverages consumption preferences and similar habits and patterns of consumption.

The present article had two main objectives: to provide a general overview of the beverages sector in Turkey, from both the supply and demand sides; and to provide a qualitative assessment of the on-going trends and dynamics of the consumption and supply of beverages in Turkey, including a preliminary analysis based on these qualitative findings. On this basis, the rest of the article is organised as follows: section two contains some background information on Turkey and from the literature; section three describes the methods of investigation; section four reports the results; this is followed by a

section for discussion; while the last section indicates the conclusions of the study.

2.2   Background

This section provides a systematic review of previous studies, national food and beverages sector reports, statistical information, and the scientific literature available on the conventional and organic beverages sector in Turkey.

2.2.1   Country Outlook

In the global trade of food and beverages, the European Union, USA, China, Brazil, and India are the top five exporters. In 2014, Turkey was the 8th most important commercial partner in the European Union in terms of food and beverages imports (FoodDrink Europe, 2014-2015).

For organic production, in 2013, Turkey was reported as the 19th country for the organic production area, and in the four most important vegetable growing countries in the world. Within European Union candidate and potential candidate countries, the most of the growth was in Turkey in past years (Willer and Shaack, 2015). Turkish organic food and beverages production is mainly export oriented, and the European market represents the main outlet. However, domestic consumption of organic products has also been increasing in Turkey, whereby product diversification has been increasing together with the available range of products through different marketing channels, such as supermarkets, e-commerce, specialised shops, organic bazaars, and other outlets.
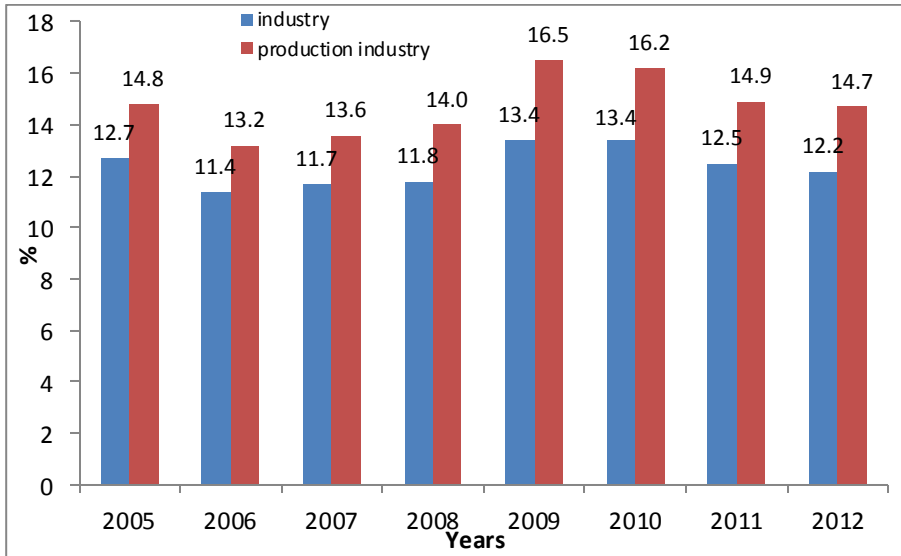
Figure 1. Share of the food and beverage sector within industry and production industry in Turkey from 2005 to 2012 (Data of Turkish Statistical Institute reported in Turkey Food and Beverage Industry Associations Federation, 2014).

Figure 1 illustrates the share of the food and beverages sector for Turkey according to the Turkish Statistical Institute cited in Turkey Food and Beverage Industry Associations Federation, 2014, in terms of the total industrial activities and the production industries, which exclude the energy, mining, and quarrying. In 2012, the food and beverages sector in Turkey was to total 107 billion Turkish liras (TRY; approximately 37 billion euros), which was indicated as 14.7% of the whole production industries in Turkey. For the European Union (EU), the food and beverages sector was valued at 1,244 billion euros, representing 15% of the EU production industries sector (Turkey Food and Beverage Industry Associations Federation, 2014). In Turkey, the beverages industry itself represents only about 5.6% of the whole of the food and beverages sector (i.e., 6.55 billion TRY; 2.10 billion euros), while this sector represents 14% for the EU (Turkey Food and Beverage Industry Associations Federation, 2014; FoodDrink Europe, 2014-2015). Non-alcoholic beverages production in Turkey has the largest share of this industry (4.71 billion TRY; 1.51 billion euros), as

72% of the beverages sector, with the remaining part covered by alcoholic drinks (Turkey Food and Beverage Industry Associations Federation, 2014). Regarding the total value of the wine market in Turkey, the last data available for 2011 which was 228 million TRY (73.2 million euros) and it was just 3.6% of the total food and beverages market (the EU is the world leading wine market, with an export value at approximately 10.9 billion euros, and an import value of 2.9 billion euros) (Turkey Food and Beverage Industry Associations Federation, 2014; Global Agricultural Information Network, 2015). In 2012, 40,719 companies were involved in the food and beverages sector, while only 484 were active in the beverages sector itself. With respect to distribution (%) of the companies in the beverages sector according to sub-sectors in Turkey, in 2012, non-alcoholic drinks producers have the biggest share of 75%. They are followed by wine producers (23%), beer producers (1%) and other distilled alcoholic drinks producers (1%) (Figure 2) (Turkey Food and Beverage Industry Associations Federation, 2014).
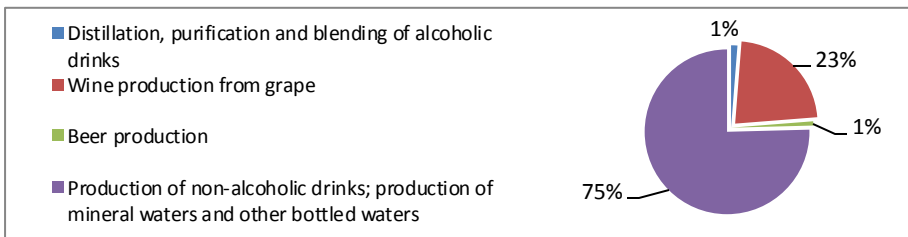
Figure 2. Distribution (%) of the companies in the beverages sector in Turkey according to sub-sectors (Data of Turkish Statistical Institute reported in Turkey Food and Beverage Industry Associations Federation, 2014).

Drinking water and mineral water sources are rich in Turkey (Republic of Turkey Ministry of Economy, 2014). After water, soft drinks constituted approximately 25% of the total beverages sector in Turkey in 2013, which mainly included sparkling drinks, milk-based products and fruit juice (Erol, 2014). With respect to hot drinks, Turkey ranked 6th in terms of global tea production quantity (FAOSTAT, 2013) and its share in Turkish beverage sector has been valued as 40% in 2013 (Erol, 2014).

The main alcoholic beverages produced in Turkey are beer, *raki*[1], wine, and vodka. According to global status report on alcohol and health issued by World Health Organization in 2014, beer was the main alcoholic drink consumed in Turkey in 2010 with 63% of total consumption. It was followed by spirits (28%) and wine (8%) (Figure 3). With respect to production of alcoholic drinks in Turkey, the latest data available from Republic of Turkey Tobacco and Alcohol Market Regulatory Authority was related to 2010; beer constituted 89% of the total alcoholic beverages production, it is followed by wine with 6% and later *raki*, which is the Turkish traditional alcoholic drink, with 4%. Turkey ranks 6th in the world for its grape tonnage harvested (FAOSTAT, 2013); however, Turkey does not appear in the list of top wine-producing countries in the world. Indeed, as stated by Ozdemir (2013), a large part of the Turkish vineyards "remains destined for the production of products that are not turned into wine" (p. 5). In 2010, 53% of the total grapes are used as table grapes, 36% for the production of raisins and only the remaining 11% for wine making (Ozdemir, 2013). However, wine production has been increasing more rapidly in Turkey in recent years (Investment Support and Promotion Agency of Turkey, 2010).
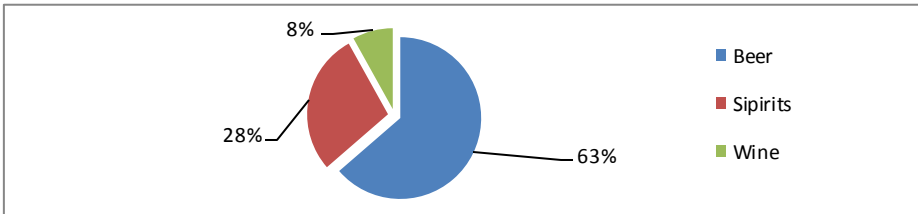
Figure 3. Distribution of the alcohol consumption per capita (age, >15 years; litres pure alcohol) according to alcoholic beverage, in Turkey, for 2010 (World Health Organisation, 2014)

For the foreign trade of alcoholic beverages for Turkey, beer is the most exported product. In 2011, the main buyers were Iraq, Azerbaijan and the Turkish Republic of Northern Cyprus. Beer

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[1] Turkish raki is a type of traditional aniseed spirit produced by double distillation with aniseed using only a grape or grape and agricultural based ethanol mixture.

exports are followed by *raki* and wine exports (Table 1) (Republic of Turkey Ministry of Economy, 2014a). However, 90% of the beer production in Turkey is for domestic consumption (Republic of Turkey Ministry of Economy, 2014).

Table 1. Export of the main Turkish alcoholic and non-alcoholic drinks (Data of Turkish Statistical Institute reported in Republic of Turkey Ministry of Economy, 2014).

Product	Export data according to year					
	2009		2010		2011	
	Quantity (1,000 L)	Value (€1,000)	Quantity (1,000 L)	Value (€1,000)	Quantity (1,000 L)	Value (€1,000)
Beer	106,269	49,769	112,762	54,920	102,030	51,607
Wine	3,610	6,226	2,708	5,914	2,695	7,035
Vodka	146	284	42	92	50	212
Raki	4,903	18,645	4,893	18,430	5,489	20,534
Soft drinks	94,557	47,347	114,415	58,365	146,820	78,748
Water, soda water	131,889	18,959	172,081	23,697	173,610	26,542

Whisky is the main alcoholic drink that is imported into Turkey (Table 2). The main imports are from the United Kingdom followed by the USA. After whisky, vodka and wine have the largest import volumes. However, the largest share of the beverages imported into Turkey is soft drinks, which mainly come from Austria, followed by Romania and Switzerland (Republic of Turkey Ministry of Economy, 2014).

Table 2. Import of the main Turkish alcoholic and non-alcoholic drinks (Data of Turkish Statistical Institute reported in Republic of Turkey Ministry of Economy, 2014)

Product	Import data according to year					
	2009		**2010**		**2011**	
	Quantity (1,000 L)	Value (€1,000)	Quantity (1,000 L)	Value (€1,000)	Quantity (1,000 L)	Value (€1,000)
Beer	905	789	1,293	1,086	5,198	4,042
Wine	1,066	2,568	1,693	4,507	1,792	5,687
Vodka	1,989	5,412	3,010	6,599	4,346	10,619
Soft drinks	20,155	24,226	24,446	26,142	38,238	39,384
Water, soda water	929	663	1,253	883	1,618	1,407
Cognac	9	179	25	414	57	967
Whisky	2,486	23,768	1,572	17,224	3,289	44,279
Spirits	204	408	427	681	552	1,583
Liquor	659	1,785	835	2,300	1,527	5,394

In Turkey, food and non-alcoholic drinks have the second largest share of the household consumption, second only to the housing and rental expenditure (Figure 4).
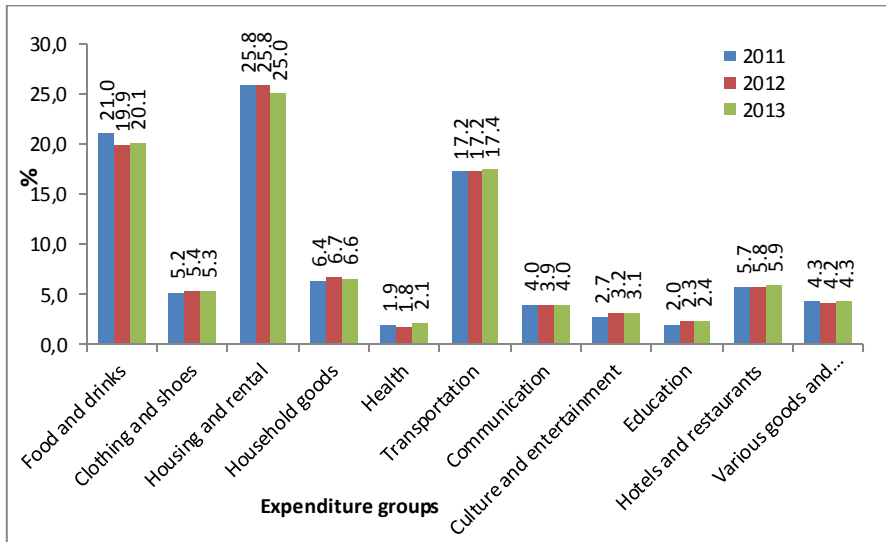
Figure 4. Distribution of household consumption expenditure by expenditure groups from 2011 to 2013 (Data of Turkish Statistical Institute reported in Turkey Food and Beverage Industry Associations Federation, 2014).

The distribution of household expenditure from 2011 to 2012 for food and beverages at the country level is given in Table 3. In 2013, alcoholic and non-alcoholic drinks consisted of 1.7% of the total share of food and beverages, which was 20.1% of the total household consumption expenditure (Figure 4).

Table 3. Distribution of household expenditure on food and beverages according to years (Data of Turkish Statistical Institute reported in Turkey Food and Beverage Industry Associations Federation, 2014)

Expenditure	Distribution according to year (%)		
	2011	**2012**	**2013**
Food	19.3	18.2	18.5
Non-alcoholic drinks	1.4	1.4	1.4
Alcoholic drinks	0.3	0.3	0.3
TOTAL (food and beverages)	**21.0**	**19.9**	**20.1**

Furthermore, the Turkish Statistical Institute research into the regional household expenditure in Turkey has shown that the total share of household food and beverages expenditure increased in parallel to the decrease in the economic situation of the regions. The southeast Anatolia region (see Figure 5) had the biggest share, followed by northeast Anatolia and the middle east Anatolia regions. Istanbul, Ankara and Izmir were the cities which had the lowest shares for household food and beverages expenditure (Turkey Food and Beverage Industry Associations Federation, 2014).

Figure 5. Map of the regions of Turkey.

Beverages consumption within Turkey can be divided into three main categories: hot drinks, soft drinks (including mineral water) and alcoholic drinks. Summary of the drinks mainly consumed in Turkey is given in Table 4 as consumption per capita. Tea is the main hot drink that is consumed, and Turkey is the highest country for tea consumption in the world, with an annual tea consumption of 3.2 kg per capita. Turkish coffee is also widely consumed in Turkey, although the global coffee chains that provide various alternative products have been entering the market more recently (Investment Support and Promotion Agency of Turkey, 2010). The total coffee consumption was been recorded as 0.74 kg per capita in 2014 (International Coffee Organisation, 2014).

Table 4. Consumption of the most preferred drinks in Turkey.

Drink	Annual consumption (per capita)
Tea	3.2 kg
Coffee	0.74 kg
Sparkling drinks (non-alcoholic)	44 litres
Airan	20 litres
Fruit juice	8 litres
Beer	12.7 litres

Sparkling (i.e., carbonated) drinks are the most preferred soft drinks in Turkey, and their consumption was estimated at 44 litres per capita in 2013 (Coca-Cola, 2013). Apple, peach, sour cherry and apricot are the main crops that are processed into fruit juice production. Apple is important for the export markets, while peach, sour cherry, apricot and mixed fruit juices are consumed mostly in the domestic market. In recent years, apple, pomegranate, tomato and grape juices have also grown in demand in the domestic market. In 2013, the annual consumption of fruit juice and similar products were recorded as 8 litres per capita (Erol, 2014).

Milk is mainly consumed after it has been processed into yogurt, cheese, and *airan*. *Airan* is a traditional cold yoghurt-based drink that is made by mixing the yoghurt with water and salt. Its production reached 598,877 tons in 2014 (Turkish Statistical Institute, 2014), although it is also often produced at home. No official information available on consumption per capita. However, it was

estimated as 20 liters per capita in 2013 including homemade consumption (Haberturk, 2013).

Shalgam juice[2], *hardaliye*[3], *boza*[4], and *kefir*[5] are the most known of the traditional Turkish fermented non-alcoholic beverages, as well as *airan*. *Shalgam juice* is becoming more popular, and it is widely consumed in the cities of Adana, Hatay and Icel (the Mediterranean region of Turkey). In recent years, it has become popular in other large cities, such as Istanbul, Ankara and Izmir (Tanguler and Erten, 2012). *Kefir* has started to be widely commercially available as well as being prepared at home (Kabak and Dobson, 2011). Unfortunately, there are no data available on the sales and market share of these more local products.

In terms of legal developments, the Turkish alcoholic beverages sector has passed two main steps: The first was in 2001, the sector was privatised by abolishing state monopoly in alcoholic beverages. After this decision, the Tobacco Products and Alcoholic Beverages Market Regulatory Authority, which was established in 2002, was authorised to regulate and inspect the market.

The second main step was the amendment to Article 6 of Law 4250 on Alcohol and Alcoholic Drinks in 2013, which focusses in particular on the restrictions for the marketing, publication, and promotion of alcoholic drinks. These restrictions have increased in importance on the national agenda, and they can be summarised as follows:

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[2] Shalgam juice is a red coloured, cloudy and sour soft drink that is produced by lactic acid fermentation of a mixture of turnips, black carrot, bulgur (broken wheat) flour, salt and water.

[3] Hardaliye is a rape-based non-alcoholic fermented drink. Red grape or grape juice and crushed black mustard seeds and cherry leaves are used for its production.

[4] Boza is a non-alcoholic fermented drink that is produced from millet, maize, wheat, or rice semolina or flour, with yeast and lactic acid fermentation.

[5] Kefir is a viscous and self-carbonated drink with a smooth, slightly foamy body, and whitish in colour. It originated in the Caucasus Mountains and is produced by fermentation of cow, ewe, goat or other types of milk.

- Advertisement and consumer promotion of alcoholic drinks is not allowed.
- Producers, importers, and sellers cannot distribute alcoholic drinks as samples, gifts or promotions, or free of charge in any form.
- Retail sale of alcoholic drinks is not allowed between 22:00 and 06:00 hours.
- Alcoholic drinks can be consumed in approved places and they cannot be sold for the aim of consumption outside of these facilities. Alcoholic drinks cannot be displayed on sale such that they can be seen from outside the sale point.
- Warning messages about the harmfulness of alcohol must be included on the packaging of alcoholic drinks produced in Turkey or imported from abroad (excluding export-oriented production).
- Trademarks, images and distinctive symbols associated with alcoholic drinks cannot be used on non-alcoholic drinks, and *vice versa* (except for products for export).
- Except in residential areas and places of accommodation, the sale of alcoholic drinks is not allowed in facilities located along highways and roads.
- Alcoholic drinks cannot be sold in student dormitories, places of medical services, stadiums and closed sports facilities, all educational institutions, coffee houses, bezique and bridge saloons, restaurants and stores of petrol stations.

The production and marketing of non-alcoholic drinks are regulated by the Food Law, as Law 5179 of 27 May, 2004. In addition, official controls and sanctions, production, processing and distribution of non-alcoholic drinks are identified under Law 5996 on "Veterinary Services, Plant Health, Food, and Feed". The Ministry of Food, Agriculture, and Livestock is the responsible authority for the implementation and control of these laws. Production of non-alcoholic drinks must be according to the Turkish Food Codex, the details of which are given in Declaration 2007/26 on "Turkish Food Codex Non-Alcoholic Drinks Notification".

2.2.2   Literature Review

There have not been many studies on the beverages sector in Turkey. In a survey involving respondents in 15 provinces in Turkey, consumers were asked to rate choices among a pre-defined list of non-alcoholic beverages. These consumer rankings of products from most preferred to least preferred were: tea, Turkish coffee, instant coffee, sparkling non-alcoholic drinks, soda water, fruit juice, *airan*, fruit and herbal teas, iced teas, energy/ sports drinks, and finally chocolate-flavoured ready-made drinks (Ulusoy and Seker, 2013). The household fruit juice consumption and purchasing tendencies in Turkey were investigated by Gul, Akpinar, Dagistan, Yilmaz and Gulcan (2011). According to their data, 49% of the families interviewed prepare their own fruit juice at home, the remaining being purchased out of the home. It is of note that child buyers have been directly effected in the evolution of the preferences in fruit juice shopping. As indicated by Akabeliev and Dimitrov (1997), "the attitude towards drinking in a given culture has a very important role in the use and abuse of alcoholic beverages" (p. 1). Celen (2014) states impact of Islamic culture in Turkey on alcoholic drink consumption saying "Ramadan has been found to be associated with lower alcohol usage" and he adds "as the price of alcoholic drinks increases, the alcohol consumption decreases significantly. In addition, alcohol consumption rises with increased disposable income" in order to indicate relation between consumption and income level (p. 1).

In parallel with the development of the organic sector, studies have been conducted to explore Turkish consumer awareness, perception and attitudes towards organic products. The relevant factors to motivate consumers to buy organic foods are: health, quality, price, taste, freshness, environmentally friendly, and food safety (Ozsacmaci and Ergin, 2011; Cene, Karaman and Cavdar, 2013; Cabuk, Tanrikulu and Gelibolu, 2014). Akgungor, Miran and Abay, (2007) reported that educated and high-income individuals have higher interest in organic product purchases, and in their research, it was found that consumer willingness to pay for products with organic

labels and certified products was higher up to 36% than non-organic products. Local markets and supermarkets/ hypermarkets are the most important places for the purchase of these items (Gunden, Turkekul , Miran, Abay and Akgungor, 2010).

2.3   Methods

A qualitative survey using in-depth interviews of relevant stakeholders in Turkey was undertaken. The list of interviewees is given in Table 5 according to their area of representation. In-depth interviews are a very common research method used in qualitative marketing surveys (Dallas and Grimmer, 2007). Interviews with both sector experts and consumers were carried out following guidelines prepared in advance, which were designed to collect information about some general topics identified as relevant for the study, which included:

- Alcoholic and non-alcoholic drinks sector: changes, trends, and expectations;
- Impact of legislation on producers and consumers;
- Development of organic sector and consumer awareness;
- Grape production *versus* wine production and consumption in Turkey.

Table 5. List of respondents

Respondent code	Area of representation
E1, E2	Inspection and certification of organic products
E3, E5	Producer, trader and consultant
E4, E11	Alcoholic drinks producer and distributor
E6, E7, E8	Retailers
E9, E10	Import and export
From R1 to R15	Consumers

According to the directions of these main topics, sample questions were developed for the in-depth interviews. The sample questions developed for the experts were:

- *What are the products that you work on? Have any products been recently added to your product range?*

- *What are the main difficulties you have faced in your work? For example: supply, demand, legislation, or others?*
- *What kinds of effects have you experienced with the changes in the alcoholic drinks law?*
- *What kind of changes have you seen in the sector? What kinds of trends have you observed?*
- *Which is your main target consumer group? How do you perceive their preferences, their awareness?*
- *What are the main issues in the organic sector? What is the consumer awareness level about these products?*

The sample questions developed for the consumers were:

- *What kind of drinks do you prefer generally? What are the consumption habits in your family?*
- *Are there any alcoholic/ non-alcoholic drinks that you prefer mainly? Is this changing for different occasions? If so, how?*
- *What do you think about the consumption of alcoholic drinks in general?*
- *Do you have any ideas about the new alcoholic drink law? What do you think about it? Did this law affect your life/ consumption? If so, how?*
- *What are the main criteria for your purchasing choices?*
- *Do you have any ideas about organic products? What do you think of them?*

The data obtained in the study were analysed after their coding and classification. They were also interpreted according to their authenticity, and as related to the issues that were investigated for this study.

