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# Consumption and attitudes regarding berries-based products – comparative analysis of Romania, France and Turkey

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## Abstract

*Berry-based products that have beneficial effects on consumer health are competitive on the market only if consumers understand the benefits of such products. The purpose of this research was to gain in-depth analysis the factors that influence the consumer choices and behaviour towards berry based food products in three different countries, from eastern and western Europe: Romania, France and Turkey. These three countries as a three distinctive markets for organic products were chosen to find out similar and different attitudes and behaviour towards organic food consumption. This cross-cultural consumer study aims to contribute to socio-economic research market actors and policy makers. French consumers appear to be the most loyal consumers of berries-based products out of the three countries investigated, preferring mostly fresh berries, jams and dairy products based on berries. In Turkey and Romania, the berries consumption is mostly occasional. Turkish consumers prefer mainly dried berries, while Romanian consumers – the frozen variant and muesli.*

**Keywords:** marketing research, consumer behaviour, online questionnaire, organic berry-based products

## 1. Introduction

Fruit and vegetables are important components of a healthy diet, WHO suggest consuming more than 400 grams fruit and vegetables per day to improve overall health and reduce risk of certain non-communicable diseases (http://www.who.int/elena/titles/fruit_vegetables_ncds/en/ [1]). Yearly average consumption, for fruit and fruit products (equivalent fresh fruit) in Romania was 65.7 kg in 2009, 67.0 kg in 2010, 74.7 kg in 2011, 71.1 kg in 2012, 73.7 kg in 2013, 80.2 kg in 2014 (National Institute of Statistics, Romanian Statistical Yearbook, 2015 [2]), while in France the consumption of fruit and vegetables is 350 grams per day (or 127 kg per year) (DUTOIT, 2015 [3]). By volume, more fruit are bought than vegetables in France (84 kg and 81 kg respectively) (http://www.eurofresh-distribution.com/news/france-higher-consumption-bananas-berries-exotics [4]). In Turkey the fruit consumption is 230 kg per capita (BURELL & OSKAM, 2005 [5]). In today's society, the consumption preferences are diversified and deeply changed than in the past; income, demographic variables and lifestyle, are no longer sufficient to categorize consumers (FABRIS, 2003 [6]; FARRUGGIA & al., 2016 [7]). Among the different factors that influence the acceptance or rejection of food, attitudes, beliefs and opinions of their potential consumers are relevant and can in some cases

be decisive. The influence of these factors on food choice and purchase is especially important in the acceptance of some types of food (organic or ecological, genetically modified or functional) that are presented to the consumer as a possible alternative to conventional food (POPA M. & POPA A., 2012 [8]). Sensory characteristics of food can be considered as one of the key factors in food acceptance. People prefer to eat what is tasty, but the importance of food taste may differ between individuals. Health benefits may have a positive impact on consumer acceptance (JAEGER & al., 2009 [9]). Fruit, especially berries, have been found to possess pharmacological and biochemical properties that are caused mainly by the antioxidant activity of their diversified compositions (JIA & al., 2012 [10]). Berry fruit have been widely recognized as an excellent source of bioactive phenolic compounds including flavonoids, phenolic acids, and tannins that both individually and synergistically may help protect against cardiovascular disease, cancer, inflammation, obesity, diabetes, and other chronic diseases (WU & al., 2010 [11]). Referring to the factors that influence the purchase decisions, the healthiness of berries or berries-based products can be an important factor affecting their acceptance and use. Moreover, the individually varying sensitivities for different tastes may have an important impact on the perception of berries or berries-based products (SUOMELA & al., 2012 [12]; HARTVIG & al., 2014 [13]; SANDELL & al., 2015 [14]; LAAKSONEN & al., 2016 [15]). FARRUGGIA & al. (2016) [7] have showed that nutraceutical properties and health benefits of berries have a strong appeal to consumers and confirmed that intrinsic attributes are determinants of consumer purchase decision. DI PALMA (2011) [16] points out that among the factors that influence the growth of consumption of berries there is, on the one hand, the growing interest in food preparations by a large part of consumers, and on the other, the health properties owned by such fruit. Regarding this latter aspect, the increased awareness of the important health properties and nutraceutical held by several species of small fruit, is one of the main reasons that drive consumers into buying choice (CRESCIMANNO & al., 2014 [17]). This paper will describe the organic food consumer with classification in age, gender, family structure, education level and income level. Furthermore, consumer attitude will be examined and common and distinctive attitudes will be underlined. Lastly, the product choice of the three countries has been examined.