A total of 26 in-depth interviews were carried out in Izmir and Istanbul during August 2014. The selected respondents were: two representatives from the organic sector, including certification bodies; two respondents involved in production, trade and consultancy; two alcoholic drinks sector representatives, as a producer and a distributor; three retailers; two representatives of import and export of alcoholic/

non-alcoholic products; 15 consumers, as five females, 10 males; <30 years old; moderate or high economic levels, according to the declarations of these consumers.

2.4   Results

2.4.1   General Consumption Habits and New Trends

According to the responses of the interviewees, the consumption habits for beverages in Turkey can be classified into three categories: (i) routine drinks; (ii) drinks preferred with meals; and (iii) occasional drinks.

Routine drinks are generally non-alcoholic beverages that are consumed daily at different times of the day, mainly because they are liked by the consumers. The first answer to the question of *"What is your favourite drink?"* included non-alcoholic beverages for all of the respondents; e.g., *"I prefer coffee", "I like tea, coffee, and soda water", "My favourites are cola, tea, coffee and soda water"*. Parents with children also indicated the drinks preferred by their children. Teenagers preferred carbonated drinks, such as cola, or other sweet soft drinks, such as iced tea. Coffee, tea and mineral water were the favourite routine drinks of the adults. Only one respondent indicated that *koumiss*[6] was the favourite drink (R15).

The second category of beverages was for drinks consumed mainly with foods. Tea is part of the traditional Turkish breakfast, and it has been maintained as the first place choice for adults. Parents with small children indicated that their children prefer milk or fruit juice at breakfast. For the other meals of the day, soft drinks were preferred by the majority of the respondents, such as *airan*, cola and soda water, as indicated in this example: *"Me and my husband prefer soda water and airan with foods, but our son drinks cola"* (R10&11). There were also respondents who prefer alcoholic drinks with foods, as expressed as: *"I prefer raki with foods in general; if I am abroad for travelling, my*

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[6] Koumiss is a fermented dairy product that is traditionally made from mare's milk.

preference is wine" (R12), although this could also be considered under the following occasional drinks category.

Occasional drinks represent the third category, and these basically include alcoholic drinks. Only one respondent never prefers alcoholic beverages, as indicated: *"I tried them in the past but did not like them. That is why I still do not drink"* (R15). For almost all of the other respondents, alcoholic beverages are preferred on different occasions, such as celebrations, meetings with friends, relaxing at weekends; as indicated: *"I consume alcoholic drinks when I am with friends"* (R13).

Tea, coffee, and carbonated soft drinks remain as the most consumed products according to the respondents. Beer and *raki* are still the most preferred alcoholic beverages, as indicated in the words of the retailers and alcoholic drinks distributors:

"Beer, raki, wine and whisky are preferred." (E6, E7).

"Sixty-five percent of alcoholic beverages are consumed by the consumers of 18-35 years old. Young consumers prefer beer, and wine is consumed mainly by people of 30 years old and more" (E11).

Even if the general picture is as indicated above, there might well be regional differences, as indicated by the respondents in terms of drink preferences and brand choices:

"Beer and raki are sold in every region of Turkey. Regions at the sea-side have a bigger market share" (E4)

"In small cities or places, people with low-income levels prefer local brands that are not known at the national level" (E6)

There were other interesting statements about regional differences in the consumption of alcoholic drinks in the cities, which was considered as "conservative" by the respondents:

"I am from Konya, which is a very conservative city. However, even there, alcohol is consumed at an important level, but it is just not visible" (R2)

"In Konya, you cannot see alcoholic drinks in the shops, and there is no place to consume alcoholic beverages in Kayseri, but these two cities are important places for alcohol consumption" (R11)

This statement from consumer R11 was confuted by the distributor of alcoholic beverages (E11), who – on the basis of general sales and consumption data – confirmed that alcohol consumption is highest in the Marmara (especially for the Thrace side), Aegean and Mediterranean regions.

Recent developments in the beverages sector relate to energy drinks and iced tea, the sales of which have shown consistent increases. Increased consumption of iced tea has had a negative impact on the sales of fruit juice, while the age of energy drink consumers is now much lower, as their consumption is increasing among children. The role of advertising is particularly relevant here in explaining these trends: *"The strong man image in the advertisements for energy drinks have positive impacts on the increase in their consumption"* (E6).

2.4.2   Impact of Health Considerations on Drink Consumption

Respondents highlighted health factors in explaining their choices. The health motives can be broken down in two sets: those related to the health of the respondents themselves; and those related to the health of their other family members, and especially of their children. Many respondents consider carbonated soft drinks as unhealthy:

"I do not consume cola and similar products, because I do not believe that they are healthy" (R13)

"In the last 4-5 years, new-young mothers do not buy cola-type beverages" (E8)

Respondents with health problems or excessive body weight confirmed their dislike of drinks with high sugar contents. This aspect is also important for the consumption of alcoholic drinks.

"My husband and I do not consume sweet and carbonated drinks because we have been on a diet for two years. We prefer water, herbal tea, and light soda water. Alcoholic drinks too are a remembrance of the past for us. Previously, beer was our preferred drink, but we do not drink it anymore" (R10 & R11)

"I do not consume alcoholic drinks because I believe that they are not good for health" (R9)

Wine is an alcoholic beverage that is considered as healthy if it is consumed in moderation; e.g., one glass per day.

"Health trends have had a big impact on the consumption of wine, which started in Turkey 10 years ago. People who are more sensitive about their health prefer wine, and this trend is increasing each year" (E11)

Increasing awareness about the relationships between health and food consumption was observed particularly by the female respondents, and especially the mothers. The mothers are usually responsible for the household food purchases and for food preparation. They are more careful about the health of their children. The choice of fruit juices and milk as drinks for their children has gained importance: *"Fruit juices are important, especially for families with children"* (E6). However, for mothers, it is not easy to control what their children consume, especially when they are teenagers: "Our *son is 14 years old, and now drinks cola or iced tea when he is out with his friends"* (R10 & 11).

2.4.3 Wine Consumption

Turkey has big potential for the production of wine, and in recent years, the wine sector has continued to grow at increasing rates. There

is an increasing interest in the consumers as well, but it cannot be said that Turkish consumers are wine lovers.

"In Turkey, the wine culture is totally different from abroad. Only a small part of consumers prefers wine." (E3)

"In Turkey, there isn't a relevant wine culture" (E1)

It was noted during the interviews that most of the respondents had no specific preferences about the consumption of wine. This appears not to be because they do not like wine, but because their level of product knowledge is relatively low.

"I should say honestly that I do not understand well quality wine" (R13)

"Wine consumers prefer generally cheap or moderate priced ones; as they do not have enough information about quality wine, they do not want to pay more" (E6)

Female respondents prefer wine with food or just as an occasional drink. After beer, wine is their most preferable drink. Male consumers are more interested in wine and have more knowledge about it. However, only one male consumer among those interviewed declared that wine is his first preference. For another male consumer, wine is only second to *raki* in his preferences. For these consumers, high wine prices are a barrier to wine purchases, such that *"good wine is expensive in Turkey due to high taxes"* (R12). Even when there is the opportunity, wine is seldom the first choice of the consumer: *"I have a wine coming from abroad which is a gift from one of my friends, but still I did not open even its package. I prefer raki"* (E1). In the words of a distributor:

"Due to an increase in awareness about health as well as economic power, consumers have started to prefer wine. Younger generations – and especially university students - prefer beer because it is cheaper. For that reason, we have produced wine with

a moderate price to attract the attention of young consumers. This wine is now one of our market hits" (E11).

Grape production is relevant in Turkey, but most of the production is for dried raisins. Raisin producers often also have grapes for wine production, but *"in the Aegean region, they make wines just for household consumption"* (E1). As a country, Turkey has the potential to produce good quality wines, but the domestic and foreign wine markets are still out of reach for most producers. *"There are [Turkish] wine producers that have won international awards with their wines, but there is no culture of [wine drinking in Turkey] and our wines are not well enough known abroad"* (E1). High governmental taxes on the production and sale of alcoholic beverages have pushed the sector to make substantial changes to increase product quality and reduce production costs: *"Wine processors have started to produce their own grapes with the help of experts, or they organise the producers better, give them consultancy to get grapes of better quality"* (E11).

2.4.4 Organic Product Awareness

According to the respondents, consumer preferences on organic products depend on the level of awareness and knowledge they have of these types of products. All of the respondents agreed that organic products are healthier and should be preferred. Speaking of organic drinks, fruit juices are the most preferred products, apart from the ones prepared at home: *"Consumers having high-quality food awareness choose organic fruit juices, but they also prefer to prepare them at home instead of buying them"* (E8). However, this awareness is limited:

"In the domestic market, we tried to establish a small shop chain for organic products starting from Istanbul. We started in quite important areas of Istanbul (high-income level; consumer awareness probably better; etc.). Our experience showed that the Turkish consumer is not really aware of organic products and doesn't have sufficient information. It was one of the main issues that we needed to explain everything to them. For example, if we

*don't have courgettes because of the weather conditions in one week, it was so difficult to explain this to them. They want organic products with the same conditions as conventional ones. On the other hand, having an organic shop and selling products to people requires sales personnel who are aware and sufficiently knowledgeable of the organic products. It was difficult to find good sales personnel to work with us" (*E3).

In recent years, the organic domestic market has continued to develop and the product range has increased:

"Fruit juice concentrates are produced mainly for exportation by organic companies as bulk products. However, there are companies that produce organic fruit juice directly for the consumption of the final consumers. For example, we have a client that made really important efforts for years to have a place in the market, and now they have succeeded. They started to export fruit juices as final products as well as selling them on the domestic market" (E1).

2.4.5 Impact of Legislative and Political Developments

Recent developments and changes to Turkish laws on alcoholic beverages have affected both producers and consumers. The respondents have different opinions about this issue. Some respondents back the restrictive policy of the current government on alcohol production, distribution, and consumption, while others do not agree, or feel uncomfortable about these new laws. It is important to underline that all of the respondents shared the opinion that alcoholic beverages should be drunk in moderation.

The current laws affect alcoholic drink producers by putting restrictions on the communication and advertising of alcoholic beverages, and by raising taxes and levies on them:

"High taxes and prohibition of advertisements are the most important problems faced now" (E4).

Marketing restrictions create barriers, especially to the companies who would like to enter the sector, but also to the existing producers and distributors who would like to grow. There are certain brands of *raki* and beer which are well known in Turkey. The companies that own these brands might not need to focus on advertising to sell their products, although advertising is one of the leverages in marketing. However, in the views of respondent E4, marketing and advertising are crucial for new start-up companies.

According to the respondents, the ban on advertising has not impacted upon sales to any significant levels:

"The new alcohol law did not affect the general sale of alcoholic beverages" (E6).

"The general alcoholic beverage sector has decreased around 5% during the last 3 years due to restrictions in the law, but the sector has found solutions to compensate for this decrease. For example, instead of advertisements, they increased their product range to attract consumers, or they have changed their bottle sizes and shapes" (E11).

High taxes are also problematic:

"The Turkish alcoholic beverage sector is faced with high taxes now; 70% of one bottle of alcoholic drink goes into taxes. Levies on alcohol are increasing every 6 months" (E4).

Other restrictions refer to the reduced purchase hours from markets and shops. However, this has also opened new areas for some entrepreneurs:

"There is a hotel in Konya which does not serve alcoholic beverages. Instead, they have interesting options like different kinds of fruits juices in specially designed bottles" (E1).

The consumer views on the new law are not convergent, though. Some consumers support the new rules, even if they are not

pro-government. Another group of consumers is strongly against the alcohol law. The first group concentrates on the bad effects of alcohol consumption, and especially for its intake at excessive levels. Their main idea is that alcohol is not good for both physiological and psychological health:

"I do not approve of the government in general, but regarding the alcohol law, I agree, because alcohol consumption is not good for health" (R9).

The second group focuses on individual freedom and defends the concept that all people should have the right to choose what they want. Instead of bringing in new restrictions, it is important to increase consumer awareness and provide more education. The greater part of the respondents did not feel any impact of the law on their life. However, one of the respondents summarised its impact on her social life and feelings as:

"I used to be a 'social drinker', but when I was consuming alcoholic drinks, I had a guilt feeling because of social pressure" (R3).

2.5   Discussion

The production and traditional consumption habits in Turkey are important factors in the current consumption patterns for both alcoholic and non-alcoholic drinks, although there are new tendencies and changing patterns to consider as well. Tea, coffee, soft drinks, *airan,* beer, and *raki* are the most preferred products, which are traditional products and/or their production is high. Ulusoy and Seker (2013) stated that the habit of traditional tea consumption is affected by the consumption demands and choices of the younger generation, which have started to promote differences. They indicated that the alternative products to tea are Turkish coffee, other coffees, and herbal and fruit teas, because of their increasing consumption, and sparkling non-alcoholic drinks are the most preferred products after tea and coffee. In parallel, soft drinks, such as cola, iced tea, and energy

drinks, are specifically important in the consumption of the younger generation, and especially for teenagers, as shown by the results of the present qualitative survey. On the other hand, soft drinks are often viewed as unhealthy. Consumers with children do not buy cola-type drinks, so as to keep their children away from these products. Respondents with health problems do not like them either. Attila and Cakir (2011) reported that the consumption of energy drinks is quite common in university students, and they also indicated that the awareness in the university students of the ingredients and potential health hazards of energy drinks should be increased.

Airan is already one of the most consumed of the traditional drink products in Turkey. The consumption data and the respondent statements that *airan* is one of their favourite drinks with foods support each other. No consumer or market research was found regarding the other traditional drinks. Most studies have focussed on the microbiota, fermentation processes and quality characteristics of these traditional drinks (Altay, Guler, Dikmen and Heperkan, 2013; Yegin and Uren, 2008; Erten, Tangüler and Canbas 2008). Although Altay *et al.* (2013) stated that the trends towards natural food and beverages have increased with the consciousness of the consumers, in this context, the traditional Turkish fermented non-alcoholic beverages have gained greater attention from researchers as well as consumers more recently. However, in the present study, only one of the respondents declared that their favourite drink is *koumiss*, while the other traditional fermented drinks such as *shalgam juice*, *hardaliye*, *boza,* and *kefir* were not mentioned by the respondents.

With respect to the consumption habits of alcoholic drinks, beer and *raki* were the most preferred products. Ozdemir (2013) indicated that "Turkish people rediscovered wine in the 1990s, which has contributing to the high quality of Turkish wine since then" (p. 5). These developments have been confirmed with the present survey, whereby health concerns, in particular, have had a positive impact on the preference for wine in recent years. However, consumers do not have sufficient perception about what is a quality wine yet. This large potential for the production of quality wines in Turkey might be

improved by the introduction of quality wines to the consumers in Turkey, the introduction high-quality Turkish wines abroad, and better control of the high taxes that are applied.

Indeed, the high taxes applied to alcoholic beverages, and the restrictions to their advertising and marketing are the main issues underlined regarding the latest changes in the laws. Although there appears to be no visible impact of these laws on daily life and there has been no significant change in the consumption levels, the social impact of these laws is seen in the answers of the respondents. However, consumer awareness about the negative impacts of excessive use of alcoholic drinks has become more important than restrictions by law.

2.6   Conclusion

In the present study, we initially provided a general overview of the current situation of the alcoholic and non-alcoholic beverages sector and the beverages consumption habits in Turkey. Combined with the findings of our qualitative survey, we have been able to provide an evaluation of the beverages sector and the dynamics of beverages consumption.

The food and beverages sector is one of the driving sectors in Turkey. As well as its production capacity, the population of Turkey provides an important consumer. Current consumption patterns show that tea, coffee, carbonated drinks and *airan* are the most preferred drinks. There is an increasing tendency for the consumption of energy drinks and iced tea particularly by the younger generation. These products have achieved an important place in the market recently. Alcoholic beverages are consumed more occasionally. Wine is becoming popular as an alternative to the most consumed products, which are beer and *raki*, due to the health concerns of consumers. The potential for Turkey to produce high-quality wines should be promoted, as these could achieve a significant place in the domestic and foreign markets. Consumer awareness about healthy products is increasing. In terms of organic products, there is an increasing interest

in them, but this is paralleled by the education and purchasing power of consumers. High taxes and restrictions with laws on the sale, promotion, and advertising of alcoholic products might create new chances in the market for innovative non-alcoholic drinks, especially in the premium segment, which is at present relatively empty. Further studies should identify what attributes such drinks should have to position them in the mind of Turkish consumers.

References

Akabeliev V., & Dimitrov I. (1997). Attitudes towards alcohol use among Bulgarians-Christians and Turks-Muslims. Folia Medica, 39(1): 7-12.

Akgungor S., Miran B. & Abay C. (2007). Consumer Willingness to Pay for Organic Food in Urban Turkey. Presented at the 105th EAAE Seminar on international marketing and international trade of quality food products, Bologna, Italy, March, 2007. DOI: 10.1080/08974431003641455

Altay F., Guler F. K., Dikmen C. D. & Heperkan D. (2013). A review on traditional Turkish fermented non-alcoholic beverages: microbiota, fermentation process and quality characteristics. International Journal of Food Microbiology, 167: 44-56. DOI: 10.1016/j.ijfoodmicro.2013.06.016

Attila S. & Cakir B. (2011). Energy-drink consumption in college students and associated factors. Nutrition, 27: 316-322. DOI: 10.1016/j.nut.2010.02.008

Bever Foods (2014). Brau Beviale 2014: Evoluzione del Settore Beveragetra Innovazione e Tradizione. Retrieved from http://www.beverfood.com/documenti/brau-beviale-2014-evoluzione-del-settore-beverage-tra-innovazione-e-tradizione/

Cabuk S., Tanrikulu C. & Gelibolu L. (2014). Understanding organic food consumption: attitude as a mediator. International Journal of Consumer Studies, 38: 337-345. DOI: 10.1111/ijcs.12094

Celen A. (2014). Influence of holy month Ramadan on alcohol consumption in Turkey. Journal of Religion and Health, DOI 10.1007/s10943-014-9875-6.

Cene E., Karaman F. & Cavdar S. C. (2013). Motives of buying organic products and habits of organic buyers in Turkey. Journal of Food, Agriculture & Environment, 11 (3/4): 539-548.

Coca-Cola (2013). Surdurulebilirlik Raporu 2013. Title in English: Sustainability Report 2013. Coca-Cola İçecek A.S. Retrieved from:
http://www.cci.com.tr/UserFiles/pdf/CCI_Surdurulebilirlik_Raporu_2013_09122014.pdf

Dallas H. & Grimmer M. (2007). The mix of qualitative and quantitative research in major marketing journals, 1993-2002. European Journal of Marketing, 41 (1/2): 58-70. DOI: 10.1108/03090560710718111

Erol O. (2014). Meyve suyu sanayisinin gelisimi icin dogru politikalar gerekli. Title in English: Right politics are needed for the development of fruit juice sector. Journal in Turkish: Dunya Gida, 2014-6: 10-11

Erten H., Tangüler H. & Canbas A. (2008). A traditional Turkish lactic acid fermented beverage: shalgam (salgam). Food Reviews International, 24: 352-359. DOI: 10.1080/87559120802089324

FAOSTAT (2013). Food and Agriculture Organization Statistical Divisions. Retrieved November 2, 2015 from http://faostat3.fao.org/browse/rankings/countries_by_commodity/E.

FoodDrink Europe (2014-2015) Data and Trends of the European Food and Drink Industry. Retrieved from http://www.fooddrinkeurope.eu/uploads/publications_documents/Data_and_Trends_2014-20151.pdf.

Global Agricultural Information Network (2015). GAIN Report Number IT1512. Retrieved from

http://gain.fas.usda.gov/Recent%20GAIN%20Publications/Wine%20Annual_Rome_EU-28_3-16-2015.pdf.

Gul M., Akpinar M. G., Dagistan E., Yilmaz H. & Gulcan S. (2011). Analyzing households' fruit juice consumption and purchasing tendency - a case study from Isparta. In: Rickert U., Schiefer G. (eds) Proceedings in Food System Dynamics and Innovation in Food Networks 2011, 52-61.

Gunden C., Turkekul B., Miran B., Abay C. & Akgungor S. (2010). Consumer preferences for purchase places of organic fruits and vegetables in Turkey. Journal of Food, Agriculture and Environment, 1: 144-149.

Haberturk (2013). Ne Ayran Ne Raki. Title in English: Not Airan Not Raki. Retrieved from http://ekonomi.haberturk.com/ekonomi/haber/839638-ne-ayran-ne-raki

International Coffee Organisation (2014). Country Datasheets. Retrieved from https://infogr.am/_/pHY7CcQWoI1XVQF8h0XU

Investment Support and Promotion Agency of Turkey (2010). Turkish Food and Beverage Industry Report. Republic of Turkey Prime Ministry, ISPAT. Retrieved from http://tr.scribd.com/doc/60423223/Food-beverage-industry-Turkey#scribd

Kabak B. & Dobson A. D. (2011). An introduction to the traditional fermented foods and beverages of Turkey. Critical Reviews in Food Science and Nutrition, 51: 248-260. DOI: 10.1080/10408390903569640

Ozdemir D. (2013). Turkey's Ardous Journey from Vine to wine. American Association of Wine Economists Working Paper No 143 Oct 2013 ISSN 2166-9112. Retrieved from http://www.wine-

economics.org/aawe/wp-content/uploads/2013/10/AAWE_WP143.pdf

Ozsacmaci B. & Ergin A. E. (2011). Turkish consumers' perceptions and consumption of organic foods. African Journal of Business Management, 5 (3): 910-914. DOI: 10.5897/AJBM10.638

Turkey Food and Beverage Industry Associations Federation (2014). Türkiye Gıda ve İçecek 2014 Envanteri. Title in English: Turkish Food and Drink Industry 2014 Inventory Report. Retrieved from http://tgdf.org.tr/pdf/2014envanter.pdf.

Turkish Statistical Institute (2014). Retrieved November 3, 2015, from http://www.tuik.gov.tr/.

Tanguler H. & Erten H. (2012). Occurrence and growth of lactic acid bacteria species during the fermentation of shalgam (salgam), a traditional Turkish fermented beverage. LWT — Food Science and Technology, 46: 36-41. DOI:10.1016/j.lwt.2011.10.026

Republic of Turkey Ministry of Economy (2014). Alkollü ve Alkolsüz İçecekler Sektör Raporu. Title in English: Alcoholic and Non-Alcoholic Drinks Sector Report. Ankara: General Directorate of Export, Department of Agricultural Products. Retrieved from http://www.ekonomi.gov.tr/portal/content/conn/UCM/uuid/dDoc Name:EK-051167.

Republic Of Turkey Tobacco and Alcohol Market Regulatory Authority (2010). Retrieved from http://www.tapdk.gov.tr/alkol/aispd_kamuoyuna_yonelik_bilgiler .htm.

Ulusoy A. & Seker M. (2013). Turkiye'de Değişen Çay Tuketim Aliskanliklari Projesi 2013. Title In English: Project on Changing Tea Consumption Habits in Turkey. Trabzon Exchange Commodity, Trabzon. Retrieved from http://www.tb.org.tr/dosya/Trabzon_Cay_Kitap.pdf

World Health Organisation (2014). Global status report on alcohol and health 2014, Country Profiles. Retrieved from http://www.who.int/substance_abuse/publications/global_alcohol _report/profiles/tur.pdf?ua=1

Willer H. & Shaack, D. (2015). This is a chapter in H. Willer & J. Lernaud (Eds.), The World of Organic Agriculture Statistics and Emerging Trends 2015: Organic Farming And Market Development In Europe (pp 181-214). FIBL-IFOAM Report. Research Institute of Organic Agriculture (FiBL), Frick and IFOAM – Organics International, Bonn.

Yegin S. & Uren A. (2008). Biogenic amine content of boza: a traditional cereal-based, fermented Turkish beverage. Food Chemistry Journal, 111: 983-987. DOI:10.1016/j.foodchem.2008.05.020

3   Eye tracking consumers' bottle choice: the role of morphology

3.1   Introduction

Product packaging has a crucial role in capturing consumers' attention and delivering the product's content (Wang & Chou, 2010). It is not only serving for product quality purposes such as containment, protection, and preservation but also for information transfer to the consumers, brand communication, convenience, presentation, aesthetic in appearance, user and environment friendliness (Coles & Kirwan, 2011). According to many marketers besides price, product, place, and promotion, packaging is now seen as the "fifth P" by itself (Kotler & Keller, 2009). Product packaging plays an important role in helping consumers to assess what kind of product they are about to purchase and the associated quality. Packaging conveys information and symbols that are communicated through the morphological and visual attributes of packages (Underwood, 2003). In the case of beverages, bottle shape, size and colour are relevant since they often help consumer to identify and categorise the product (Arboleda & Arce-Lopera, 2015), though consumers – in rating attributes – appear to be cognitively unaware of the importance of packaging in their choice (Xie, 2013).

While label information, colour and shape symbolism in packaging of beverages has been already addressed in recent literature (Chambers, Ells, & Yeomans, 2013; Kozup, Burton, & Greyer, 2001; Mary K. Ngo et al., 2013), we are not aware of any study focusing on the effects on consumers of bottle morphology and the different physical parts of a bottle. Understanding which morphological part of a bottle drives most visual attention by consumers may help marketers to convey the most relevant information in that area, while bottle manufacturers may seek innovation in differentiating the shape of that part.

The objective of this study was to analyse consumer's visual behaviour when selecting a bottle for a soft drink (a non-alcoholic

sparkling fruit juice). For the purpose of this study, we were not specifically interested in which bottle was chosen, nor in the type of beverage, but in the visual behaviour that consumers enacted when focusing their attention on the bottles to perform the choice task. We used eye-tracking techniques to investigate these visual pattern behaviours. The paper is organized as follow: in Section 2 we provide the background of the study and review previous studies on packaging choice, with special reference to shape and morphology. Section 3 deals with the methods, while results are described in Section 4 and followed by discussion and conclusions.

3.2   Background

Essential product packaging elements are divided into two categories by Silayoi & Speece (2004): visual and informational. The visual elements include shape, size, and graphics of the packaging, and they affect consumer's emotions. The informational elements consist of product information in the packaging. These elements have different impact on the consumer decision-making process.

Karimi, Mahdieh, & Rahmani (2013) examined the relationship between packaging elements and consumers' purchase behaviour of food, health and cosmetics products in terms of visual (graphic elements, colours, size, and form) and informative (product information and technology) aspects. As a result, they found that there is a significant relationship between the packaging elements and consumer purchase behaviour. Mueller and Lockshin (2008), in their study on wine packaging and the reliability of measuring attribute importance with direct verbal versus indirect visual methods, affirm that "the first taste is almost always with the eye" and conclude that stimuli which are visually perceived by consumers cannot be reliably measured with verbal methods. In a study on Indonesian consumers' preferences on yogurt packaging was found that shape was the most important factor which affected the respondents' choice (Suzianti, Rengkung, Nurtjahyo, & Al Rasyid, 2015).

Packaging, branding, and labelling can also have a significant impact on experiencing food and drink by a 'sensation transfer' process, in which external attributes are transferred to our sensory perception of a product (Skaczkowski, Durkin, Kashima, & Wakefield, 2016). For example, regarding shape and taste perception, Spence & Gallace (2011) and Ngo, Piqueras-Fiszman, & Spence (2012) found that people associated sparkling water more with angular shapes and still water with round shapes. The relationship between basic taste words and shape roundness/angularity was further studied by Velasco et al. (2015). Their result showed that "sweet" clustered with round shape and "bitter", "salty", and "sour" with angular shape. Skaczkowski et al. (2016) provided a comprehensive review on packaging and sensation transfer, while Spence (2011) reviewed a wealth of studies where 'crossmodal correspondences', i.e. nonarbitrary associations that appear to exist between different basic physical stimulus attributes, or features, in different sensory modalities, have been analysed. In the case of bottles, the shape is not only influencing the labelling (typographic form, typeset, etc.) but also the whole bottle morphology as well as its individual parts: finish, neck, shoulder, body and heel (Figure 1).
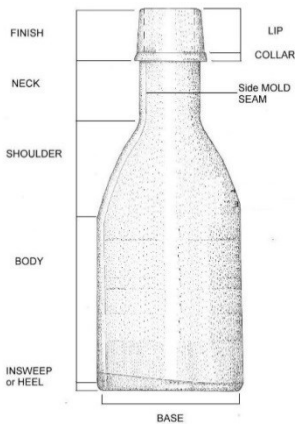

Figure 1. Bottle morphology (modified version of https://sha.org/bottle/morphology.htm)

3.3 Eye tracking

In the last few years, there has been an increasing interest in the use of consumer neuroscience tools in marketing research owing to the importance of understanding non-verbal natural responses of the consumers such as eye movements and emotional responses. Given non-verbal reactions to visual stimuli are better assessed by direct observations than by verbal reporting (Mueller & Lockshin, 2008), new tools have been employed to allow accurate measurement of consumer non-verbal responses. Eye tracking is used to identify where and how people are looking. In this process, characteristics of eye movements and the eye itself can be measured (Bojko, 2013). Different objects of analyses are investigated in eye tracking studies: advertisements (e.g., Folkvord, Anschütz, Wiers, & Buijzen, 2015; Velazquez & Pasch, 2014), websites (e.g., Djamasbi, Siegel, & Tullis, 2010; Roth, Tuch, Mekler, Bargas-Avila, & Opwis, 2013; Steinfeld, 2016), product design (e.g., Guo, Ding, Liu, Liu, & Zhang, 2016; Khushaba et al., 2013), packaging and labelling (e.g., Ares, Mawad, Giménez, & Maiche, 2014; Bialkova & van Trijp, 2010; Bialkova et al., 2014; Bialkova, Sasse, & Fenko, 2016; Piqueras-Fiszman, Velasco, Salgado-Montejo, & Spence, 2013; Rebollar, Lidón, Martín, & Puebla, 2015; Van Herpen & Trijp, 2011), shelf design (e.g Marchini et al., 2015) and product itself (e.g., Almeida, Mealha, & Veloso, 2016). Eye tracking studies are carried out either in controlled conditions by using fixed eye trackers or in real shopping areas such as supermarkets with mobile eye trackers (glasses).

In marketing research, eye tracking is increasingly used to explore which elements capture the visual attention and how consumers process this information to make choices. Visual attention is associated with the eye fixations and eye movements and their combination is specific to each individual which states individual visual attention level (Clement, 2007). Visual properties of stimuli (e.g., colour, darkness and brightness of the packaging) have an impact on visual attention and this influences consumer choices (Milosavljevic, Koch, & Rangel, 2011).

By manipulating visual characteristics of food packages it is possible to influence consumers' choices by increasing the visual saliency of stimuli; at rapid decision speeds visual saliency is a more relevant influencer of choice than preferences and the effect is related to an increased cognitive load (Milosavljevic, Navalpakkam, Koch, & Rangel, 2012). Previous studies showed there are also automatic biases influencing people attention. Eye movements of English speakers proceed from left to right, and this is valid for speakers of other languages written in the same direction (Higgins, Leinenger, & Rayner, 2014). According to (Nielsen, 2010) web users spend 69% of their time viewing the left half of the page and 30% viewing the right half. However, findings regarding visual search dynamics and bias are not univocal: other studies found a strong bias of looking towards the centre of the viewing area (Tatler, 2007) or a higher tendency of decision makers to choose an item in the centre of the screen (60%) than similar items displayed at other locations (Reutskaja, Nagel, Camerer, & Rangel, 2011).

Visual fixations are the most commonly used parameter in assessing where a consumer's attention might be focused on visual information extracted during fixations (Piqueras-Fiszman et al., 2013). There are a number of different measures of eye movements that can be obtained by eye trackers, such as number and duration of fixations, time spent on a fixation area and the number of returns to this area (Li, Huang, & Christianson, 2016). Analysing these measures allows describing the relationship between factors influencing gaze and choice behaviour (Vu, Tu, & Duerrschmid, 2016). Several studies showed that observing the same stimulus with different tasks and cognitive load can lead to different gaze patterns and influence choices (Orquin & Mueller Loose, 2013). In some studies, first fixation (where people look at first sight) was found as positively correlated with the choices of the people (e.g. Glaholt & Reingold, 2011), while no relation was seen in other studies (e.g., van der Laan, Hooge, De Ridder, Viergever, & Smeets, 2015).

Few studies have studied bottle packaging by eye tracking. Gomes, Hurley, Duchowski, Darby, & Ouzts (2014) used eye tracking

to collect phenomenological data on the shelf presence of full body graphic labels versus partial body graphic labels on plastic beverage bottles. Their results revealed that both label sizes drew an equivalent amount of visual attention; however, consumers selected partial body labels more often than full body labels, regardless of the flavour of the beverage or their age group. Rojas, Contero, Bartomeu, & Guixeres (2015) analysed consumer perceptions of a photographic and a virtual representation of a beer bottle with 38 participants. They focused their study attention on AOIs representing both different morphology parts and labels. They found that the orientation of the bottle and how it is presented affect consumer perception.

3.4 Material and methods

The experiment consisted in a choice task regarding a nude (i.e. unlabeled) bottle packaging for a specific beverage (a non-alcoholic sparkling grape juice). Participants, after viewing four different bottles individually, were asked to select which bottles were perceived as the most /least suitable as a container for the product according to their preferences. The assigned task provided a consistent setting to study the relevance of bottle shape and parts in driving participants' attention.

3.4.1 Participants

Sixteen participants, equally distributed across gender, were recruited for the study. All participants were adults between the ages of 21 and 59 (mean age = 32 S.D. = 10), equally distributed in two age groups (<30, >30). The experiment took place at our university's consumer research and neuromarketing laboratory, equipped with a Tobii X2-60 eye tracker and using IMotions Attention Tool v5.7 software for the design of the experiment, data collection and analysis. STATA version 13 was used for statistical analysis

3.4.2 Procedure

Four bottle models, different in design and shapes but having the same capacity (750 cl) were chosen for the test. For the selection of bottles, market availability was taken into consideration as well as the

technical requirements for a sparkling beverage. The designs were expressly chosen among those available for sparkling wine since in another portion of the study we were interested in understanding the differences in perception of bottle design according to its alcoholic/non-alcoholic beverage content. The four bottle designs were named as A, B, C and D. Photos of the four bottles were taken and prepared for the test by respecting the original proportions (Figure 2). A plastic glass (which is commonly known and very neutral in terms of colour) was also placed next to each bottle as a reference, to let the participants understand the dimensions of the bottle. The participants were informed that the aim of the survey was to identify the most suitable bottle for a new sparkling non-alcoholic fruit juice according to their own preferences. Their task was to observe photos of each bottle shown one by one and at the end to choose the "most favourite" and "least favourite" bottle according to their preferences. Photos were shown to the participants in a random order according to a Balanced Latin Square Design for 4 stimuli (Bojko, 2013). The test took place in four phases. Each trial started with a 9-point calibration pattern. After calibrating the eye-tracker, the study started, with a grey screen presented for a few seconds, and then the first bottle image was shown. An exposure time of 10 seconds for each bottle photo was determined after a pilot test on 4 participants. A grey inter-slide was also presented when moving from one photo to another. At the end, participants were presented a final slide including all bottle photos and they were asked to select their "most favourite" and "least favourite" bottle. After the choice task, participants were also asked to explain the reason behind their choices. All measurements were performed in a quiet room and under standard illumination conditions. Each participant was seated at a distance of 65 cm from the eye-tracker and monitor.

Figure 2. Photos of the bottles presented to the participants

3.5 Results

Results for heat maps and area of interest (AOI) metrics are reported. Three AOI were defined for each bottle image: neck and finish (upper part of the bottles or top), shoulder (middle part) and body and heel (bottom part). The neck area was about 1/3 of the area of each of the other AOIs, which were of equal size. AOIs were defined following the guidelines suggested in Bojko (2013) and Holmqvist, Nyström, & Mulvey (2012).

Different metrics for each AOI are reported in Table 1. These are:

- **Time To First Fixation** (TTFF) or the time stamp of the first fixation inside the AOI;
- **Time spent (or total dwell time)**, that is the total fixation time spent in each AOI during the trial;
- **Ratio** of visitors, that is how many participants visited the AOI;
- the number of **Revisitors**, that is the number of visitors who exhibited multiple fixations in the AOI;
- and the number of **Total Fixations** in the AOI.

Table 1. Average AOI metrics of each bottle design for all participants

Bottles	A	B	C	D
AOI	1- Top (Neck + Finish)			
TTFF (sec)	3.1	2.4	3.2	2.5
Time Spent	1.6	1.2	1.2	1.7
Ratio	14/16	14/16	13/16	13/16
Revisitors	12/14	11/14	9/13	13/13
Fixations	91	72	73	90
	2- Shoulder			
TTFF (sec)	0.6	1.0	1.0	0.6
Time Spent	3.0	2.4	3.4	2.9
Ratio	16/16	16/16	16/16	16/16
Revisitors	15/16	16/16	16/16	16/16
Fixations	149	140	184	162
	3- Bottom (Body + Heel)			
TTFF (sec)	3.7	3.2	7.4	4.0
Time Spent	0.9	1.9	0.5	1.0
Ratio	14/16	14/16	7/16	13/6
Revisitors	10/14	14/14	7/7	10/13
Fixations	64	118	37	64

TTFF is a measure of which AOI attracted participants' attention first. More precisely, TTFF values show which AOI was looked upon at first sight by the participants: short time values in TTFF indicates that the participant's fixation started right after as the image appeared on the screen; while high time values of TTFF indicates that the fixation occurred later or did not start at all. For all bottles, the first visited AOI was the shoulder with a shorter TTFF (average 0.8 sec). It was followed by the neck and finish (2.8 sec) and

then body and heel (4.6 sec). The time spent was higher in the AOI of the shoulder than AOIs of the upper and bottom part. This is another indicator showing that participants' attention focused more on the shoulder, though this value may be influenced by the size of the AOI (the top is about 1/3 in size than the other AOIs). The ratio of visitors, number of re-visitors and total fixations were also higher for the shoulder area.

Figure 3 shows the heat maps of each bottle including all participants. In the heat maps, areas that have attracted the most attention are indicated in red while those that have attracted lower levels of attention are coloured yellow and green. The maps confirm that the shoulders of the bottles were the most attractive areas. The size of red area is different for each bottle. Red areas of bottles B and D are bigger than those of bottles A and C. The second most attractive area is the finish and the area always receiving less attention is the body and heel of the bottle. From visual inspection of heat maps, the heel part of bottle A and C was never fixated.
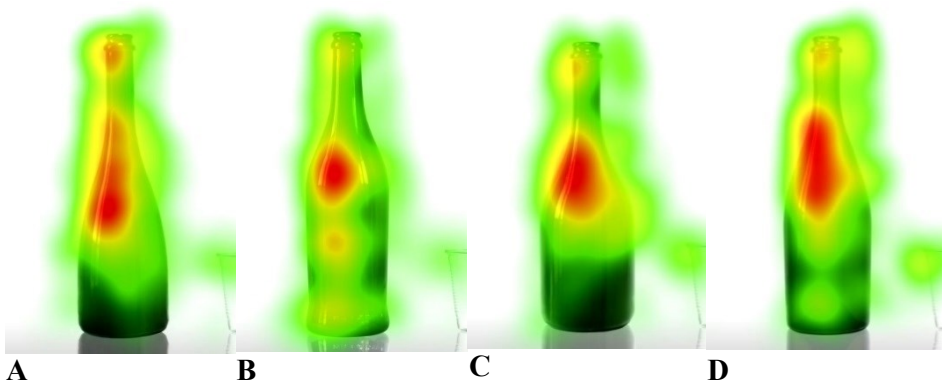

A   B   C   D

Figure 3. Heat map of each bottle including all participants' attention

In Figure 4 different heat maps are shown for the age and gender subgroups. The most attractive parts of the bottles are always shoulder followed by the neck for all groups, while there appear to be no to differences between the groups.

In order to validate these qualitative results, we performed some statistical analyses on the two most relevant AOI metrics: TTFF and Time Spent.

A one-way ANOVA was conducted to examine the effect of bottle design on TTFF. Given the bottle were presented in random order no fatigue effect should bias TTFF. Indeed, there was no statistical difference among the TTFF of each bottle ($F(3,188) = 2.62$, $p = .05$). A Tukey post-hoc test confirmed that TTFF was not statistically significantly higher for any bottle.

Similarly, one-way ANOVA was conducted to determine if TTFF was different between AOIs. The results showed that AOIs were associated with statistically significant differences in TTFF, $F(2, 189) = 25.46$, $p < 0.0001$. A Tukey post-hoc test revealed that TTFF was statistically significantly lower for the shoulder AOI compared to both top (-1.94 ± 0.52 seconds, $p = .001$) and bottom (-3.71 ± 0.52 seconds, $p = .001$). Besides, the top AOI exhibited a statistically significant lower TTFF than the bottom (-1.77 ± 0.52 seconds, $p = .002$).

Similar results found for Time spent. There was no statistical difference among bottles ($F(3,188) = 0.10$, $p = .962$) and there was among AOIs ($F(2,189) = 32.47$, $p = .001$). A Tukey post-hoc test revealed that Time Spent was statistically significantly higher for the shoulder AOI compared to both top ($+1.52 \pm 0.24$ seconds, $p = .001$) and bottom ($+1.85 \pm 0.24$ seconds, $p = .001$). However, there was no significant statistical difference between the Time spent on the top and the bottom ($+0.34 \pm 0.24$ seconds, $p = .358$).

ANCOVA was run to examine the effect of gender and age groups on TTFF and Time Spent. The results show neither age nor gender significantly influences the AOI metrics.

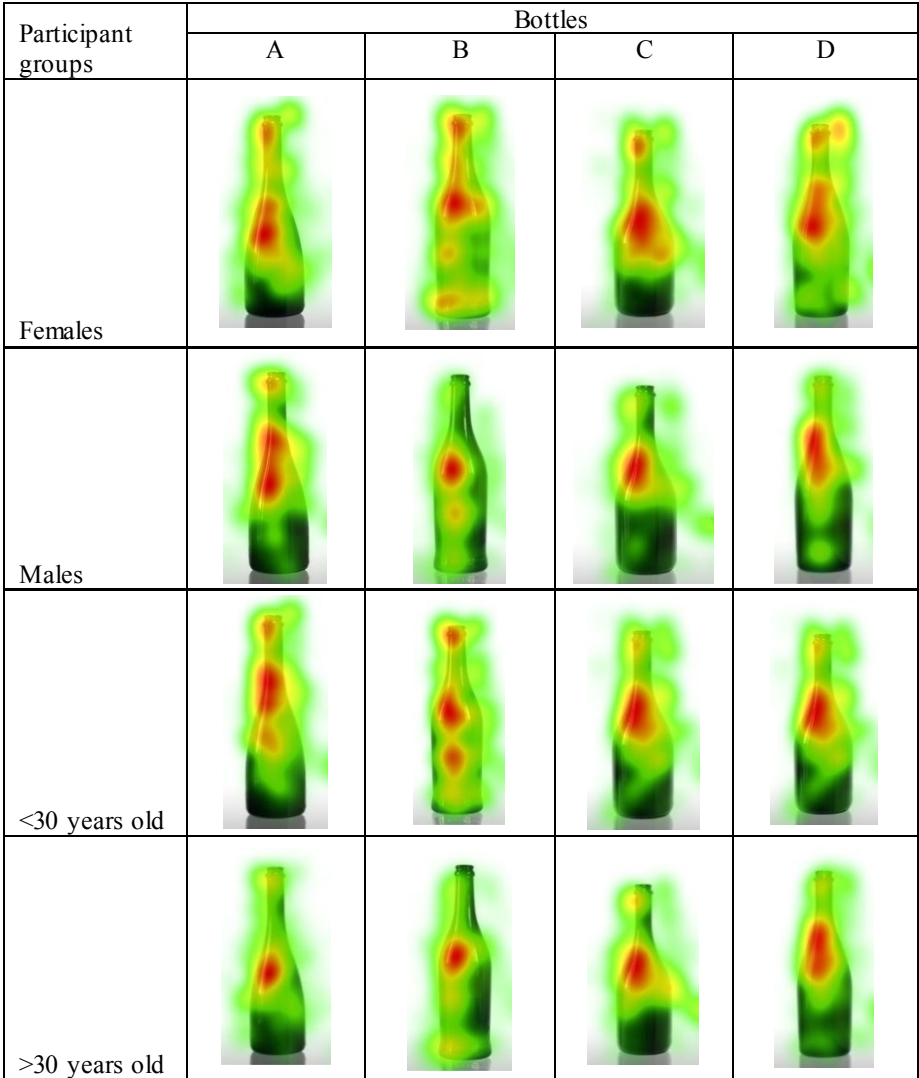| Participant groups	Bottles			
	A	B	C	D
Females				
Males				
<30 years old				
>30 years old				

Figure 4. Heat map of each bottle according to participant groups

3.6 Discussion

Viewing patterns of the participants showed that the shoulder of bottles took the attention of the participants at first and it is followed by top and bottom respectively. Analyses of AOI metrics confirmed that first fixation, duration of fixation and total number of fixations

were higher for the shoulder of the bottles. These results appear to be independent of gender and age.

The results of our study alone do not allow making inferences on the reasons behind this finding. A centre-bias could be at work (Tatler, 2007), while it could also be that the shoulder represents the most relevant shape element in characterising a bottle morphology. For bottles A and C, which have a more round shapes, the bottom of the bottles received very little attention. On the contrary, bottle B and D, which are more angular, received attention along all AOIs, though the shoulder remained the first and most viewed part.

Bottle B has a larger attention area on the heat map, which means that the participants intentionally looked at almost all parts of the bottle. This is the only bottle which has a small curvy shape at the bottom and that may be the reason of the higher attention to the heel. Bottle A has also the lowest TTFF at the shoulder, while TTFF of the other AOIs are never the lowest. If Reutskaja, Nagel, Camerer, & Rangel, 2011 are right, this may place further relevance on the shoulder of a bottle. In several choice experiments, it was investigated if there are any influences of the task on the choices and/or participants asked to make a choice between more than one options exposed at the same time (e.g., Bialkova et al., 2014; Khushaba et al., 2013; van der Laan et al., 2015; Van Herpen & Trijp, 2011). There are some other studies focusing on areas which capture user attention without any task (Rebollar et al., 2015), or investigating both task and observation of the packages (Clement, Kristensen, & Gronhaug, 2013; Gomes et al., 2014). In our experiment, each stimulus was exposed equally in time (10 sec each) and one by one to the participants. They were free to observe the bottles during the test without doing any choices. The choice question was asked only at the end of the test, to avoid biases. Besides, differently from Rojas et al. (2015), to study the role of bottle morphology we deliberately showed nude bottle samples to participants without any information regarding the brand, nutritional values, way of processing or any other information that may be found on packaging and labelling or seen at the point of purchase. Nevertheless, the viewing pattern of the nude bottles may

help in designing the labelling of the beverage. On the basis of our results, it can be hypothesised that the shoulder area of the bottle receives higher attention by the consumer and is, therefore, potentially relevant in influencing consumer choice. Were these finding confirmed in a larger sample, the shoulder areas should be used to convey important messages about the product.