## 2. Materials and Methods

**Choice of the topic.** This paper tried to gain in-depth knowledge and analyses the factors that influence consumer choices of buying berry-based products. The findings help to provide suggestions for implementation in industry new processing techniques of berries. For this purpose this study tried to test the consumer perceptions regarding the berry-based products consumption in three different countries, which could be the preliminary research for developing new processing techniques and packaging materials in order to obtain safe, high quality and healthy organic berry products.

**Research Instruments**

**Questionnaire.** The analysis of consumers' perceptions regarding the quality and health aspects of berries was carried out for Romania, France and Turkey. In order to collect the data, the questionnaire was developed based on a literature review on consumer behaviour (FARRUGGIA & al., 2016 [7]). The questionnaire was first prepared in English language and then it was translated into French, Romanian and Turkish languages with small modifications depending on each country demands (e.g. the income levels were express in each country's currency, respectively, Romanian New Leu, Euro and Turkish lira). The questionnaire was designed to contain 15 questions, which comprised of three sections: shopping behaviour, consumption and attitudes of berries-based products type and their fabrication techniques, and

socio-demographics. The first part of the questionnaire included questions about the person who decides what food products shall be bought in the respondent household, the frequency and the locations for food shopping, the health status of the respondents and what food the respondent used to buy and consume. The questions were designed to collect data on main motivations that drive consumers in their choice (purchase and consumption) and the purpose of purchase and identification of quality attributes (intrinsic and extrinsic) for berries. The responses for food safety, origin, price, health benefits, market availability, eco-friendliness, such as "It happened to buy fresh berries that were already spoiled", "I prefer to buy food products with locally sourced berries", "I think frozen berries are a convenient choice", "I seldom buy fresh berries because they get spoiled too fast", "I am willing to pay more in orderto have a healthy diet", were measured with five Likert-type measures (1 = totally disagree; 2 = disagree; 3 = neither agree or disagree; 4 = agree; 5 = totally agree). Respondents were asked to judge the importance of the following general choice criteria when purchasing berry based products: taste preferences, packaging, price, product naturalness, organic certification, store availability, local origin of berries, recommendation, sales promotions, commercials, health or nutritional claims on pack and the extended expiration date. Each criterion was rated on a five Likert-type scale ranging from "not important" to "very important". One series of eight questions were selected to describe the socio-demographic profile of the respondents regarding the gender, the age, education level, employment situation, family structure and incomes.

**Survey.** Pre-survey: In order to prepare and form the questionnaires for the survey, some short interviews were conducted with six consumers. These practices helped to find out main aspects from a consumer perspective. Afterwards, a pilot survey was carried out on a sample of 30 consumers in order to make sure the survey questions operate well and function as expected (BRYMAN & BELL, 2011 [18]). The survey preview link was sent to 30 people in order to avoid mistakes on the questions and to test if the skipped logic worked well. The feedback helped to change some phrases into understandable words in several questions, correct some spelling errors, and also some suggestions were made in order to improve the survey. For this study, Survey monkey "Plus subscription" lasting in one month was used. (Surveymonkey.com is a commercial website that allowsthe collection of online responses). The website is considered to be superior to other free online survey tools and more suitable for the purpose of the survey.

**Sampling method and procedure.** The main qualitative and quantitative methods applicable to the investigation on the consumer opinions and attitudes towards food are: depth interviews focus groups, questionnaire-based surveys (BARRIOS & al., 2004 [19]). In the current study, researchers gathered the data through a questionnaire-based online survey, being the most cost and time efficient method. Snowball sample method was used for empirical data finding process. For this method of sampling the researcher made initial contact with a small group of people who are relevant to the research topic and then used this to establish contact with others (BRYMAN & BELL, 2010 [17]). For this study, firstly questionnaires were designed on commercial website (surveymonkey.com), later the survey links were sent out to initial contacts; that were carried out through emails and social media. Online survey was completed by a total sample of 722 respondents from all three participating countries.

**Participants.** A total sample of 722 consumers was gathered, with 275 answers received from Romanian consumers (79.27% women and 20.73% men), 281 from French consumers (74.0% women and 25.80% men), and 166 responses from Turkish consumers (61.40% women and 38.60% men). The socio-demographic profile of the sample is summed up in Table 1.

**Statistical analysis.** Statistical proccessing was made using an IBM SPSS Statistics 24 program. Anova (Analysis of Variance) method was used to determine statistically significant differences between groups as well as frequencies or crosstabulation statistics in order to asses the buying behaviour of the consumers. Analysis of variance was conducted to test whether socio-economic factors of consumers are important in explaining the buying behaviour of berry fruits.