3.7   Conclusion

The results of this eye-tracking study allow to argue that marketers and beverage companies alike should really be thinking much more carefully about optimizing the morphological and conceptual characteristics of the bottle so as to capture the attention of the consumer, since the bottle is such an intrinsic part of the overall firs impression a consumer gathers about a drink on a shelf. The results of this study suggest that the different parts that constitute the morphology of a bottle are not equally relevant and that much more attention should be given, in labelling and packaging of a drink, to the shoulder. Given the small sample, the results of this study need to be confirmed by further research. Besides, further research may explore including further shape elements (e.g. labels) in the design of the study, to check if relevant interactions exists that may be influencing consumer attention in real life packaging.

References

Almeida, S., Mealha, Ó., & Veloso, A. (2016). Video game scenery analysis with eye tracking. *Entertainment Computing*, *14*, 1–13. http://doi.org/10.1016/j.entcom.2015.12.001

Arboleda, A. M., & Arce-Lopera, C. (2015). Quantitative analysis of product categorization in soft drinks using bottle silhouettes. *Food Quality and Preference*, *45*, 1–10. http://doi.org/10.1016/j.foodqual.2015.04.006

Ares, G., Mawad, F., Giménez, A., & Maiche, A. (2014). Influence of rational and intuitive thinking styles on food choice: Preliminary evidence from an eye-tracking study with yogurt labels. *Food Quality and Preference*, *31*(1), 28–37. http://doi.org/10.1016/j.foodqual.2013.07.005

Bialkova, S., Grunert, K. G., Juhl, H. J., Wasowicz-Kirylo, G., Stysko-Kunkowska, M., & van Trijp, H. C. M. (2014). Attention mediates the effect of nutrition label information on consumers' choice: Evidence from a choice experiment involving eye-tracking. *Appetite*, *76*, 66–75. http://doi.org/10.1016/j.appet.2013.11.021

Bialkova, S., Sasse, L., & Fenko, A. (2016). The role of nutrition labels and advertising claims in altering consumers' evaluation and choice. *Appetite*, *96*, 38–46. http://doi.org/10.1016/j.appet.2015.08.030

Bialkova, S., & van Trijp, H. (2010). What determines consumer attention to nutrition labels? *Food Quality and Preference*, *21*(8), 1042–1051. http://doi.org/10.1016/j.foodqual.2010.07.001

Bojko, A. (2013). *Eye Tracking the User Experience A Practical Guide to Research*. Brooklyn, New York: Rosenfeld Media, LLC.

Chambers, L., Ells, H., & Yeomans, M. R. (2013). Can the satiating power of a high energy beverage be improved by manipulating sensory characteristics and label information?, *28*(1), 271–278. http://doi.org/10.1016/j.foodqual.2012.08.008

Clement, J. (2007). Visual influence on in-store buying decisions: an eye-track experiment on the visual influence of packaging design. *Journal of Marketing Management*, *23*(9-10), 917–928. http://doi.org/10.1362/026725707X250395

Clement, J., Kristensen, T., & Gronhaug, K. (2013). Understanding consumers' in-store visual perception: The influence of package design features on visual attention. *Journal of Retailing and Consumer Services*, *20*(2), 234–239. http://doi.org/10.1016/j.jretconser.2013.01.003

Coles, R., & Kirwan, M. (2011). *Food and Beverage Packaging Technology*. http://doi.org/10.1002/9781444392180

Djamasbi, S., Siegel, M., & Tullis, T. (2010). Generation Y, web design, and eye tracking. *International Journal of Human Computer Studies*, *68*(5), 307–323. http://doi.org/10.1016/j.ijhcs.2009.12.006

Folkvord, F., Anschütz, D. J., Wiers, R. W., & Buijzen, M. (2015). The role of attentional bias in the effect of food advertising on actual food intake among children. *Appetite*, *84*, 251–258. http://doi.org/10.1016/j.appet.2014.10.016

Glaholt, M. G., & Reingold, E. M. (2011). Eye movement monitoring as a process tracing methodology in decision making research. *Journal of Neuroscience, Psychology, and Economics*, *4*(2), 125–146. http://doi.org/10.1037/a0020692

Gomes, T., Hurley, R. A., Duchowski, A., Darby, D., & and Ouzts, A. (2014). The Effect of Full Body Versus Partial Body Graphic Labelling on Beverage Packaging. In *Packaging Technology and*

Science (Vol. 27, pp. 1–11). John Wiley and Sons Ltd. http://doi.org/10.1002/pts

Guo, F., Ding, Y., Liu, W., Liu, C., & Zhang, X. (2016). Can eye-tracking data be measured to assess product design?: Visual attention mechanism should be considered. *International Journal of Industrial Ergonomics*, *53*, 229–235. http://doi.org/10.1016/j.ergon.2015.12.001

Higgins, E., Leinenger, M., & Rayner, K. (2014). Eye movements when viewing advertisements. *Frontiers in Psychology*, *5*(MAR), 1–15. http://doi.org/10.3389/fpsyg.2014.00210

Holmqvist, K., Nyström, M., & Mulvey, F. (2012). Eye tracker data quality: what it is and how to measure it. *Proceedings of the Symposium on Eye Tracking Research and Applications*, *1*(212), 45–52. http://doi.org/10.1145/2168556.2168563

Karimi, P., Mahdieh, O., & Rahmani, M. (2013). The Study of Relationship between Packaging Elements and Purchase Behavior: Consumers of Food, Cosmetics and Health Products Parisa. *Interdisciplinary Journal of Contemporary Research in Business*, *5*(3), 281–295.

Khushaba, R. N., Wise, C., Kodagoda, S., Louviere, J., Kahn, B. E., & Townsend, C. (2013). Consumer neuroscience: Assessing the brain response to marketing stimuli using electroencephalogram (EEG) and eye tracking. *Expert Systems with Applications*, *40*(9), 3803–3812. http://doi.org/10.1016/j.eswa.2012.12.095

Kotler, P., & Keller, K. L. (2009). *Marketing Management. Organization* (Vol. 22). http://doi.org/10.1080/08911760903022556

Kozup, J., Burton, S., & Greyer, E. (2001). A comparison of drinkers' and nondrinkers' responses to Health-related information presented on wine beverage labels, *24*(2), 209–230.

Li, Q., Huang, Z. J., & Christianson, K. (2016). Visual attention toward tourism photographs with text: An eye-tracking study. *Tourism Management*, *54*, 243–258. http://doi.org/10.1016/j.tourman.2015.11.017

Marchini, A., Diotallevi, F., Paffarini, C., Stasi, A., Baselice, A., Stasi, A., & Baselice, A. (2015). Visualization and purchase An analysis of the Italian olive oil grocery. http://doi.org/10.1108/QMR-02-2015-0009

Milosavljevic, M., Navalpakkam, V., Koch, C., & Rangel, A. (2012). Relative visual saliency differences induce sizable bias in consumer choice. *Journal of Consumer Psychology*, *22*(1), 67–74. http://doi.org/10.1016/j.jcps.2011.10.002

Mueller, S., & Lockshin, L. (2008). How important is wine packaging for consumers? In *4th International Conference of the Academy of Wine Business Research* (p. 19).

Ngo, M. K., Piqueras-Fiszman, B., & Spence, C. (2012). On the colour and shape of still and sparkling water: Insights from online and laboratory-based testing. *Food Quality and Preference*, *24*(2), 260–268. http://doi.org/10.1016/j.foodqual.2011.11.004

Ngo, M. K., Velasco, C., Salgado, A., Boehm, E., O'Neill, D., & Spence, C. (2013). Assessing crossmodal correspondences in exotic fruit juices: The case of shape and sound symbolism. *Food Quality and Preference*, *28*(1), 361–369. http://doi.org/10.1016/j.foodqual.2012.10.004

Nielsen, J. (2010). Horizontal Attention Leans Left. Retrieved September 2, 2016, from https://www.nngroup.com/articles/horizontal-attention-leans-left/

Orquin, J. L., & Mueller Loose, S. (2013). Attention and choice: A review on eye movements in decision making. *Acta*

Psychologica, *144*(1), 190–206.
http://doi.org/10.1016/j.actpsy.2013.06.003

Piqueras-Fiszman, B., Velasco, C., Salgado-Montejo, A., & Spence, C. (2013). Using combined eye tracking and word association in order to assess novel packaging solutions: A case study involving jam jars. *Food Quality and Preference*, *28*(1), 328–338. http://doi.org/10.1016/j.foodqual.2012.10.006

Rebollar, R., Lidón, I., Martín, J., & Puebla, M. (2015). The identification of viewing patterns of chocolate snack packages using eye-tracking techniques. *Food Quality and Preference*, *39*, 251–258. http://doi.org/10.1016/j.foodqual.2014.08.002

Reutskaja, E., Nagel, R., Camerer, C. F., & Rangel, A. (2011). Search dynamics in consumer choice under time pressure: An eye-tracking study. *American Economic Review*, *101*(2), 900–926. http://doi.org/10.1257/aer.101.2.900

Rojas, J. C., Contero, M., Bartomeu, N., & Guixeres, J. (2015). Using Combined Bipolar Semantic Scales and Eye-Tracking Metrics to Compare Consumer Perception of Real and Virtual Bottles. *Packaging Technology and Science*, *28*(12), 1047–1056. http://doi.org/10.1002/pts.2178

Roth, S. P., Tuch, A. N., Mekler, E. D., Bargas-Avila, J. A., & Opwis, K. (2013). Location matters, especially for non-salient features-An eye-tracking study on the effects of web object placement on different types of websites. *International Journal of Human Computer Studies*, *71*(3), 228–235. http://doi.org/10.1016/j.ijhcs.2012.09.001

Silayoi, P., & Speece, M. (2004). Packaging and purchase decisions: An exploratory study on the impact of involvement level and time pressure. *British Food Journal*, *106*(8), 607–628. http://doi.org/10.1108/00070700410553602

Skaczkowski, G., Durkin, S., Kashima, Y., & Wakefield, M. (2016). The effect of packaging, branding and labeling on the experience of unhealthy food and drink: A review. *Appetite*, *99*. http://doi.org/10.1016/j.appet.2016.01.022

Spence, C. (2011). Crossmodal correspondences: A tutorial review. *Attention, Perception, & Psychophysics*, *73*(4), 971–995. http://doi.org/10.3758/s13414-010-0073-7

Spence, C., & Gallace, A. (2011). Tasting shapes and words. *Food Quality and Preference*, *22*(3), 290–295. http://doi.org/10.1016/j.foodqual.2010.11.005

Steinfeld, N. (2016). "i agree to the terms and conditions": (How) do users read privacy policies online? An eye-tracking experiment. *Computers in Human Behavior*, *55*, 992–1000. http://doi.org/10.1016/j.chb.2015.09.038

Suzianti, A., Rengkung, S., Nurtjahyo, B., & Al Rasyid, H. (2015). An Analysis of Cognitive-based Design of Yogurt Product Packaging. *International Journal of Technology*, *6*(4), 659. http://doi.org/10.14716/ijtech.v6i4.1105

Tatler, B. W. (2007). The central fixation bias in scene viewing: selecting an optimal viewing position independently of motor biases and image feature distributions. *Journal of Vision*, *7*(14), 4.1–17. http://doi.org/10.1167/7.14.4

Underwood, R. L. (2003). The Communicative Power of Product Packaging: Creating Brand Identity via Lived and Mediated Experience. *Journal of Marketing Theory and Practice*, *11*(1), 62–76. http://doi.org/10.1080/10696679.2003.11501933

van der Laan, L. N., Hooge, I. T. C., De Ridder, D. T. D., Viergever, M. A., & Smeets, P. A. M. (2015). Do you like what you see? The role of first fixation and total fixation duration in consumer choice. *Food Quality and Preference*, *39*, 46–55.

http://doi.org/10.1016/j.foodqual.2014.06.015

Van Herpen, E., & Trijp, H. C. M. van. (2011). Front-of-pack nutrition labels. Their effect on attention and choices when consumers have varying goals and time constraints. *Appetite*, *57*(1), 148–160. http://doi.org/10.1016/j.appet.2011.04.011

Velasco, C., Woods, A. T., Marks, L. E., Cheok, A. D., & Spence, C. (2015). The semantic basis of taste-shape associations. http://doi.org/10.7287/peerj.preprints.1366v1

Velazquez, C. E., & Pasch, K. E. (2014). Attention to food and beverage advertisements as measured by eye-tracking technology and the food preferences and choices of youth. *Journal of the Academy of Nutrition and Dietetics*, *114*(4), 578–582. http://doi.org/10.1016/j.jand.2013.09.030

Vu, T. M. H., Tu, V. P., & Duerrschmid, K. (2016). Design factors influence consumers' gazing behaviour and decision time in an eye-tracking test: A study on food images. *Food Quality and Preference*, *47*, 130–138. http://doi.org/10.1016/j.foodqual.2015.05.008

Wang, R. W. Y., & Chou, M. C. (2010). Differentiation in the arched surface of packaging: Its influence on the findability of logo typography displays. *Displays*, *32*(1), 24–34. http://doi.org/10.1016/j.displa.2010.09.006

Xie, Y. (2013). Wine Bottle Design and Consumer Preferences. In Y. Yang & M. Ma (Eds.), *Proceedings of the 2nd International Conference on Green Communications and Networks 2012 (GCN 2012): Volume 5* (pp. 639–646). Berlin, Heidelberg: Springer Berlin Heidelberg. http://doi.org/10.1007/978-3-642-35398-7_80

4 Predictive package design for organic sparkling grape juice: A study with Italian and Turkish consumers

4.1 Introduction

Italy and Turkey are within the top ten countries in the production of grape (FAOSTAT, 2013) and in the five most important organic grape growing countries in worldwide (Willer, H. & Lernoud, 2016). Grape is mostly produced for wine production in Italy and major part of Turkish production is for table grape and raisins. The subject of our research is "organic sparkling grape juice" which is a quite innovative product for these countries and could be an alternative product particularly for the companies which are seeking innovation to diversify production and added value to grapes which are used for table wine. Organic production is still relatively new for many consumers and can be considered still an innovation in the food industry as well (Marchese, Masotti, Sidali, & Dörr, 2014; Vanhonacker et al., 2013).

In the present study, the primary aim is to predict the suitable brand name, bottle and label shapes for an "organic sparkling grape juice" by using sound and shape symbolism, which are the two classes of crossmodal correspondences, in order to utilise the best launching options for Italian and Turkish markets. It was attempted to understand if crossmodal associations could help to design a new packaging with a new name for Italian and Turkish consumers. In particular, the possible impacts of term "organic" in the description of the product on the choices of the participants was analysed and more specifically, it was also checked if alcohol consumers have different choices from the participants who do not consume alcohol. The secondary aim is to evaluate general consumer profiles in these countries regarding consumption of organic products and trust level to these products.

The paper is organized as follow: in Section 2 we provide the background of the study and review previous researches. Section 3

explains the methods, while results are described in Section 4 and followed by discussion and conclusions.

4.2   Background

Recently, several studies demonstrated that people have a tendency to match sensory attributes of a food and drinks such as taste and aroma spontaneously to other sensory features such as shapes and sounds. This phenomenon is described as 'crossmodal correspondences' in the literature (Spence & Ngo, 2012). Pioneering work in this area was realized by Köhler (1929) by asking people to associate the meaningless words 'maluma' and 'takete' with abstract shapes. The results showed that rounded, cloud-like shapes were matched with the soft sounding 'maluma', while angular, star-like shapes were matched to the sharp sound of 'takete'. Later, this experiment was repeated by Ramachandran & Hubbard (2001, 2003) by using different words and shapes so that as a result they called it as the Bouba/Kiki Effect. In the same year with Köhler, crossmodal link between the speech sounds /a/ and /i/ and size of the objects was observed by Edward Sapir (1929). He found that meaningless words "mal" was associated with large objects and "mil" with small objects. Afterwards, various studies published on crossmodal correspondences showing that it occurs possibly between all different pairings of sensory modalities (Knöferle & Spence, 2012; Spence, 2011, 2012 for reviews). Here, we give examples regarding associations of taste with sound and shape which are the basis of our research.

Klink (2000) documented that product brand names including higher frequency vowel and consonant sounds are concluded as smaller, lighter (relative to darker and heavier), milder, more bitter, thinner, softer, weaker, faster, prettier, friendlier, more feminine and colder. Front vowels, the letters i and e produce higher frequency sounds than the back vowels which are letters o and u. Concerning consonants, fricatives (the letters f, s, v, and z) generally produce higher frequency sounds than stops (the letters p, t, b, g, d, and k or hard c) (see Klink, 2000 for a review). In the study realized by Crisinel, Jones, and Spence (2012), participants rated low-pitched

sounds as 'bitter', while rating high-pitch sounds as sweeter. Furthermore, they found the sweeter taste of the cinder toffee as being more intense when they were listening to higher-pitched sounds than when listening to the 'bitter' sound- track instead.

Specific to shape and taste associations, Ngo, Piqueras-Fiszman, & Spence (2012) demonstrated that people conveyed the sparkling water much with the angular shape and still water with round shapes as similar results were noted by Spence & Gallace (2011) as well. Crossmodal correspondence between basic taste words and shape roundness/angularity was studied by Velasco, Woods, Marks, Cheok, & Spence (2015). Their result showed that "sweet" clustered with round shape and "bitter", "salty", and "sour" with angular shape. In addition, dark chocolate having higher cocoa content was matched with angular shapes and with sharp meaningless speech sounds (e.g., "tuki" and "takete") while milk chocolate which is sweeter was strongly associated with round shapes and rounded speech sounds (e.g., "lula" and "maluma") (Ngo, Misra, & Spence, 2011; Ngo & Spence, 2011). Correspondingly, in the experiment with fruit juices, the juices which were considered sweet and low in sourness were associated with rounder shapes and rounder sounds like "maluma" and "bouba" while the juices which were classified as tasting sour were consistently associated with angular shapes as well as sharper sounds like "takete" and "kiki" by the participants (Ngo et al., 2013).

Topolinski and his colleagues worked on another argument which was about oral kinematics of words during their pronunciation. They focused on two types of articulations; swallowing-like (inward movement, e.g., bodika) or spitting-like (outward movement, e.g., kodiba). They held a set of experiments to explore matching effects between word articulation and meaning of the objects that the words denoted. They labelled various items with these words and participants rated their liking for them. They found out that for items the use of which involves ingesting oral actions (mouthwash, lemonade) inward words were preferred more than outward words. For items that cause expectorating oral actions (pill, bubble gum, toxic

chemical) this preference was reduced or reversed (outward words were liked more than inward) (Topolinski, Boecker, Erle, Bakhtiari, & Pecher, 2015). In addition, Francis, MacRae, Spirduso, & Eakin (2015) reported that inward compared to outward product and brand names, were liked more by the participants, they reported higher likelihood to purchase and willingness-to-pay was up to 13% of the product's estimated value. However, reliable in-over-out preference was found also for inedible products used the experiments (e.g., software) or even lightly negative products (e.g., pest control) in their research.

Findings of above mentioned studies are of considerable importance for creating brand names and designing product packaging. Today, numerous new brands and products are introduced every day and consumers begin to experience them with the sound of a product name and packaging generally (Fenko, Lotterman, & Galetzka, 2016). Understanding how unfamiliar names, packaging shape or design of labels can trigger unconscious associations regarding product properties and assessing how the sensory attributes of product packaging are perceived by the consumers contributes product communication and improves brand value (Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014). For example, Fenko and her colleagues looked for the influence of unfamiliar brand names, package shapes and product types (muesli cookie vs. butter cookie) on perceived product healthfulness, product evaluation, taste expectations and purchase intention were investigated. Their results showed that consumers perceived muesli cookies as healthier than butter cookies. Therefore, angular packages and brand name "Asahi" preferred for healthier cookies more versus round packages and brand name "Ramune". Angular cookies were presumed tastier than round cookies (Fenko et al., 2016). The relation between packaging attributes and taste studied by Velasco et al. (2014) demonstrated that rounded shapes, typefaces, and names, and low-pitched sounds express better ''sweet'' tastes while angular shapes, typefaces, and names, and high-pitched sounds communicate more ''sour tastes''.

However, it is important to emphasize that there are previous studies demonstrating both cultural similarities and differences in crossmodal correspondences. For example, Ngo et al. (2013) realized a series of experiment with British and Colombian participants to investigate crossmodal correspondences in two different cultures. Participants tasted a number of fruit juices, and results demonstrated that sweeter fruit juices associated with rounder shapes and sounds with a lower pitched while sourer fruit juices matched with more angular abstract shapes and sounds with a higher pitch. With respect to cross-cultural differences, carbonated water is associated with angular shapes by Western participants (Ngo, Piqueras-Fiszman, & Spence, 2012; Spence & Gallace, 2011) . However, no such effect was found in the study done with members of the Himba tribe from rural Namibia (Bremner et al., 2013). According to the results of another test with chocolate having 30, 70, or 90% cocoa content, Himba participants tended to match less bitter chocolate samples to angular rather than rounded shapes which is the opposite association of Westerners (Bremner et al., 2013). More researches are needed to understand and to define whether crossmodal correspondences are shared universally or not.

Countries addressed in this study are Italy and Turkey. Italian and Turkish consumers may demonstrate some differences in terms of their cultures which might lead to differences in their preferences. For example, the majority of Italian population is represented by Catholic Christians while the majority of Turkish population is Muslim (World Religion Map, 2008). Therefore, we investigated if there are any differences in terms of crossmodal associations between Italian and Turkish consumers.

Consumer trust is an important precondition to establish a market, especially when the products are premium priced and have credence attributes which cannot be verified by the consumer such as "green" products (Nuttavuthisit & Thøgersen, 2015). For that reason, we asked consumers about their trust levels to following labels: "Halal certified products", "Organic certified products", "Made in Italy", "Made in Turkey" and "Made in EU".

Today, halal foods (means "lawful" or "permitted" according to Islamic principles) is a part of globalized market (Reuters, 2015); and halal products are not only marketed in Muslim majority countries but also in the countries where there is growing Muslim immigrant community (Atalan-Helicke, 2015). Turkey is one of the world's largest markets in terms of consumption of halal foods with a Muslim majority (Reuters, 2015) and attention to the "halal certified products" has given recently by middle class Muslim consumers (Uner & Gungordu, 2016). Therefore, this label information included to survey questions.

4.3   Material and methods

4.3.1   Respondents

508 respondents including 257 Turkish and 251 Italian consumers (aged between 18-88 years old, mean 40.1) were recruited for the survey. Quotas of the respondents were set according to general population distribution based on resident population of each region in each country and gender ratio considering general census results available for Italy (http://dati-censimentopopolazione.istat.it/Index.aspx?lang=en) and Turkey (http://www.tuik.gov.tr/PreTablo.do?alt_id=1018) in order to have convenient and representative samplings of the countries. Education level quotas were taken into consideration as well at the beginning. However, it could not be applied due to online nature of the survey since it was not easy to recruit participants who have no any education title for an online work. For each country, half of the respondents were non-drinkers of alcoholic beverages while the other half was drinking alcoholic beverages (See Table 1). The respondents were invited to complete the online questionnaire by Qualtrics and each was paid 3.2 US Dollars. In the description of the product, the term "organic" was used for half of the participants, and not used for the others (See Table1 and 2.3 Procedure).

Table 1: Demographic characteristics of participants per experimental conditions

Experimental condition	Nationality		Gender		Consume alcohol		Mean ages	Total (N)
	Italian	Turkish	M	F	Yes	No		
Organic sparkling grape juice	122	124	117	129	115	131	40.3	246
Sparkling grape juice	129	133	133	129	136	126	39.8	262
Total (N)	251	257	250	258	251	257	40.1	508

4.3.2 Survey design

The online questionnaire consisting three sections was prepared in Italian and in Turkish. The first section included questions about demographic characteristics of the respondents and questions regarding consumption of organic products and trust level to the certain label information (See Table 2 for the questions and scales used for the answers where applicable). Detailed answers taken from the participants for their age, education and income level were classified under 3 groups in order to facilitate analysis of the results as given in Table 2.

Table 2. Survey questions

Section	Questions	Scales of answers
1st Demographic characteristics, trust levels to certain label information and organic product consumption	What is your nationality?	Italian=1, Turkish=2
	Do you consume alcoholic drinks?	1=No, 2=Yes
	Where is your residency?	For Italy: 1=North, 2=Centre, 3=South, 4=Islands. For Turkey: 1=Eastern/Southeastern Anatolia, 2=Black sea/Middle Anatolia, 3=Agean/Mediterranean, 4=Marmara
	What is the annual income of your family?	1=Low, 2=Medium, 3=High
	What is your education?	1=Low, 2=Medium, 3=High
	What is your occupation?	1=Unemployed, 2=Student, 3=Part-time, 4=Full-time, 5=Retired, 6=Housewife, 7=others
	What is your sex?	1=Male 2=Female
	How old are you?	1=Age<35, 2=Age35-50, 3=Age>50
	What is your level of trust to the products labelled as follows? "Halal certified products" "Organic certified products" "Made in Italy" "Made in Turkey" "Made in EU"	1=Very below the average 2=Quite below the average 3=Slightly below the average 4=Average 5=Slightly above the average 6=Quite above the average 7=Very above the average
	Do you consume organically certified products?	1=No, never 2=Yes, occasionally 3=Yes, regularly
2nd Packaging questions	Please observe labelled/not labelled bottles and label couples given under each question and indicate	4=Very adapted, 3=Adapted, 2=Slightly adapted, 1=Little adapted, 0= Both are not adapted, -1=Little

	the most appropriate point, which you think that matches with the taste of (organic) sparkling grape juice, on the scales given under each of them.	adapted, -2=Slightly adapted, -3=Adapted, -4=Very adapted (positive values are referring angular shapes, negative values are used for round shapes)
3rd Branding questions	Please find below possible brand name couples under each question. Indicate the most appropriate point, which you think that matches with the taste of (organic) sparkling grape juice, on the scales given under each of them.	4=Very adapted, 3=Adapted, 2=Slightly adapted, 1=Little adapted, 0= Both are not adapted, -1=Little adapted, -2=Slightly adapted, -3=Adapted, -4=Very adapted (positive values are used for round&inward words, negative values are used for angular&outward words)

For the survey, two different bottle models (round and angular) and two label shapes (round and angular) were used. In the second section, bottle and label couples were presented in four combinations including bottles without label, bottles with labels and only labels (See Fig.1).

(a) Angular bottle vs. round bottle

(b) Angular label vs. round label

(c) Angular label with angular bottle vs. angular label with round bottle

(d) Round label with angular bottle vs. round label with round bottle

Figure 1. Bottles, labelled bottles and label images used in the 2nd section of the survey

We used nine scales described with bottoms in order to allow participants to indicate the degree to which they perceived the described sparkling grape juice to match a given choice on the scale (See Fig. 2).

Bottiglie con etichette

| Molto appropriata | Appropriata | Leggermente appropriata | Poco appropriata | Entrambi Per niente appropriate | Poco appropriata | Leggermente appropriata | Appropriata | Molto appropriata |

○   ○   ○   ○   ○   ○   ○   ○   ○

Figure 2. Online questionnaire: Sample question regarding labelled bottles presented to the respondents (scale in English "Very adapted, Adapted, Slightly adapted, Little adapted, Both are not adapted, Little adapted, Slightly adapted, Adapted, Very adapted" respectively)

The third section was dedicated to the sound association questions for the given sparkling grape juice. Totally nine word couples were presented to the respondents based on literature information and pre-survey results: Two couples chosen from angular/round sounds (kiki/buba and takete/maluma) and two couples were from inward/outward sounds (mutari/rutami and beniga/g(h)eniba) based on previous literatures (e.g. Ngo et al., 2013, Topolinski, Maschmann, Pecher, & Winkielman, 2014). Other names were chosen considering high/low pitched vocals (i, e: high, a, o, u: low): One couple of existing brands, icemary/zerotondo (Italian brand names for an organic sparkling grape juice) were used as they are. Ordal/kidem which are modified from existing fruit juice brands orbal/kedem, were used as another couple of brands. Orbal/kedem have been chosen according to the results of pre-survey done by 66 people about brands. In that survey, respondents were asked if they recognize the given brand names or not. Orbal and kedem were not recognized by the participants. These two names were modified by us as "ordal/kidem" and added to the survey to increase their unknowability. And final three brand couples were created by us. These are sweet temper/cold comfort, benesse/annatura and opus/biel. All names were chosen considering if they were similarly pronounced in Italian and Turkish. Only change was done in "geniba" which was

written as "gheniba" in Italian translation of the survey in order to have same pronunciation with Turkish. Order of questions was randomized in this section across respondents and again nine scales were used to allow them to express their perceived level of associations for each couple (See Fig.2).
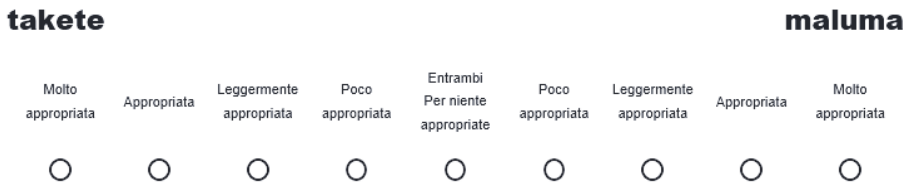
takete   **maluma**

Molto appropriata	Appropriata	Leggermente appropriata	Poco appropriata	Entrambi Per niente appropriate	Poco appropriata	Leggermente appropriata	Appropriata	Molto appropriata
○	○	○	○	○	○	○	○	○

Figure 2. Online questionnaire: Sample question of word association presented to the respondents (scale in English "Very adapted, Adapted, Slightly adapted, Little adapted, Both are not adapted, Little adapted, Slightly adapted, Adapted, Very adapted" respectively)

Instructions were presented at the top of the screen for each section, and below, a scale was presented after each question (see Fig. 2). Nine radio buttons appeared for each scale. The first and ninth radio buttons were at the left and right points of the scale, respectively, and the fifth radio button was at the mid-point of the scale.

4.3.3   Procedure

The respondents followed a link to an online questionnaire and were told that they would be completing a survey about a drink. After completing the first section, two instructions directed respondents to select a point along the scale that corresponded to the image or word couples that best matched their expectations when imagining the taste of the drink. In the description of the product, half of the participants saw the term "organic" and product was described as "organic sparkling grape juice", the others saw only as "sparkling grape juice" (See Table 1 for the experimental conditions). It was informed that this product "lightly carbonated beverage with a sweet and a bit sour taste which is consumed cold". Respondents selected a radio button

located just below the question in order to indicate their choice. Once they had made their choice, the respondents clicked on the ''next'' button to submit their response and move onto the next question. If the participant attempted to continue to the next question without answering any of the questions, a prompt appeared indicating that a response was required. After completing to respond all questions, a ''thank you'' screen appeared indicating that the questionnaire was complete and that the respondent's answers had been submitted. The survey was tried with 36 people in order to be sure if online questionnaire works well and all questions are understood by the respondents. Answers of these participants were not included in the results.

4.4   Results

Results obtained from the survey were presented and discussed under four titles: Organic product consumption, trust level to the certain product label information, shape symbolism and sound symbolism. Analyses were realized mainly focusing on comparison of Italy and Turkey.

4.4.1   Organic Product consumption

Answers of the participants regarding consumption of organic products have been evaluated with the data obtained from the first section of the on-line survey. Information regarding the frequency with which the participants consumed organic products is presented in Table 3.

Table 3. Do you consume organically certified products?

Consumption frequency and scale	Italian	Turkish	Males	Females	Age<35	Age 35-50	Age>50	Total
1 No, never	41	10	27	24	11	22	18	51
2 Yes, occasionally	185	210	195	200	161	126	108	395
3 Yes, regularly	25	37	28	34	30	23	9	62
Total	251	257	250	258	201	171	135	508

Occasional consumption of organic products constituted a very large proportion of the population in two countries (Italy 74% and

Turkey 82%) and it is followed by regular consumption in Turkey (14%) while non-consumers is at second level in Italy (16%) (Fig. 3).

ANOVAs were run to examine the effect of gender, age, income, and education level of the participants as well as their occupation on organic product consumption frequency considering all survey participants. The results show neither income nor gender significantly influences the organic product consumption. However, age ($F_{(2, 505)}$=4.92, $p < 0.01$), occupation ($F_{(6, 501)}$=2.68, $p < 0.05$) and education level ($F_{(2, 505)}$=4.95, $p < 0.01$) of the participants had a significant impact. A Tukey post-hoc test showed that young participants (age less than 35 years) consuming organic products statistically significantly higher than old participants (age above 50 years) (0.16±0.05, p=.006). With respect to occupation, students consume significantly more organic products than unemployed participants (0.28±0.08, p=.017) and organic consumption is higher for the participant having high education level than the participants with low education level (0.16±0.05, p=.006).

Similarly, same analyses were run at national levels. According to results, only education had an impact on consumption for Italian participants ($F_{(2, 248)}$=3.68, $p < 0.05$) which increases while education level is higher. However, Tukey post-hoc test did not showed a significant difference between the groups having low, medium and high education levels. Same factors did not show any significant impact for Turkish participants.
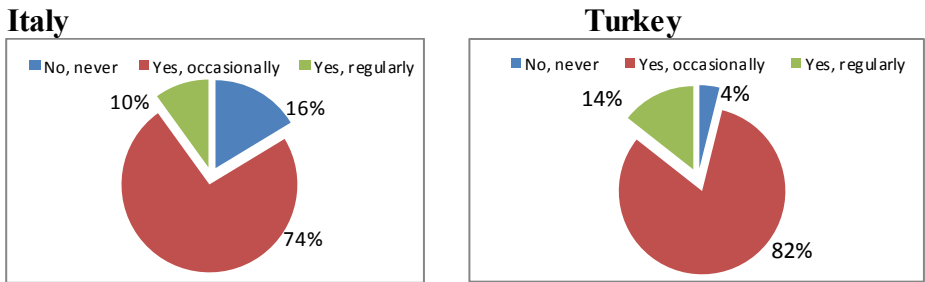

Figure 3. Organic product consumption frequencies of Italian and Turkish participants

4.4.2 Trust level to certain label information

Mean ratings with respect to the trust levels to the given label information of Italian and Turkish participants are given in Figure 3. According to results, except Italians' trust to Halal (M=3.63±0.09) and Made in Turkey (M=2.64±0.09) both counties participants' trust levels were higher than average.

Two sampled t-tests were conducted to test whether trust level to certain label information differed significantly according to the nationality of the participants. According to the results, the trust level of Turkish participants is statistically significantly higher than Italian participants for Halal (p<0.001) and organic certified products (p<0.001) as well as for products Made in Turkey (p<0.001). However, Italian participants trust more than Turkish people to products Made in Italy (p<0.001). There is no significant difference was found between Italian and Turkish participants regarding trust level to the products Made in EU (p=.548) (See figure 3).
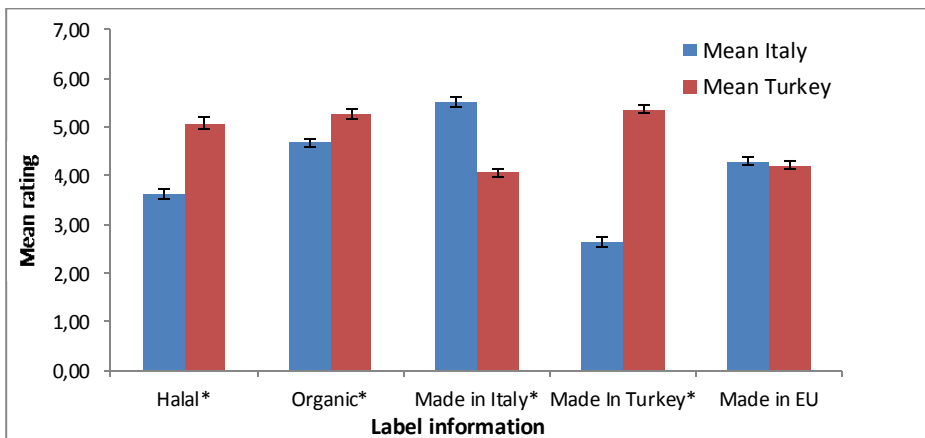
Figure 3: Participants mean ratings for trust levels to the label information (*significant difference between Italian and Turkish respondents)
Ratings: 1=very below the average 2=quite below the average 3=slightly below the average 4=average 5=slightly above the average 6=quite above the average 7=very above the average

The relation between organic product consumption frequency and trust to organically certified products was investigated at national levels (F(6,244)=7.95, p<0.001 for Italians, F(6,250)=3.27, p<0.01 for

Turkish participants). Results showed that consumption frequency increases with the increase of trust levels.

For each country, impacts demographic characteristics such as age, gender, income, education and occupation were examined by running ANOVAs and Tukey post-hoc test where it was applicable. Results showed neither gender nor occupation have significant impact on trust levels.

Trust to Halal certified products was affected by following factors: Age had significant impact only on trust level for Halal certified products ($F(2,248)=3.44$, $p<0.05$ for Italians, $F(2,254)=4.35$, $p<0.05$ for Turkish); both Italian (0.53 ± 0.22, $p=.043$) and Turkish (0.88 ± 0.30, $p=.010$) young participants have significantly higher trust than old participants. Income and education showed significant impact for Turkish participants with respect to Halal certified products (income: $F(2,254)=6.34$, $p<0.01$), education: $F(2,254)=3.40$, $p<0.05$)). Tukey post-hoc test revealed that trust level of the Turkish participants with low income is significantly higher compared to participants having medium (0.72 ± 0.24, $p=.007$) and high incomes (0.78 ± 0.27, $p=.011$). In addition, low educated participants trust Halal product significantly more than medium educated (0.67 ± 0.25, $p=.023$).

Made in Italy was affected by income ($F(2,254)=3.32$, $p<0.05$) and education ($F(2,254)=3.19$, $p<0.05$) level of Turkish participants: Turkish participants with high-income trust significantly more to products Made in Italy than participants having low income (0.63 ± 0.24, $p=.029$). High educated Turkish participants trust more to products Made in Italy than low educated participants (0.57 ± 0.22, $p=.032$).

Made in Italy was affected by education level of Italian participants ($F(2,248)=4.45$, $p<0.05$); trust level of high educated participants is significantly higher than participants having low education (0.69 ± 0.25, $p=.017$).

Demographic characteristics of the participants did not show any impact on the trust level of organically certified products and Made in EU.

4.5   Result of packaging and branding

4.5.1   Shape of bottles and labels

The values on each scale ranged from -4 to +4, with 0 as the midpoint. Positive values are referring angular shapes; negative values are used for round shapes. One sample t-tests, with 0 (i.e., the mid-point of the scale) as the test value, were conducted on each scale. Respondents' ratings on all scales were significantly different from the mean test value, $p < 0.001$ for all comparisons. In particular, respondents found adapted more round shapes for "organic sparkling grape juice" (Fig.4).
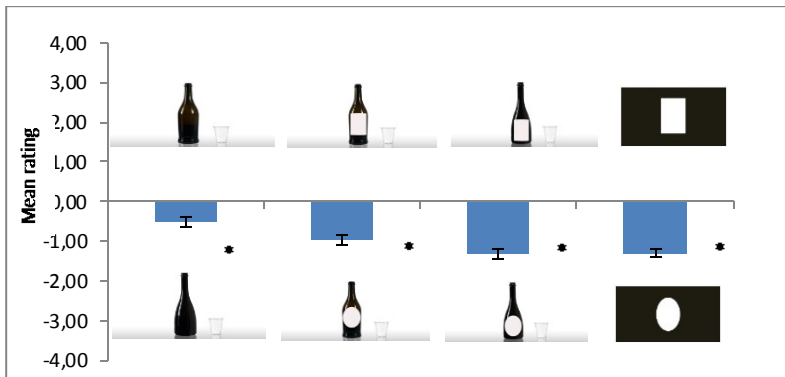
Figure 4: Participants mean ratings for bottle, labelled bottle and labels (*significant difference from the mean $p<0.001$)

Using term "organic" in the description of the product had no statistically significant impact on the choices of the participants. Alcohol consumption of the participants did not change the choices on round shapes. However, for the choice question including only bottle images, there was a significant difference between both groups (M=-0.23 SD=0.17 for not consuming alcohol, M=-0.78 SD=0.17 for consuming alcohol, $p<0.05$) but always remains the round shape side in the mean ratings.

One sample t-tests repeated for Italian and Turkish participants separately (See Table 4). Italian respondents' ratings on all scales were significantly different from the mean test value, $p < 0.001$ for all comparisons; respondents found adapted more round shapes for "organic sparkling grape juice". Turkish respondents' ratings on round and angular bottle scale did not show significant difference from the mean test value. However, their ratings on all other scales were significantly different from the mean test value, $p < 0.001$; Turkish respondents found adapted more round shapes for "organic sparkling grape juice" (Table 4).

Table 4. Mean ratings for each packaging design (value=0; negative values mean that ratings were closer to the first of the two anchors presented at the top of each column) and ratings significantly different from the mid-point are in bold ($*p<0.001$).

	Bottle: round / angular	Angular bottle: round label / angular label	Round bottle: round label / angular label	Label: round / label
All participants	**-.51***	**-.96***	**-1.32***	**-1.30***
Italians	**-.84***	**-.73***	**-1.39***	**-1.28***
Turkish	-.18	**-1.19***	**-1.25***	**-1.32***

Neither using term "organic" in the description of the product did either alcohol consumption show statistically significant impact on the choices of the Italian participants. With respect to Turkish participants, participants consuming alcohol mean rating was on "round" (M=-0.61 SD=2.77), while participants not consuming alcohol mean rating was on "angular" (M=+0.22 SD=2.76) (p<0.05).

Italian and Turkish respondents' responses were compared using t-tests for each of the scales. Participants of both countries selected round shapes as more adapted for "organic sparkling grape juice". A significant difference between Italian and Turkish participants was observed only for "bottle" choice (M=-0.84 SD=0.17 for Italian participants, M=-0.18 SD=0.17 for Turkish, p<0.001) (Fig. 5) but remaining the round shape side.
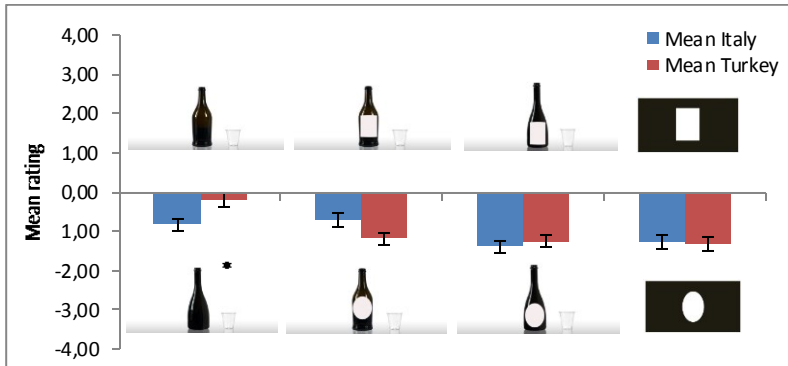
Figure 5: Participants mean ratings for bottle, labelled bottle and labels (*significant difference between Italian and Turkish respondents p<0.001)

4.5.2 Brand names

Similarly to bottles and labels, the values on each scale ranged from -4 to +4, with 0 as the midpoint. Positive values are used for round&inward names, negative values are used for angular&outward names. One sample t-tests, with 0 (i.e., the mid-point of the scale) as the test value, were conducted on each scale. Respondents' ratings on scales were significantly different from the mean test value (p<0.001 for all) for following brand name couples (Fig. 6): Round names "maluma" and "opus" significantly more adapted vs. angular "takete" and "biel" respectively, inward name "beniga" significantly more adapted vs. outward "gheniba", angular names "icemary" and "benesse" significantly more adapted vs. round "zerotondo" and "annatura" respectively (Fig. 6).

Using term "organic" in the description of the product had no statistically significant impact on the choices of the participants as general. Alcohol consumption of the participants made significant impact (p<0.05) only on one choice of the participants which was regarding angular vs round names: Participants consuming alcohol mean rating was on "coldcomfort" (M=+0.26 SD=2.29) while participants not consuming alcohol mean rating was on "sweettemper" (M=-0.16 SD=2.30).
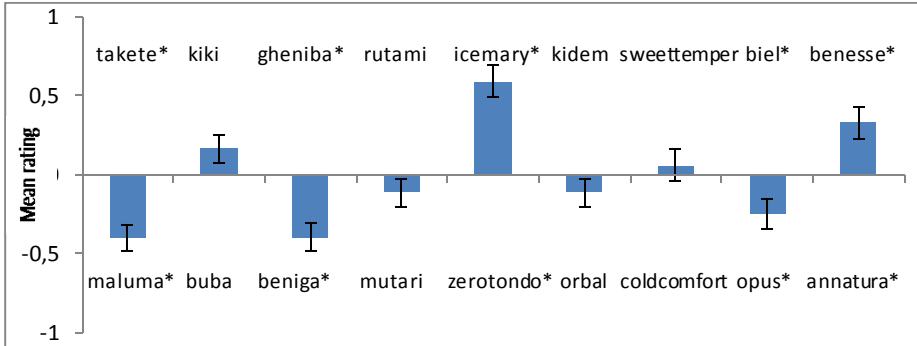
Figure 6: Participants mean ratings brand names (*significant difference from the mean p<0.001)

One sample t-tests repeated for Italian and Turkish participants separately (See Table 5). Italian respondents' ratings on scales were significantly different from the mean test value for following brand name couples (Table 5): Angular name "kiki" and "benesse" significantly more adapted vs. angular "buba" and "annatura" respectively, inward names "beniga" and "mutari" significantly more adapted vs. outward "gheniba" and "rutami" respectively. With respect to Turkish respondents' raitings, following raitings showed significant difference: Round names "maluma" "orbal" and "opus" significantly more adapted vs. angular "takete", "kidem" and "biel" respectively, inward name "beniga" significantly more adapted vs .outward "gheniba", angular names "icemary" and "benesse" significantly more adapted vs. round "zerotondo" and "annatura" respectively (Table 5).

Table 5. Mean ratings for each word couples (value=0; negative values mean that ratings were closer to the first of the two anchors presented at the top of each column) and ratings significantly different from the mid-point are in bold (*p<0,05, **p < 0.01, *** p < 0.001)

	takete / maluma	kiki / buba	gheniba / beniga	rutami / mutari	icemary / zerotondo	kidem / orbal	sweettemper /coldcomfort	biel / opus	benesse /annatura
All participants	**-.40***	.16	**-.40***	-.12	**.59***	-.11	.06	**-.25**	**.33***
Italians	-.09	**.50***	**-.28***	**-.31***	.14	.07	**.27***	-.14	**.30***
Turkish	**-.71***	-.18	**-.50***	.08	**1.03***	**-.29***	-.16	**-.34***	**.35***

With respect to Italian participants, using term "organic" in the description of the product had no statistically significant impact on the choices of the Italian participants. Alcohol consumption of the participants made significant impact ($p<0.05$) only on one choice of the participants which was regarding angular vs round names: Participants consuming alcohol mean rating was on "coldcomfort" (M=+0.56 SD=2.08) while participants not consuming alcohol mean rating was on "sweettemper" (M=-0.05 SD=2.26).

As regards Turkish participants, using term "organic" in the description of the product made significant impact ($p<0.05$) on the choice about inward vs outward names: Participants', who saw the term "organic", mean rating was on "mutari" (M=-0.23 SD=2.25) while others mean rating was on "rutami" (M=+0.37 SD=2.25). Alcohol consumption of the participants made significant impact ($p<0.05$) on mean ratings of inward name "beniga"; (participants consuming alcohol M=-0.80 SD=2.15, not consuming alcohol M=-0.22 SD=2.19 but both groups means remained on "beniga").

Italian and Turkish respondents' responses were compared using t-tests for each of the scales. Table 6 summarizes the results and significant differences between Italian and Turkish respondents and Figure 7 shows the mean ratings according to nationalities.

Table 6: The pairwise comparison of mean ratings of Turkish and Italian participants for brand names with t-test (*$p<0.05$, **$p<0.001$)

	Mean Ratings (with SD) Turkish	Italian	Significancy P value
Angular(+) vs round(-)			
takete vs. maluma	-0.09 (1.61)	-0.71(2.06)	0.001**
kiki vs. buba	+0.50 (1.70)	-0.17(2.26)	0.001**
icemary vs. zerotondo	+0.14 (2.29)	+1.04 (2.19)	0.001
kidem vs. orbal	+0.07 (1.59)	-0.29 (2.27)	0.042*
sweettemper vs. coldcomfort	+0.27 (2.19)	-0.16 (2.37)	0.036*
biel vs. opus	-0.14 (1.75)	-0.35 (2.41)	0.279
benesse vs. annatura	+0.31 (2.17)	+0.35 (2.38)	0.815
Outward (+) vs inward (-)			
gheniba vs. beniga	-0.29 (1.64)	-0.52 (2.18)	0.203
rutami vs. mutari	-0.31 (1.59)	+0.08 (1.92)	0.021*

Round names "maluma" and "opus" were selected as more adapted vs. angular "takete" and "biel", angular names "icemary" and "benesse" found more adapted vs. round "zerotondo" and "annatura" and inward name "beniga" was selected vs. outward "gheniba" by both country participants. However, ratings showed a difference for other names: While Italian participants find more adapted angular names "kiki", "kidem" and "benesse", Turkish participants mean ratings were negative meaning that they choose round names "buba", "orbal" and "cold comfort". Another difference was regarding inward and outward names: Italians mean rating was negative (inward "mutari"), while it was positive for Turkish participants (outward "rutami").
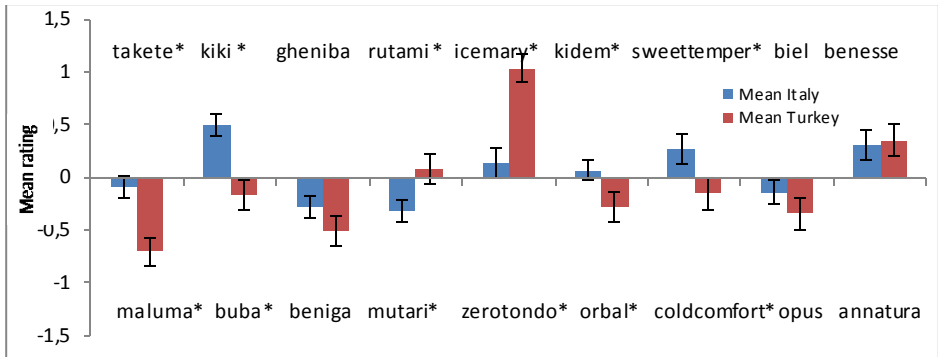
Figure 7: Participants mean ratings for brand names (*significant difference between Italian and Turkish respondents p<0.001)

4.6   Discussion

4.6.1   Organic product consumption and trust

We focused on general consumers in each country in order to have a collective idea about organic product consumption patterns. There were only two questions asked to participants about organic products; the frequency of consumption and their trust level to these products. Although we cannot make inferences on the reasons behind this finding, results give a general picture on consumption and trust. Various studies like those focused on national or international consumption patterns confirm the results such as occasional use of

organic products at high level and consumption is very much related positively to education level of consumers (Elif Akagun Ergin & Ozsacmaci, 2011; Ilyasoglu, H., Temel, S. & Ozcelik, 2010; Jensen, Denver, & Zanoli, 2011; Pellegrini & Farinello, 2009; Shafie & Rennie, 2012). Occasional consumers and non-consumers of organic food products were evaluated as generally have very limited knowledge and experience about organic products (Jensen, Denver, & Zanoli 2011). While regular consumers prefer organic products mainly for health and safety values, occasional consumers are attracted more by taste and good looking, but they have doubts about organic food quality (Naspetti & Zanoli, 2006). Indeed, our findings showed that the consumption frequency of organic products have a positive interaction with the trust levels of consumers to these products. More general, the trust of consumers for organically certified products is higher than average in both countries.

Young participants (age less than 35 years) are consuming organic products statistically significantly higher than old participants (age above 50 years) and students consume significantly more organic products than unemployed participants. Although no interaction was found between income level and consumption frequency, lower consumption of unemployed participants could be a reference to economical unavailability of them to buy organic products because of higher prices of organics in comparison to conventional products in general.

Except for Italians' trust to Halal and Made in Turkey products, which are under average, both nations trust are higher than average level for all label information. Italian consumers trust more "Made in Italy" than "Made in Turkey" and vice versa for Turkish consumers. However, for both country participants, their trust to other country made products increases with education level.

Younger consumers trust to Halal certified products more than old participants in both countries. Trust level to these product increases with the decrease of income and education level in Turkey.

4.6.2 Packaging and branding

The product was described as "lightly carbonated beverage with a sweet and a bit sour taste which is consumed cold" and participants asked to imagine and consider the taste of the product to choose more adapted packaging designs and possible brand names. Bottle and label options were asked step by step: only bottles, bottles with labels and only labels to investigate whether there would be any difference between choices.

The results of the packaging questions reported demonstrate reliable appropriateness of round shapes: round bottle, round label and use of them together for both countries. Although the described product has conflicting properties (sweet taste which is associated with round shapes, carbonated drinks and sour tastes which are associated with angular shapes (Ngo et al., 2013; Ngo et al., 2011; Salgado-Montejo et al., 2015; Velasco et al., 2015)), participants found round shapes as more adapted to the product. There can be following reasons behind these results: First, if crossmodal correspondence exists and the participants considered the taste of the products as base of their choices, they may mostly consider the "sweet" taste or the product itself a "grape juice" which is known as a sweet drink. Or, secondly, round options were more pleasant aesthetically (Salgado-Montejo et al., 2015) and the participants voted for pleasant options. Fenko and collegues (2016) found influence of perceived product healthiness on package shape (cookies in angular packages were perceived as healthier than cookies in round packages). In fact, when the term "organic" added to the product description, no significant impact was seen in our results. Hence, this may strengthen the domination of aesthetical impression and general experience about grape juice sweetness in the choices of the participants instead of product description.

Results of brand names showed diverse results and some differences were apparent between the two populations. According to overall results, inward words "beniga" and "mutari" clearly found more adapted than outwards. Italians' choice remained more significantly on "mutari" while Turkish participants' was on "beniga".

We investigated "sparkling grape juice" as a product which is a drink and highly associated to oral domain and ingesting oral actions. As the previous literatures introduce positive inward articulation effect of brand names and also match of these names with product meaning (Francis et al., 2015; Topolinski et al., 2015), our results suggest for both countries inward brand names are more suitable for this product.

With respect to angular/high pitched and round/low pitched names, "maluma", "orbal" and "opus" were preferred over "takete", kidem and "biel" by Turkish participants. According to Italians, "kiki", sweettemper" and "benesse" showed significant adaptation over "buba", "coldcomfort" and "annatura". As it is found for packaging designs, when the term "organic" added to the product description, no significant impact was seen in brand name results. If we assume that the product was considered as "sweet" and other descriptions had no impact on the participants' choices, existing differences may be attributed to other cultural differences between the two populations. For example, there is a phonetic difference between both languages regarding grape juice properties. If product is considered as "sweet" by both country participants, in Turkish more round/low pitched "tatlı (tatlɯ)" means "sweet" while in Italian angular/high pitched word "dolce (dɒltʃeɪ)" has this meaning. About sourness, high pitched "ekşi ('ɛkʃi) means sour in Turkish and low pitched "aspro ('aspro)" in Italian language. On the basis of our results, it can be hypothesised that the phonetic differences in the language to describe taste of products could be relevant in sound symbolism. Where these findings confirmed with additional researches, this can be conveyed to find more suitable brand names. About taste experience regarding grape juice, no difference is expected between two populations since grape is produced at high level in both countries and familiar to the consumers. However, it is necessary to verify this hypothesis by also adding product tasting into similar studies. Accordingly, it can is possible to understand more precisely how consumers judged the real taste of the product (sweet, sour, soft, sparkled etc.) and define it according to sound and shape symbolism.

Here it is important to mention about the impact of foreign brands on consumer perception since "icemary" and "benesse" which are considered as high pitched preferred by Turkish participants over low pitched "zerotondo" and "annatura". "Icemary" is an English name and could be more familiar than "zerotondo". On the other side, "benesse" might be considered as more foreign than "annatura" since "ana" means "mother" in Turkish and "natura" can be associated with "naturel" which is commonly used for expressing "natural" in Turkish. "annatura" can be associated with meaning of "mothernature" as general. In this case, "benesse" would remain more foreign word for Turkish people. A recent study of Ergin, Akbay, & Ozsacmaci (2014) reported that foreign brand names evoke more positive attitude on Turkish consumers than national brands. In addition, Ozturk, Ozata, & Aglargoz (2015) studied on prevalence of foreign brand names for blue jean and café. English brand name was significantly more favourable for the blue jean category. Attitude towards the local brand name was more favourable for café. However, café branded by using an English sounded name took also higher intention to visit as well as Turkish branded café. We suggest together with the findings of previous studies that further studies should be conducted on local and foreign brand names impact on consumer perceptions for different products.

4.7   Conclusion

The results of this study allow arguing that marketers and beverage companies should really be thinking much more carefully about optimizing the packaging and branding characteristics of the product in order to match product properties with the consumer expectations. Sound and shape symbolism could be a powerful tool to use in their researches. The results of this study suggest that for Italy and Turkey round shaped bottle and label designs are more adapted for "organic sparkling grape juice". Positive perception regarding favourableness of inward words might be used in marketing strategies or negative impacts could be avoided by not choosing outward names. There are some differences between Italian and Turkish populations' preferences towards brand names. Further researches may include product tasting

to similar studies or compare different sensory characteristics and products. Accordingly, it can be possible to evaluate more precisely how consumers associated real taste of the product (sweet, sour, soft, sparkled etc.) and define it considering sound and shape symbolism. In the present study, only influence of "organic" property of the product on the consumer perception with respect to shape and sound elements (bottle, label and product name), was investigated and it did not show any difference. However, further researches may explore the impact of other informational or functional components of the product (e.g. sparkling, country of origin, non-alcoholic for this study subject) which can be relevant in addition to the visual elements that are influencing consumer attention in real life packaging.

References

Köhler, W. (1929). Gestalt psychology. New York: Liveright.

Atalan-Helicke, N. (2015). The halal paradox: negotiating identity, religious values, and genetically engineered food in Turkey. *Agriculture and Human Values*, *32*(4), 663–674. http://doi.org/10.1007/s10460-015-9585-z

Bremner, A. J., Caparos, S., Davidoff, J., de Fockert, J., Linnell, K. J., & Spence, C. (2013). " Bouba" and " Kiki" in Namibia? A remote culture make similar shape-sound matches, but different shape-taste matches to Westerners. *Cognition*, *126*(2), 165–172. http://doi.org/10.1016/j.cognition.2012.09.007

Crisinel, A. S., Cosser, S., King, S., Jones, R., Petrie, J., & Spence, C. (2012). A bittersweet symphony: Systematically modulating the taste of food by changing the sonic properties of the soundtrack playing in the background. *Food Quality and Preference*, *24*(1), 201–204. http://doi.org/10.1016/j.foodqual.2011.08.009

Ergin, E. A., Akbay, H. O., & Ozsacmaci, B. (2014). Insights into Consumer Preference of Foreign Brand Names: Reality or Myth? *International Journal of Marketing Studies*, *6*(4), 157–164. http://doi.org/10.5539/ijms.v6n4p157

Ergin, E. A., & Ozsacmaci, B. (2011). Turkish consumers' perceptions and consumption of organic foods. *African Journal of Business Management*, *5*(3), 910–914. http://doi.org/10.5897/AJBM10.638

Fenko, A., Lotterman, H., & Galetzka, M. (2016). What's in a name? The effects of sound symbolism and package shape on consumer responses to food products. *Food Quality and Preference*, *51*, 100–108. http://doi.org/10.1016/j.foodqual.2016.02.021

Francis, K. L., MacRae, P. G., Spirduso, W. W., & Eakin, T. (2015).

Age and practice effects on inter-manual performance asymmetry. *Frontiers in Psychology*, *6*(JAN), 1–10. http://doi.org/10.3389/fpsyg.2015.00585

Ilyasoglu, H., Temel, S. & Ozcelik, B. (2010). Consumer perceptions of organic foods in Turkey. Journal of Food, Agriculture & Environment 8(3/4).

Jensen, K. O. D., Denver, S., & Zanoli, R. (2011). Actual and potential development of consumer demand on the organic food market in Europe. *NJAS - Wageningen Journal of Life Sciences*, *58*(3-4), 79–84. http://doi.org/10.1016/j.njas.2011.01.005

Klink, R. R. (2000). Creating brand names with meaning: The use of sound symbolism. *Marketing Letters*, *11*(1), 5–20. http://doi.org/10.2307/40216555

Knöferle, K., & Spence, C. (2012). Crossmodal correspondences between sounds and tastes. *Psychonomic Bulletin & Review*, (April 2016), 992–1006. http://doi.org/10.3758/s13423-012-0321-z

Marchese, A., Masotti, M., Sidali, K. L., & Dörr, A. C. (2014). the Consumer Behaviour and New Brand Management Policies of Organic Food in Italy: the Case Study of "Vivi Verde Coop." *Ciência E Natura*, *36*(1), 11–17. http://doi.org/10.5902/2179460X11269

Naspetti, S., & Zanoli, R. (2006). Organic Food Quality & Safety Perception Throughout Europe. *EAAE Seminar "Marketing Dynamics within the Global Trading System: New Perspectives,"* 1–18. http://doi.org/10.1080/10454440902908019

Ngo, M. K., Misra, R., & Spence, C. (2011). Assessing the shapes and speech sounds that people associate with chocolate samples varying in cocoa content. *Food Quality and Preference*, *22*(6), 567–572. http://doi.org/10.1016/j.foodqual.2011.03.009

Ngo, M. K., Piqueras-Fiszman, B., & Spence, C. (2012). On the colour and shape of still and sparkling water: Insights from online and laboratory-based testing. *Food Quality and Preference*, *24*(2), 260–268. http://doi.org/10.1016/j.foodqual.2011.11.004

Ngo, M. K., & Spence, C. (2011). Assessing the shapes and speech sounds that consumers associate with different kinds of chocolate. *Journal of Sensory Studies*, *26*(6), 421–428. http://doi.org/10.1111/j.1745-459X.2011.00359.x

Ngo, M. K., Velasco, C., Salgado, A., Boehm, E., O'Neill, D., & Spence, C. (2013). Assessing crossmodal correspondences in exotic fruit juices: The case of shape and sound symbolism. *Food Quality and Preference*, *28*(1), 361–369. http://doi.org/10.1016/j.foodqual.2012.10.004

Nuttavuthisit, K., & Thøgersen, J. (2015). The Importance of Consumer Trust for the Emergence of a Market for Green Products: The Case of Organic Food. *Journal of Business Ethics*. http://doi.org/10.1007/s10551-015-2690-5

Ozturk, S. A., Ozata, F. Z., & Aglargoz, F. (2015). HOW FOREIGN BRANDING AFFECT BRAND PERSONALITY AND PURCHASE INTENTION ? Abstract :, (June), 283–300. http://doi.org/10.20472/BMC.2015.001.016

Pellegrini, G., & Farinello, F. (2009). Organic consumers and new lifestyles: An Italian country survey on consumption patterns. *British Food Journal*, *111*(9), 948–974. http://doi.org/10.1108/00070700910992862

Ramachandran, V. S., & Hubbard, E. M. (2001). Synaesthesia–a window into perception, thought and language. *Journal of Consciousness Studies*, *8*(12), 3–34. Retrieved from http://www.ingentaconnect.com/content/imp/jcs/2001/00000008/00000012/1244

Ramachandran, V. S., & Hubbard, E. M. (2003). Hearing colors, tasting shapes. *Scientific American*, *288*(5), 52–59. http://doi.org/10.1038/scientificamericanmind1005-16

Reuters, T. (2015). State of the GLOBAL ISLAMIC ECONOMY. *Dubai the Capital of Islamic Economy*, 1–287.

Salgado-Montejo, A., Alvarado, J. A., Velasco, C., Salgado, C. J., Hasse, K., & Spence, C. (2015). The sweetest thing: the influence of angularity, symmetry, and the number of elements on shape-valence and shape-taste matches. *Frontiers in Psychology*, *6*(April 2016), 1–17. http://doi.org/10.3389/fpsyg.2015.01382

Shafie, F. A., & Rennie, D. (2012). Consumer Perceptions Towards Organic Food. *Procedia - Social and Behavioral Sciences*, *49*, 360–367. http://doi.org/10.1016/j.sbspro.2012.07.034

Spence, C. (2011). Crossmodal correspondences: A tutorial review. *Attention, Perception, & Psychophysics*, *73*(4), 971–995. http://doi.org/10.3758/s13414-010-0073-7

Spence, C. (2012). Managing sensory expectations concerning products and brands: Capitalizing on the potential of sound and shape symbolism. *Journal of Consumer Psychology*, *22*(1), 37–54. http://doi.org/10.1016/j.jcps.2011.09.004

Spence, C., & Gallace, A. (2011). Tasting shapes and words. *Food Quality and Preference*, *22*(3), 290–295. http://doi.org/10.1016/j.foodqual.2010.11.005

Spence, C., & Ngo, M. K. (2012). Assessing the shape symbolism of the taste, flavour, and texture of foods and beverages. *Flavour*, *1*(1), 12. http://doi.org/10.1186/2044-7248-1-12

Topolinski, S., Boecker, L., Erle, T. M., Bakhtiari, G., & Pecher, D. (2015). Matching between oral inward–outward movements of object names and oral movements associated with denoted objects. *Cognition and Emotion*, (AUGUST), 1–16.

http://doi.org/10.1080/02699931.2015.1073692

Topolinski, S., Maschmann, I. T., Pecher, D., & Winkielman, P. (2014). Oral approach-avoidance: Affective consequences of muscular articulation dynamics. *Journal of Personality and Social Psychology*, *106*(6), 885–96. http://doi.org/10.1037/a0036477

Uner, M. M., & Gungordu, A. (2016). The new middle class in Turkey: A qualitative study in a dynamic economy. *International Business Review*, *25*(3), 668–678. http://doi.org/10.1016/j.ibusrev.2015.11.002

Vanhonacker, F., Kühne, B., Gellynck, X., Guerrero, L., Hersleth, M., & Verbeke, W. (2013). Innovations in traditional foods: Impact on perceived traditional character and consumer acceptance. *Food Research International*, *54*(2), 1828–1835. http://doi.org/10.1016/j.foodres.2013.10.027

Velasco, C., Salgado-Montejo, A., Marmolejo-Ramos, F., & Spence, C. (2014). Predictive packaging design: Tasting shapes, typefaces, names, and sounds. *Food Quality and Preference*, *34*, 88–95. http://doi.org/10.1016/j.foodqual.2013.12.005

Velasco, C., Woods, A. T., Marks, L. E., Cheok, A. D., & Spence, C. (2015). The semantic basis of taste-shape associations. http://doi.org/10.7287/peerj.preprints.1366v1

Willer, H. and Lernoud, J. E. (2016). *The World of Organic Agriculture 2016: Statistics and Emerging Trends*. *the World of Organic Agriculture*. http://doi.org/10.4324/9781849775991

World Religion Map, 20018. https://worldmap.harvard.edu/data/geonode:wrd_province_religion_qg0 (last visit on 16.06.2016)

FAOSTAT, 2013. Food and Agriculture Organization of the United Nations statistic Division.

http://faostat3.fao.org/browse/rankings/countries_by_commodity/E (last visit on 25.07.2016)

5 An eye tracking study on packaging and branding of an organic sparkling grape juice

5.1 Introduction

In globalized beverage market, consumers are introduced to diverse products with various packaging designs and unfamiliar brand names. The consumer experience is mediated by shape, size, and colour of containers and with the sound of a product name. These often help consumer to identify and categorise the product (Arboleda & Arce-Lopera, 2015). Moreover, consumers match sensory attributes the product such as taste and aroma spontaneously to other sensory features such as shapes and sounds which is described as "crossmodal correspondence" in the literature (Spence & Ngo, 2012).

The primary objective of this study was to analyse which features related to packaging have impact on consumer's visual behaviour when selecting an adapted package design for a non-alcoholic sparkling grape juice. The secondary aim was to evaluate their emotional responses to product tasting and liking. For the purpose of this study, packaging designs were formed taking into consideration sound and shape symbolism (angular vs. round). A choice experiment (with tasting and without tasting the product) prepared by using eye-tracking techniques to investigate visual pattern behaviours and emotional responses of the participants from their facial expressions. The paper is organized as follow: in Section 2 we provide background of the study based on review of previous studies. Section 3 concerns the methodology, while results are described in Section 4 and are followed by discussion and conclusions

5.2 Background

5.2.1 Eye tracking

In the last few years, eye tracking has been increasingly applied in the marketing researches in order to explore which elements capture the visual attention and how consumers process this visual information (Clement, 2007). Where and how people look is connected to their

behaviour and thinking. Measuring eye movements helps to behavioural researches and analyses (Gofman, Moskowitz, Fyrbjork, Moskowitz, & Mets, 2009). Visual fixations are the gaze patterns in which the eyes are relatively immobile. Their frequency and duration are measured to evaluate where a consumer's attention might be focused on (Rayner, 1998).

Previous packaging studies conducted by using eye tracking techniques concentrated on finding out which areas or elements on packaging catch user attention. Some studies worked on examining stimulus-driven attention. In this method, it was investigated that which areas on a packaging capture user attention while they were only observing stimuli without any goal or task orientation. In this case, impulse buys can be analysed better since the subject has no purpose of making the purchase but it occurs as a result of a stimulus. Four major factors were identified for stimulus driven studies: saliency, surface size, visual clutter, and position (Orquin & Mueller Loose, 2013). Other studies sought goal-oriented attention. This technique investigated which packaging elements capture user attention while they complete a specific task, such as considering to what extend healthy a packaged product is. There are also other studies examined both.

Recent stimuli driven study of Ruben Rebollar, Lidon, Martin, & Puebla (2015) investigated viewing patterns of chocolate snack packages and how the location of packaging design elements influences the buyer's visual attention in impulse buying. The results showed the existence of two patterns: Following the order of surface size of packaging elements, from larger to smaller; and the subject's reading system, in their case the Western system of left to right and up to down. Orquin & Mueller Loose (2013) mentioned also attention to central or top locations could also come from visual practices, such as learned reading patterns. The impact of two different tasks on visual attention with respect to five different yogurt packages was investigated by Orquin & Scholderer (2011): Product healthfulness evaluation, and purchase likelihood evaluation. They found out that nutrition label took attention during product healthfulness evaluation

while the name of the product category and the nutrition label was more attractive for purchase likelihood evaluation. Visual saliency is also a relevant influencer of choices (Milosavljevic, Navalpakkam, Koch, & Rangel 2012). Orquin, Scholderer, and Jeppesen (2012) suggest that packaging elements with high saliency will attract more attention than low saliency attributes.

There are limited studies conducted on bottle packaging by eye tracking. Reis, Machín, Rosenthal, Deliza, & Ares (2016) used eye tracking to investigate the influence of packaging elements on consumer purchase intention. They studied with pomegranate/orange fruit juice bottles which are different in design, front-of-pack nutritional information, nutrition claim and processing claim. The experiment conducted with or without time constraint. The bottle design was found as the variable with the largest relative importance in both conditions. Rojas, Contero, Bartomeu, & Guixeres (2015) analysed consumer perceptions of a real (photographic) and a virtual representation (three-dimensional) of a beer bottle. Their study results showed that the orientation of the bottle and how it is presented affect consumer perception. Gomes, Hurley, Duchowski, Darby, & Ouzts (2014) studied on the presence of full body graphic labels versus partial body graphic labels on plastic beverage bottles. They found that even both label sizes drew an equivalent amount of visual attention, consumers selected partial body labels more often than full body labels.

5.2.2 Sound and shape symbolism in food packaging

In 1929, Köhler showed that people associate the meaningless words 'maluma' and 'takete' with abstract shapes. While rounded, spiky, star-like shapes were matched to the sharp sound of 'takete', cloud-like shapes were matched with the soft sounding 'maluma'. After this study, various studies conducted on sound and shape symbolism which are two fields of crossmodal correspondences. In food and beverage sector, previous studies showed that taste of the products can be conveyed with sounds and shapes. Sweet tasting foods associated more with soft, rounded-sounding names (Abel & Glinert, 2008). For instance, milk chocolate was strongly associated with sounds like

"lula"and "maluma" while dark chocolate having higher cocoa content was matched with "tuki" and "takete" (Ngo, Misra, & Spence, 2011; Ngo & Spence, 2011). People associated sounds like "maluma" and "bouba" with sweet fruit juices (Ngo et al., 2013). Yorkston & Menon (2004) found that if ice cream with brand name 'Frosh' instead of 'Frish' will be perceived by the people as creamier taste. With respect to shape and taste associations, basic taste words and shape roundness/angularity was studied by Velasco, Woods, Marks, Cheok, & Spence (2015). According to their results "sweet" conveyed with round shape and "bitter", "salty", and "sour" with angular shape. Ngo, Piqueras-Fiszman, & Spence (2012) showed that sparkling water is associated much with the angular shape and still water with round shapes.

Potential applicability of shape and sound symbolism in the fields of packaging design, branding, and product naming has been recently realized by the researches (Spence, 2012). Velasco and his colleagues studied on how packaging elements (shapes, names, and typefaces) can be combined in order to match information about the sweetness and sourness of a product. Their results suggest that ''sweet'' tastes are better communicated with round shapes, typefaces, and names, while ''sour tastes'' are better matched with angular shapes, typefaces, and names (Velasco, Salgado-Montejo, Marmolejo-Ramos, & Spence, 2014).

In addition to taste and sound/shape associations, it is important to mention that visual features of packaging elements also can be conveyed with other informational features. For example, accessible products with reasonable price require light primarily white coloured packaging, serif and sans serif typographies, horizontal and oblique straight lines, circles, curves, wavy outlines, asymmetrical compositions and several elements in graphic forms and illustrations showing people. Products which are aimed to the high classes, with a high price and based on elegant and refined aesthetics need cold, dark colored packaging. These products were associated with bold, large, roman, upper case letters with expanded characters in typographies, vertical straight lines, squares, straight outlines, and symmetrical

composition with one single element in graphic forms and pictures showing the product (Ampuero & Vila 2006). Fenko, Lotterman, & Galetzka (2016) found that products in angular packages were perceived as healthier than products in round packages.

In the present study, we are not interested in directly if the taste of the product has been matched with packaging characteristics but if these phenomena could have an impact on visual responses of the consumers. Understanding complete responses of the consumers may help marketers to convey all relevant information with packaging design.

5.2.3 Emotions

Preferences and choices with respect to foods, liking has been the main measure in sensory analysis. In broad terms, products with a higher liking score are preferred more than products with lower liking scores (De Graaf et al., 2005). Nonetheless, failure of products in the market that previously subjected to the consumer panel tests show there is more than sensory liking in food choices of the consumers. More understanding of how consumers choose a food is needed considering emotional responses of consumers as well as all associations that can be assigned to a product (Gutjar et al., 2014).

There are various methods that are used for measurement of emotions including emotion checklists, scaled lists of emotions, facial expression scaling and cartoon figures. The number and set of emotions are diverse in each method. There are also a variety of physiological methods for measuring emotions (Cardello et al., 2012). In this paper, we used method measuring facial expressions. Facial expressions, which are the strongest indicators for emotions, are the movements of the muscles in the human face. Six basic emotions are defined as happiness, surprise, anger, disgust, fear, and sadness by Ekman & Friesen (1971) that are universally associated with facial expressions despite the differences in culture, location, or race (Ekman, 1972). Contempt is also added after further studies as a seventh basic emotion (Paul Ekman, 1999; Matsumoto, 1992). Facial expressions can be collected and analysed in three different ways: by

facial electromyography which based on tracking of facial muscles with electrodes attached to the skin surface (fEMG), by live observation and manual coding of facial activity or by automatic facial expression analysis using computer-vision algorithms as it is used in the present study (İMotions, 2016).

Emotions can be categorized along two dimensions: valence and arousal. Valence as horizontal axis ranges from positive to negative (or pleasant to unpleasant) and arousal as vertical axis range from low to high activation (See Figure 1). This dimensional model can be used to evaluate emotions that are elicited by a stimulus or feelings that may be occurring naturally (Russell & Barrett, 1999).

Figure 1. Two dimensional model of emotions (İMotions, 2016)

Different sensory features may elicit different emotional responses from consumers. As reported in the study of Desmet & Schifferstein (2008), among all food product properties, smell and taste (41.9%) are most often quoted as eliciting emotion. It was followed by food quality (23.3%) and experience of eating food or anticipated consequence (14.6%). In addition, products more often evoke multiple emotions than a single one which may occur at the same time (Desmet & Schifferstein, 2008) Cardello and collegues (2012) reported that emotion responses to different foods and food

names may show diversification; some foods are more ''emotional'' than other foods. Their results also showed that magnitude of emotion responses differed between tasted foods and corresponding food names. With respect to packaging, emotional responses can be evoked by their design, graphics, and structural design such as shape, size, and materials. For instance, Liao, Corsi, Chrysochou, & Lockshin (2015) investigated consumers' emotional responses to food packaging elements: colours, images, and typefaces. Their results showed that all packaging elements had significant effects on emotions but images have the largest effect on the intensity and valence of emotion.

This work complements previous studies by using emotional responses while choosing adapted packaging for the product with both product tasting and without tasting in order to evaluate consumers' behaviours.

5.3   Material and methods

5.3.1   Participants

64 university students and researchers (aged between 18-37 years, mean 24.6) including 35 males 29 females were recruited for the experiment. They were basically from Engineering and Science Faculties of Università Politecnica delle Marche, only two students were coming from University of Macerata & Camerino. All of them were invited to complete the test in the marketing laboratory of UNIVPM which is a room specifically designated not to disturb participants' attention during the test.

Half of the participants completed the test by having a brief instruction about how to complete; the others have tasted the product as well after the instruction. In order to see impact of different typefaces on the participants, half received stimuli with only angular one (Book Antigua), the other half received with only round one (Fabada) (See Table 1 and 2.3 Procedure for details). Typefaces were determined after a small survey realized with 66 people. They were asked to rank 10 different typefaces from the most round to the least

one. According to the results, "Book Antigua" was chosen as the least round writing character and "Fabada" was the most round writing character.

Table 1: Characteristics of participants per experimental conditions

Experimental condition	Type faces		Gender		Mean ages	Total (N)
	Angular	Round	M	F		
Without tasting the product	16	16	17	15	24	32
Tasting the product	16	16	18	14	25.2	32
Total (N)	32	32	35	29	24.6	64

5.3.2 Design

Photoshop CS5.1 Software was used to create the visual stimuli used in the study. The visual stimuli were formed by various images of product packaging. The designs were created with the aim of using angular and round characteristics; shape of bottles (angular vs. rounded), shape of labels (angular vs. rounded) and name (angular vs. rounded, namely Takete and Maluma, see Table 2).

Table 2. Characteristics of the eight packaging designs

Design #	Bottle	Label	Name
1	Angular	Angular	Round
2	Angular	Angular	Angular
3	Angular	Round	Round
4	Angular	Round	Round
5	Round	Angular	Round
6	Round	Angular	Angular
7	Round	Round	Round
8	Round	Round	Angular

Total of 8 combinations (2 x 2 x 2) of visual stimuli obtained by crossing these factors. The first group of these 8 combinations were prepared by using angular typeface (Book Antigua) and other 8 combinations were created by using round typeface (Fabada). All

designs were presented in Figure 2 and Figure 3. Sixteen choice sets were developed and in choice set three packaging design described that varied in shape of bottle, label and name. Efficient incomplete block design was used to assign the 8 different combinations as 3 per 3 to 16 choice sets.

A

Design 1   Design 2   Design 3   Design 4

Design 5   Design 6   Design 7   Design 8

Figure 2. The illustration of product packages developed for the study (A) Designs created by using angular typeface "Book Antigua"

A Tobii X2-60 Eye Tracker and IMotions (6.1) software were used in order to design the test and present stimuli, record responses and analyse the results. STATA version 13 were used for statistical analysis.

Figure 3. The illustration of product packages developed for the study (B) Designs created by using angular typeface "Fabada"

5.3.3 Procedure

Instructions were presented at the beginning of the study. The context was to choose packages for an "organic sparkling grape juice". Half of the participants tasted the product after the instruction and they first expressed their level of "pleasant" on 7 level Lickert scale (from "very pleasant=1" to "very unpleasant=7") and then they continued to make their choices for the packaging designs. Other half of the participants did the experiment without tasting the product. 16 choice sets were presented one-at-a-time and participants asked to click on the packaging design he/she felt that they liked the most, and click on the packaging that they liked the least (Figure 4). Once they made their choice, they could go forward by using "next" button seen at the bottom of the screen in order to see the next choice set.

Figure 4. An example of one choice set of two bottles with different labels and names.

Characteristics of each design were recorded considering angular vs. round bottle, label, name, and typefaces. These variables were coded for each design as follows: angular characteristics = 0, round characteristics = 1). Throughout the task, eye gaze and facial expressions were recorded (Figure 5) for analysis of eye tracking values and emotional response of the participants.

Figure 5. Records of eye tracking and facial expressions

5.4 Results

Results obtained from the experiment were presented 2 titles: eye tracking and emotional responses.

5.4.1 Eye tracking and choices

Analysis results of areas of interest (AOI) metrics and heat maps are reported. For each packaging design, three AOI were defined following the guidelines suggested in Bojko (2013) and Holmqvist, Nyström, & Mulvey (2012): neck and finish (upper part of the bottles or top), shoulder (middle part) and body and heel (bottom part). An example of how the different AOI were defined is shown in Figure 6.
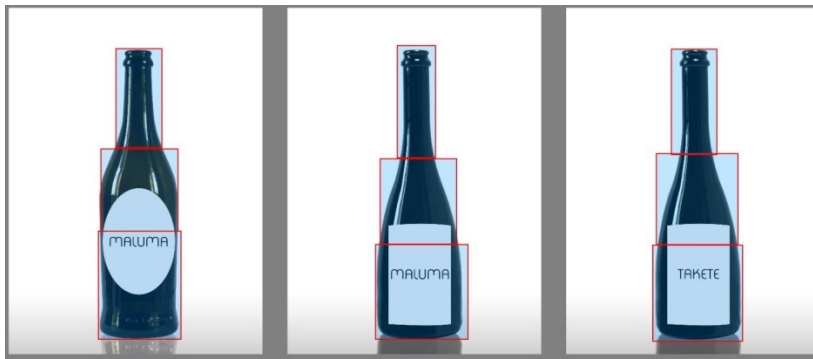

Figure 6. Example of how the different areas of interest (AOI) were defined in each stimulus including three designs

For each AOI, following metrics obtained from eye tracker software were analysed: time to first fixation (TTFF-time from the start of the stimuli display until the participant fixated on the AOI for the first time) and time spent (total fixation time spent in each AOI during the trial). TTFF measures show which AOI attracted participants' attention first by looked upon at first sight: short time values in TTFF indicate that the participant's fixation started right after as the image appeared on the screen; while high time values of TTFF indicate that the fixation occurred later or did not start at all.

For all 8 packaging designs, the first visited AOI was the body and heel with a shorter TTFF. It was followed by the shoulder and

then neck and finish. The time spent was higher in the AOI of the bottom than AOIs of the shoulder and upper.

Figure 7 shows the heat maps samples of choice sets including three packaging designs. In the heat maps, red colour indicates the higher attention of participants while yellow and green show lower levels of attention. The maps confirm that the bottom of the designs were the product name appeared is the most attractive areas.
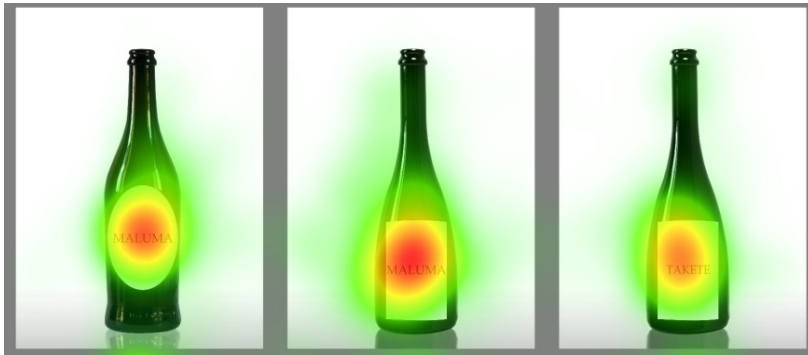

Figure 7. Example of heat map of one of the choice sets

AOI values obtained from the eye tracking software shows that almost for all choice sets, visual observation of the participants start from the bottom of the central packaging design, and continues with the bottom of other designs, they are followed by the shoulders of designs and finally with tops (See Figure 8).

Figure 8. Example of a visual pattern of participants while observing choice sets (1= indicates the AOI where the most fixation occurred, 9=where the least fixation occurred)

In order to evaluate these qualitative results regarding AOIs as well as impact of roundness of the packaging characteristics on TTFF and Time Spent, we used Stata Version 13 to perform a linear mixed effects analysis. As fixed effects, we entered AOIs (bottle part) and roundness into the model. As random effects, we had intercepts for subjects, in order to allow for responses. P-values were obtained by likelihood ratio tests of the full model.

For the analysis purposes, four levels of roundness have been determined as shown in Table 3.

Table 3. Description of four levels of "roundness" according to design characteristics

Roundness	Description of characteristic (bottle, label, name)
0	All characteristics are angular
1	One characteristic is round, others angular
2	Two characteristics are round, other is angular
3	All characteristics are round

Results of linear mixed analysis related to impact of roundness and AOIs on TTFF and Time Spent have been reported in Table 4. According to results both roundness and AOIs have significant impact on TTFF ($p<0.001$); while roundness is increasing, TTFF is

decreasing and TTFF for bottom is shorter than shoulder and top of the bottles. With respect to Time Spent, while AOIs have significant impact (p<0.001), roundness of the designs did not show any significant influence. Time Spent is higher in the bottom of the bottles with respect to shoulder and top.

Table 4. Impact of roundness and AOIs on TTFF and Time Spent – Results of linear mixed analysis (* p<0.001)

Dependent Variables	Fixed effects	Coefficient	S E	z	P value
TTFF(ms)					
	Roundness				
	0	9996.21	312.04	32.04	0.00*
	1	9954.48	265.06	37.56	0.00*
	2	9589.47	265.06	36.18	0.00*
	3	9370.65	312.04	30.03	0.00*
	AOIs				
	Shoulder vs Top	-2404.34	285.19	-8.43	0.00*
	Bottom vs Top	-6524.23	285.19	-22.88	0.00*
Time Spent(ms)					
	Roundness				
	0	4.03	45.16	0.09	0.93
	1	20.85	39.81	0.52	0.60
	2	31.80	39.81	0.80	0.42
	3	32.58	45.16	0.72	0.47
	AOIs				
	Shoulder vs Top	147.16	36.92	3.99	0.00*
	Bottom vs Top	676.33	36.92	18.32	0.00*

Similarly, linear mixed analyses were conducted to examine the impact of the roundness of the each design items (roundness of bottles, labels, names as fixed effects) and their interactions on TTFF and Time Spent. Results are given in the Table 5. Except bottle roundness (p<0.001) which increases TTFF, other characteristics showed no significant impact on TTFF alone. However, roundness of bottle, label and name together increased the TTFF significantly (p<0.001). With respect to Time Spent, bottle decreased (p<0.01) while label increased (p<0.001). Label and bottle interaction decreased the Time Spent (p<0.001) while name and bottle interaction

increased (p<0.001). Roundness of bottle, label and name together decreased the Time Spent (p<0.001).

Table 5. Impact of bottle, label and name on TTFF and Time Spent – Results of linear mixed analysis (* p<0.01, ** p<0.001)

Dependent variables	Fixed effects	Coefficient	SE	z	P value
TTFF(ms)					
	Bottle	593.58	164.47	3.61	0.00**
	Label	-215.91	164.47	-1.31	0.19
	Name	284.98	164.47	1.73	0.08
	Label#Name	-271.84	232.59	-1.17	0.24
	Label#Bottle	430.67	232.59	1.85	0.06
	Name#Bottle	430.67	232.59	1.85	0.06
	Label#Name#Bottle	1088.26	328.93	3.31	0.00**
Time Spent(ms)					
	Bottle	-51.55	21.21	-2.43	0.01*
	Label	123.22	21.21	5.81	0.00**
	Name	-28.40	21.21	-1.34	0.18
	Label#Name	-13.41	29.10	-0.45	0.66
	Label#Bottle	-132.50	29.10	-4.42	0.00**
	Name#Bottle	220.30	29.10	7.34	0.00**
	Label#Name#Bottle	-166.99	42.42	-3.94	0.00**

Mean values of TTFF and Time Spent according to angular and round characteristic of each designs items are compared with t-test as well and results are given in the Table 6.

Table 6. Mean values of TTFF and Time Spent – Results of t-test (* p<0.01, ** p<0.001)

	TTFF(ms)		Time Spent(ms)	
	Angular	*Round*	*Angular*	*Round*
Bottle	5969.20**	6332.02**	412.27**	362.82**
Label	6082.82	6218.40	383.31	391.78
Name	6299.13*	6002.10*	370.90*	404.20*

Impact of typefaces (angular vs round), product tasting (tasting without tasting), gender (fixed effects) on TTFF and Time Spent have been also investigated with mixed linear analyses. Only significant result obtained was the impact of the age on Time Spent (p<0.01);

Time Spent increased with the increase of the age (Coefficient= 18.58, SE=6.49, z=2.86, p=0.004).

5.4.2 Emotional responses

Facial expressions of the participants and corresponding seven basic emotions (joy, anger, surprise, fear, contempt, disgust and sadness) as well as three valences (positive, neutral and negative) were recorded by the iMotions automatic facial coding software. Results obtained in a logarithmic scale show the presence of the facial expression occurring at that point in time. In order to understand meaning of values, explanations were given in the Table 7 taking as an example "joy".

Table 7. Facial expression analysis explanation using joy as an example (İmotions, 2013)

Value	Description of Expression
2	The expression is 100 times more likely to be categorized by an expert human coder as joyful than not joyful
1	The expression is 10 times more likely to be categorized by an expert human coder as joyful than not joyful
0	There is equal chance that the expression is to be categorized by an expert human coder as joyful or not joyful
-1	The expression is 10 times more likely to be categorized by an expert human coder as not joyful than joyful
-2	The expression is 100 times more likely to be categorized by an expert human coder as not joyful than joyful

T-tests were conducted to compare emotional expressions of the participants who tasted the product and who did not. For analysis, seven basic emotions (joy, anger, surprise, fear, contempt, disgust and sadness) and the valences (positive, neutral and negative) recorded by the software while the participants evaluate 16 choice sets including packaging designs were used. Table 8 summarizes the results and significant differences and Figure 8 shows the mean values. According to the results, difference between all basic emotions and valence were significantly important (p<0.001).

Table 8. Mean values of emotional responses of the participants who tasted and who did not taste the product (***p<0.001)

Emotions	Tasted	SD	Not tasted	SD	Significancy P value
Joy	**-0.36**	1.75	-0.59	1.58	0.00***
Anger	**0.65**	0.80	0.47	0.83	0.00***
Surprise	0.20	0.82	**0.34**	0.86	0.00***
Fear	**-0.026**	0.63	-0.09	0.65	0.00***
Contempt	-0.05	0.66	**0.03**	0.55	0.00***
Disgust	0.28	0.28	**0.52**	0.80	0.00***
Sadness	0.15	0.48	**0.30**	0.52	0.00***
Positive	**-0.36**	1.75	-0.59	1.59	0.00***
Neutral	1.09	1.07	**1.47**	0.99	0.00***
Negative	**0.99**	0.70	0.94	0.62	0.00***

Differences are as follows for the emotions: Joy, anger and fear were higher for the participants who tasted the product. Surprise, contempt, disgust and sadness were higher for the participants who did not. With respect to valence, positive and negative were higher with product tasting while neutral was higher without tasting.
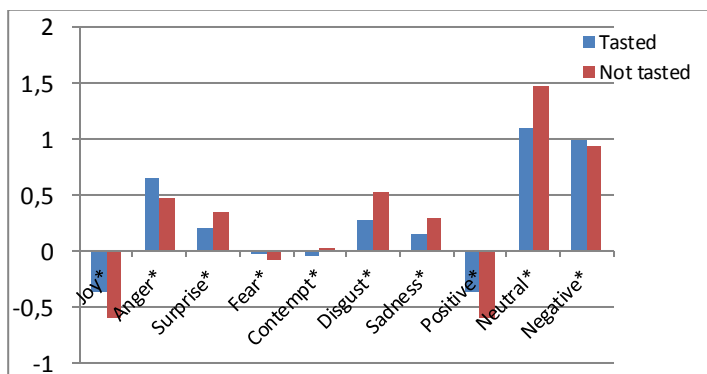

Figure 8. Comparison of averages of each emotion and valence for the participants who tasted the product and who did not taste (*p<0.001)

Similarly, t-tests were conducted to compare emotional responses of the participants who liked the taste of the product and who did not like considering the emotional records obtained from the software at the moment of product tasting. Table 9 summarizes the results and significant differences and Figure 9 shows the mean values.

Table 9. Mean values of emotional responses of the participants who liked and who did not like the product (***p<0.001)

Emotions	Liked	SD	Not Liked	SD	Significancy P value
Joy	0.48	1.68	**1.39**	1.76	0.00***
Anger	0.64	0.85	**0.92**	1.10	0.00***
Surprise	-0.25	0.10	**0.32**	1.08	0.00***
Fear	0.13	0.73	**0.22**	1.03	0.00***
Contempt	0.02	0.58	**0.40**	0.81	0.00***
Disgust	0.47	1.05	**1.80**	1.19	0.00***
Sadness	**0.09**	0.51	0.00	0.51	0.00***
Positive	0.48	1.68	**1,39**	1.76	0.00***
Neutral	0.90	1.14	**1,66**	1.13	0.00***
Negative	1.07	0.87	**2,05**	1.23	0.00***

According to the results, difference between all basic emotions and valences were significantly important (p<0.001). It was found that only sadness was higher for the participants who liked the product. All other emotions and valences were higher for the participants who did not like the taste of the product.
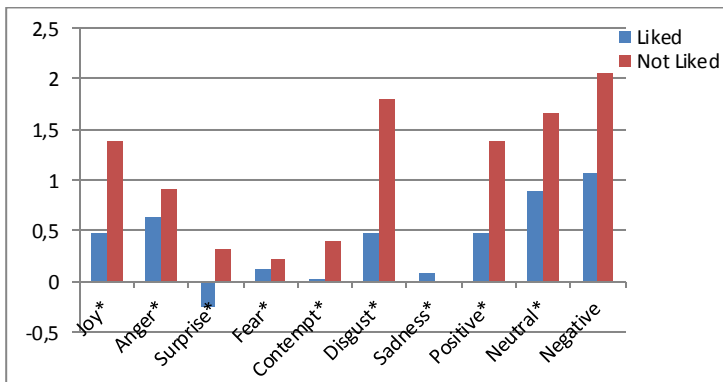

Figure 9. Comparison of averages of each emotion and valence for the participants who liked the product and who did not like (*p<0.001)

5.5 Discussion

5.5.1 Eye tracking

Viewing patterns of the participants showed that the bottoms of bottles took the attention of the participants at first and it is followed by shoulder and top respectively. Analysis of AOI metrics confirmed that

first fixation occurred in the bottoms of the bottles and time spent in these areas was higher. The AOIs defined as bottom of the designs contains all design items together; bottom of bottles, part of labels and name of the product. While AOI defined as shoulder consists only half of label and bottles' shoulder part and AOI defined as top includes only the neck and finishing of the bottles. Hence, Time Spent can be higher in this area since all characteristics are present together. First attraction in the same area could be due to name written on the white label with black letter, which attracts the visual attention at first sight.

With respect to roundness of the packaging characteristics, while roundness increased in the packaging designs, TTFF has decreased. TTFF is a measure of attention; shorter time values in TTFF indicate that the roundness of the designs increased the attention, more precisely attracted the participants. Accordingly, increasing roundness in designs can more likely to attract first fixations and to enter the consideration set, while less round designs can fail to capture attention and do not enter the consideration set can therefore less likely to be chosen. Indeed, in some studies showed that people are more likely to choose the item that they fixated on first (e.g. Glaholt & Reingold, 2011; Krajbich, Armel, & Rangel, 2010; Schotter, Berry, McKenzie, & Rayner, 2010). However, there are other studies (e.g. Armel, Beaumel, & Rangel, 2008; van der Laan, Hooge, De Ridder, Viergever, & Smeets, 2015) did not found same impact of first fixation. Therefore, duration of fixations is also important in the choice tasks since it is the indicator of intentional visual search. According to the results of our study, no significant interaction was observed between roundness and Time Spent. Our task was simply to choose the most favourite and least favourite packaging designs for the given product. Since, these results appear to be independent of product tasting and typefaces, visual attraction of the designs at first sight could be important and that is increases with the roundness. Gender did not influence the results. Only, Time Spent increased with the increase of age.

With respect to the roundness of the each design items separately (bottles, labels, names), bottle increased the TTFF and

decreased the Time Spent. It means, participants attracted by angular bottle and also spent more time on angular bottle. However, round name was more attractive (TTFF is lower than angular) and also took more time (Time Spent is higher than angular). Consequently, roundness or angularity of each design item separately is not showing similar pattern of attention. Their interaction is more significant on the visual behaviour of the participants. In this interaction, bottle seems as a powerful item since especially on Time Spent because while label alone increases the Time Spent, its interaction with bottle decreases. However, when bottle interact with the name, Time Spent increases and this shows name takes more time of the participants.

5.5.2 Emotions

In the present study, emotional responses induced by product tasting and product liking while choosing an adapted packaging have been investigated. Seven basic emotional responses and valences seem to be sensitive to both cases since analysis results showed significant difference at all levels.

Considering the two dimensional model of emotion, basic seven emotions can be associated with valences as follows: Emotions associated with a negative valence are contempt, anger, and disgust; emotion associated with a positive valence is joy; and emotions associated with a neutral valence are sadness, surprise, and fear. With respect to product tasting, joy which is associated with positive valence as well as positive valence itself is higher for the participants who tasted the product. Although the anger which connected with negative valence is higher for those participants, other emotions disgust and contempt are higher for the participants who did not taste the product. With respect to neutral valence related emotions, while surprise and sadness are higher for the participants who did not taste the product, only anger is higher for others. Considering these results, it is possible to conclude that product tasting had positive impact on the emotions of the participants while doing the test. With respect to impact of product liking/disliking, except sadness which is associated with neutral valence, all other emotions and valences are higher for the participants who did not like the taste of the product.

Consequently, product disliking had more impact on overall expressions of the participants than liking.

This results may support the previous findings of Zeinstra, Koelen, Colindres, Kok, & de Graaf (2009), who used the facial expression in their study, that facial reactions can be appropriate measure for dislike but not for liking. Besides, facial expressions to disliked foods compared to liked foods are detected primarily (de Wijk, Kooijman, Verhoeven, Holthuysen, & de Graaf, 2012). Previous studies that are used facial expression to measure emotional responses related to food showed diverse results. Danner, Sidorkina, Joechl, & Duerrschmid (2014) found regarding consumer responses to orange juices that happy expressions are not connected to liking scores, in contrast to neutral, angry, and disgusted expressions. According to the study of He, Boesveldt, De Graaf, & De Wijk, (2014) on breakfast drink, liking was positively associated with neutral facial expressions and negatively associated with facial expressions of sadness, anger, and scared in a study on breakfast drink. Furthermore, the facial expression of surprise was found to be both negatively related with liking with breakfast drinks (De Wijk, He, Mensink, Verhoeven, & De Graaf, 2014) and positively with odours (He et al., 2014). In the present study, there is only one positive emotion (joy), considering that surprise can be positive or negative depending on the situation, is also high for the participants who liked the product. This is also critical point in the application of this method to measure consumer emotions elicited by food to distinguish between products that are supposed to have a positive emotional association. Measuring food-related emotions registration is also challenging due to the mouth movements during tasting (Mojet et al., 2015). Köster & Mojet (2015) suggested facial behaviour as more suited to measure responses to food names or images than to tasted food. In the present study, we are not able to measure emotional responses to packaging designs itself since the designs were shown three per three and for each stimuli it was asked at the same time the most and the least favourite design. Although we can measure the emotions for each stimuli including three design choice set, it would not be possible to distinguish the emotions on design base. This limitation of our experiment could be

overcome with the further researches by exposing packaging designs one by one to the subjects.

5.6 Conclusion

The results of this study suggest that for the optimization of the packaging and branding characteristics of the product in order to attract visual attention of consumers, angularity and roundness of the packaging design items could be an important tool to use in the marketing researches. The results of this study suggest that roundness of the packaging designs attracts the attention of the consumers for the relevant product. Although the bottle shape has strong impact on capturing the attention of the consumer, it is more significant its interaction with the other packaging characteristics such as label shape and name. With respect to emotional responses of the based on facial expressions, product disliking had more impact on overall expressions of the participants than liking. However, it was not be possible to measure them as response to the packaging designs due the nature of our study. This limitation of our experiment could be overcome with the further packaging researches by considering eye tracking and facial expression measurements together.

References

Ampuero, O., & Vila, N. (2006). Consumer perceptions of product packaging. *Journal of Consumer Marketing*, *23*(2), 100–112. http://doi.org/10.1108/07363760610655032

Arboleda, A. M., & Arce-Lopera, C. (2015). Quantitative analysis of product categorization in soft drinks using bottle silhouettes. *Food Quality and Preference*, *45*, 1–10. http://doi.org/10.1016/j.foodqual.2015.04.006

Armel, K. C., Beaumel, a., & Rangel, a. (2008). Biasing simple choices by manipulating relative visual attention. *Judgment and Decision Making*, *3*(5), 396–403.

Bojko, A. (2013). *Eye Tracking the User Experience A Practical Guide to Research*. Brooklyn, New York: Rosenfeld Media, LLC.

Cardello, A. V., Meiselman, H. L., Schutz, H. G., Craig, C., Given, Z., Lesher, L. L., & Eicher, S. (2012). Measuring emotional responses to foods and food names using questionnaires. *Food Quality and Preference*, *24*(2), 243–250. http://doi.org/10.1016/j.foodqual.2011.12.002

Clement, J. (2007). Visual influence on in-store buying decisions: an eye-track experiment on the visual influence of packaging design. *Journal of Marketing Management*, *23*(9-10), 917–928. http://doi.org/10.1362/026725707X250395

Danner, L., Sidorkina, L., Joechl, M., & Duerrschmid, K. (2014). Make a face! Implicit and explicit measurement of facial expressions elicited by orange juices using face reading technology. *Food Quality and Preference*, *32*(November 2016), 167–172. http://doi.org/10.1016/j.foodqual.2013.01.004

De Graaf, C., Kramer, F. M., Meiselman, H. L., Lesher, L. L., Baker-Fulco, C., Hirsch, E. S., & Warber, J. (2005). Food acceptability

in field studies with US army men and women: Relationship with food intake and food choice after repeated exposures. *Appetite*, *44*(1), 23–31. http://doi.org/10.1016/j.appet.2004.08.008

De Wijk, R. A., He, W., Mensink, M. G. J., Verhoeven, R. H. G., & De Graaf, C. (2014). ANS responses and facial expressions differentiate between the taste of commercial breakfast drinks. *PLoS ONE*, *9*(4), 1–9. http://doi.org/10.1371/journal.pone.0093823

de Wijk, R. A., Kooijman, V., Verhoeven, R. H. G., Holthuysen, N. T. E., & de Graaf, C. (2012). Autonomic nervous system responses on and facial expressions to the sight, smell, and taste of liked and disliked foods. *Food Quality and Preference*, *26*(2), 196–203. http://doi.org/10.1016/j.foodqual.2012.04.015

Desmet, P. M. A., & Schifferstein, H. N. J. (2008). Sources of positive and negative emotions in food experience. *Appetite*, *50*(2-3), 290–301. http://doi.org/10.1016/j.appet.2007.08.003

Ekman, P. (1972). Universals and cultural differences in facial expressions of emotion. *Nebraska Symposium on Motivation*. http://doi.org/10.1037/0022-3514.53.4.712

Ekman, P. (1999). Basic Emotions. *Handbook of Cognition and Emotion*. http://doi.org/10.1017/S0140525X0800349X

Ekman, P., & Friesen, W. V. (1971). Constants across cultures in the face and emotion. *Journal of Personality and Social Psychology*. http://doi.org/10.1037/h0030377

Fenko, A., Lotterman, H., & Galetzka, M. (2016). What's in a name? The effects of sound symbolism and package shape on consumer responses to food products. *Food Quality and Preference*, *51*, 100–108. http://doi.org/10.1016/j.foodqual.2016.02.021

Glaholt, M. G., & Reingold, E. M. (2011). Eye movement monitoring as a process tracing methodology in decision making research. *Journal of Neuroscience, Psychology, and Economics*, *4*(2), 125–

146. http://doi.org/10.1037/a0020692

Gofman, A., Moskowitz, H. R., Fyrbjork, J., Moskowitz, D., & Mets, T. (2009). Extending rule developing experimentation to perception of food packages with eye tracking. *Open Food Science Journal*, *3*, 66–78. http://doi.org/10.2174/1874256400903010066

Gomes, T., Hurley, R. A., Duchowski, A., Darby, D., & and Ouzts, A. (2014). The Effect of Full Body Versus Partial Body Graphic Labelling on Beverage Packaging. In *Packaging Technology and Science* (Vol. 27, pp. 1–11). John Wiley and Sons Ltd. http://doi.org/10.1002/pts

Gutjar, S., de Graaf, C., Kooijman, V., de Wijk, R. A., Nys, A., Ter Horst, G. J., & Jager, G. (2014). The role of emotions in food choice and liking. *Food Research International*, *76*(P2), 216–223. http://doi.org/10.1016/j.foodres.2014.12.022

He, W., Boesveldt, S., De Graaf, C., & De Wijk, R. A. (2014). Dynamics of autonomic nervous system responses and facial expressions to odors. *Frontiers in Psychology*, *5*(FEB). http://doi.org/10.3389/fpsyg.2014.00110

Holmqvist, K., Nyström, M., & Mulvey, F. (2012). Eye tracker data quality: what it is and how to measure it. *Proceedings of the Symposium on Eye Tracking Research and Applications*, *1*(212), 45–52. http://doi.org/10.1145/2168556.2168563

İmotions. (2013). Attention tool FACET module guide, 1–47. Retrieved from https://imotions.com/wp-content/uploads/2013/08/130806_FACET_Guide.pdf

İMotions. (2016). Facial expression analysis. *The Definitive Guide. Https://imotions.com/guides/.*

Köster, E. P., & Mojet, J. (2015). From mood to food and from food to mood: A psychological perspective on the measurement of food-related emotions in consumer research. *Food Research*

International, *76*(P2), 180–191.
http://doi.org/10.1016/j.foodres.2015.04.006

Krajbich, I., Armel, C., & Rangel, A. (2010). Visual fixations and the computation and comparison of value in simple choice. *Nature Neuroscience*, *13*(10), 1292–8. http://doi.org/10.1038/nn.2635

Liao, L. X., Corsi, A. M., Chrysochou, P., & Lockshin, L. (2015). Emotional responses towards food packaging: A joint application of self-report and physiological measures of emotion. *Food Quality and Preference*, *42*(November), 48–55. http://doi.org/10.1016/j.foodqual.2015.01.009

Matsumoto, D. (1992). More evidence for the universality of a contempt expression. *Motivation and Emotion*, *16*(4), 363–368. http://doi.org/10.1007/BF00992972

Milosavljevic, M., Navalpakkam, V., Koch, C., & Rangel, A. (2012). Relative visual saliency differences induce sizable bias in consumer choice. *Journal of Consumer Psychology*, *22*(1), 67–74. http://doi.org/10.1016/j.jcps.2011.10.002

Mojet, J., Dürrschmid, K., Danner, L., Jöchl, M., Heiniö, R. L., Holthuysen, N., & Köster, E. (2015). Are implicit emotion measurements evoked by food unrelated to liking? *Food Research International*, *76*(P2), 224–232. http://doi.org/10.1016/j.foodres.2015.06.031

Ngo, M. K., Misra, R., & Spence, C. (2011). Assessing the shapes and speech sounds that people associate with chocolate samples varying in cocoa content. *Food Quality and Preference*, *22*(6), 567–572. http://doi.org/10.1016/j.foodqual.2011.03.009

Ngo, M. K., Piqueras-Fiszman, B., & Spence, C. (2012). On the colour and shape of still and sparkling water: Insights from online and laboratory-based testing. *Food Quality and Preference*, *24*(2), 260–268. http://doi.org/10.1016/j.foodqual.2011.11.004

Ngo, M. K., & Spence, C. (2011). Assessing the shapes and speech sounds that consumers associate with different kinds of chocolate. *Journal of Sensory Studies*, *26*(6), 421–428. http://doi.org/10.1111/j.1745-459X.2011.00359.x

Ngo, M. K., Velasco, C., Salgado, A., Boehm, E., O'Neill, D., & Spence, C. (2013). Assessing crossmodal correspondences in exotic fruit juices: The case of shape and sound symbolism. *Food Quality and Preference*, *28*(1), 361–369. http://doi.org/10.1016/j.foodqual.2012.10.004

Orquin, J. L., & Mueller Loose, S. (2013). Attention and choice: A review on eye movements in decision making. *Acta Psychologica*, *144*(1), 190–206. http://doi.org/10.1016/j.actpsy.2013.06.003

Orquin, J., & Scholderer, J. (2011). Attention to health cues on product packages. *Journal of Eye Tracking, Visual Cognition and Emotion*, *1*(1), 59–63.

Rayner, K. (1998). Eye movements in Reading and Information Processing: 20 Years of Research. *Psychological Bulletin*, *124*(3), 372–422. http://doi.org/10.1037/0033-2909.124.3.372

Rebollar, R., Lidon, I., Martin, J., & Puebla, M. (2015). The identification of viewing patterns of chocolate snack packages using eye-tracking techniques. *Food Quality and Preference*, *39*, 251–258. http://doi.org/10.1016/j.foodqual.2014.08.002

Reis, F., Machín, L., Rosenthal, A., Deliza, R., & Ares, G. (2016). Does a time constraint modify results from rating-based conjoint analysis? Case study with orange/pomegranate juice bottles. *Food Research International*, *90*(November), 244–250. http://doi.org/10.1016/j.foodres.2016.11.006

Rojas, J. C., Contero, M., Bartomeu, N., & Guixeres, J. (2015). Using Combined Bipolar Semantic Scales and Eye-Tracking Metrics to Compare Consumer Perception of Real and Virtual Bottles.

Packaging Technology and Science, *28*(12), 1047–1056. http://doi.org/10.1002/pts.2178

Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called emotion: dissecting the elephant. *Journal of Personality and Social Psychology*.

Schotter, E. R., Berry, R. W., McKenzie, C. R. M., & Rayner, K. (2010). Gaze bias: Selective encoding and liking effects. *Visual Cognition*, *18*(8), 1113–1132. http://doi.org/10.1080/13506281003668900

Spence, C. (2012). Managing sensory expectations concerning products and brands: Capitalizing on the potential of sound and shape symbolism. *Journal of Consumer Psychology*, *22*(1), 37–54. http://doi.org/10.1016/j.jcps.2011.09.004

Spence, C., & Ngo, M. K. (2012). Assessing the shape symbolism of the taste, flavour, and texture of foods and beverages. *Flavour*, *1*(1), 12. http://doi.org/10.1186/2044-7248-1-12

van der Laan, L. N., Hooge, I. T. C., De Ridder, D. T. D., Viergever, M. A., & Smeets, P. A. M. (2015). Do you like what you see? The role of first fixation and total fixation duration in consumer choice. *Food Quality and Preference*, *39*, 46–55. http://doi.org/10.1016/j.foodqual.2014.06.015

Velasco, C., Salgado-Montejo, A., Marmolejo-Ramos, F., & Spence, C. (2014). Predictive packaging design: Tasting shapes, typefaces, names, and sounds. *Food Quality and Preference*, *34*, 88–95. http://doi.org/10.1016/j.foodqual.2013.12.005

Velasco, C., Woods, A. T., Marks, L. E., Cheok, A. D., & Spence, C. (2015). The semantic basis of taste-shape associations. http://doi.org/10.7287/peerj.preprints.1366v1

Yorkston, E., & Menon, G. (2004). A Sound Idea: Phonetic Effects of Brand Names on Consumer Judgments. *Journal of Consumer Research*, *31*(1), 43–51. http://doi.org/10.1086/383422

Zeinstra, G. G., Koelen, M. A., Colindres, D., Kok, F. J., & de Graaf, C. (2009). Facial expressions in school-aged children are a good indicator of "dislikes", but not of "likes." *Food Quality and Preference*, *20*(8), 620–624. http://doi.org/10.1016/j.foodqual.2009.07.002

Köhler, W. (1929). Gestalt psychology.New York: Liveright.

Orquin, J. L., Scholderer, J., & Jeppesen, H. (2012). What you see is what you buy: How saliency and surface size of packaging elements affect attention and choice. Paper presented at the Society for Advancement of Behavioural Economics, Granada, Spain.

6   General Conclusion

In existing global marketplace, numerous new brands and products with various packaging designs and unfamiliar names are introduced to consumers every day. Since the consumers become "better educated, more demanding, less predictable in terms of purchase behaviour and more conscious about health aspects" than in the past, the main challenge for the industry and for the marketing researchers is to understand and adapt with evolving consumers. Considering these challenges, we have chosen an innovative drink – an organic sparkling grape juice- in the present study as a study subject which may represent good example innovation as a product since it is organically produced and non-alcoholic but similar to sparkling grape wine. We have involved Italy and Turkey as research areas considering that they are the biggest grape producers in worldwide and the research subject can be an alternative product in their grape-based production industry.

        We initially provided a general overview of the current situation of the alcoholic and non-alcoholic beverages sector and the beverages consumption habits in Turkey combining with the findings of our qualitative survey since such a research work was not conducted before. Basic findings coming forward were consumer awareness about healthy products is increasing and with respect to alcoholic drinks high taxes as well as restrictions with laws on the sale, promotion, and advertising of alcoholic products might create new chances in the market for innovative non-alcoholic drinks, especially in the premium segment, which is at present relatively empty.

        In the following researches, we focused on the development of a packaging design for the product in question considering the importance of packaging in taking attention of consumers and communicating with them as a silent salesman. We used eye tracking and crossmodal correspondences which are recently becoming important research tools in understanding the non-verbal responses of consumers. Our primary research on bottle morphology with eye

tracking suggest that the different parts that constitute the morphology of a bottle are not equally relevant and that much more attention should be given, in labelling and packaging of a drink, to the shoulder. In the second research, we studied with Turkish and Italian consumers using especially sound and shape symbolism which are two areas of crossmodal correspondences in order to optimize bottle and label shape as well as brand name for the product. The results of this study suggest that for Italy and Turkey round shaped bottle and label designs are more adapted for "organic sparkling grape juice". Positive perception regarding favourableness of inward words might be used in marketing strategies or negative impacts could be avoided by not choosing outward names. There are differences between Italian and Turkish populations' preferences towards brand names and this should be taken into consideration while entering into these markets. Our final research combined eye tracking with sound and shape symbolism in the packaging design. The results of this study suggest that roundness of the packaging designs attracts the attention of the consumers for the relevant product. Although the bottle shape has a strong impact on capturing the attention of the consumer, its interaction with the other packaging characteristics such as label shape and name is more significant.

The results of overall study allow arguing that marketers and beverage companies should really be thinking much more carefully about optimizing the packaging and branding characteristics of the product in order to match product properties with the consumer expectations. Eye tracking technology, sound and shape symbolism, and analysis of emotional reactions of consumers can be powerful tools to use in their researches in order to understand responses of consumers which are not verbally expressed. Early development and optimization of packaging designs with such studies may increase the success of product launches, as well as reducing costs that might be devoted later stages of improvements regarding how to match packaging with product attributes and brands. Moreover, it could be certainly very useful to add informational or functional components of the product into further studies since they are still relevant to consider optimizing the real life packaging.