## 3. Results and discussion

The socio-demographics and health status of the respondents are presented in Table 1.

**Table 1.** Socio-demographics and health status of the survey respondents

| Characteristics | | Romania | France | Turkey |
|---|---|---|---|---|
| Gender | Man | 20.73% | 25.80% | 38.60% |
| | Woman | 79.27% | 74.20% | 61.40% |
| Marital status | married/ living with the life partner | 71.72% | 28.80% | 45.20% |
| | in a relationship, but not living together | 11.67% | 27.00% | 0.00% |
| | single (including widows, divorced) | 17.21% | 44.20% | 54.80% |
| Education | lower than high school | 0.81% | 0.00% | 0.60% |
| | professional training/ college | 0.41% | 0.70% | 0.60% |
| | high school | 6.91% | 1.80% | 6.00% |
| | higher education | 91.87% | 97.50% | 92.80% |
| Employment situation | full time (>40 h/week) including business owners | 72.24% | 40.20% | 60.80% |
| | part time (10-39 h/week) | 4.47% | 4.30% | 3.60% |
| | short term projects | 2.63% | 6.20% | 1.80% |
| | unemployed (including students, housewives, retired) | 16.26% | 49.30% | 33.70% |
| Household size | 1 | 8.16% | - | 11.40% |
| | 2 | 35.92% | - | 27.70% |
| | 3 | 32.65% | - | 25.90% |
| | 4 or above | 23.27% | - | 34.90% |
| With children under 18 y.o. | Yes | 30.17% | 84.70% | 38.60% |
| | No | 69.83% | 15.30% | 61.40% |
| Age | Between 18 and 24 years | 9.05% | 65.30% | 21.70% |
| | Between 25 and 34 years | 33.74% | 15.20% | 51.20% |
| | Between 35 and 44 years | 16.46% | 7.90% | 9.60% |
| | Between 45 and 54 years | 28.40% | 6.90% | 10.20% |
| | Above 55 years | 12.35% | 4.70% | 7.20% |
| Family's average monthly income | Under 1500 RON/ EUR/ TRY | 9.76% | 53.50% | 12.70% |
| | 1501 – 3000 RON/ EUR/ TRY | 34.15% | 21.20% | 19.90% |
| | 3001 – 4500 RON/ EUR/ TRY | 22.36% | 10.30% | 25.30% |
| | Above 4501 RON/ EUR/ TRY | 22.36% | 7.30% | 22.30% |
| | I refuse to answer | 11.38% | 7.70% | 19.90% |
| Health status | Ulcer or other gastrointestinal diseases | 8.42% | 0.70% | 15.10% |
| | Diabetes | 4.40% | 2.20% | 3.60% |
| | Cardiovascular diseases | 8.79% | 0.40% | 1.80% |
| | Weight problems | 17.58% | 5.80% | 10.80% |
| | Allergies/ intolerances | 5.49% | 6.90% | 10.20% |
| | Pregnant | 2.93% | 0.40% | 1.80% |
| | Special diet | 13.55% | 7.70% | 6.60% |
| | None/ I refuse to answer | 54.95% | 80.30% | 62.00% |

* Note : 1 € = 4,51 RON ; 1 € = 3,81 TRY

**Shopping behaviour.** In Table 2, the shopping behaviour is described, in terms of shopping responsibility, food purchasing frequency and also the locations chosen by consumers for food purchasing.

**Table 2.** Shopping responsibility, food purchasing frequency and food purchasing location for Romanian, French and Turkish consumers

| Questions | Answer options | Answers | | |
|---|---|---|---|---|
| | | Romania (%) | France (%) | Turkey (%) |
| Shopping responsibility | I am | 44.44 | 63.70 | 26.50 |
| | somebody else | 4.98 | 4.60 | 10.80 |
| | I, together with somebody else | 50.57 | 31.70 | 62.70 |
| Food purchasing frequency | more often than once per week | 30.90 | 59.16 | 57.20 |
| | once per week | 50.18 | 36.64 | 35.50 |
| | less often than once per week | 18.86 | 4.20 | 7.20 |
| The favourite location for food purchasing | super-/hypermarket | 93.80 | 96.80 | 87.30 |
| | open/traditional market | 70.80 | 48.80 | 36.10 |
| | specialised shop | 24.09 | 36.70 | 28.30 |
| | corner/convenience shop | 29.56 | 20.30 | 14.50 |
| | online grocery store | 3.65 | 3.90 | 4.20 |

In Romania and Turkey, more than half of the respondents (51%, respectively 63%) are deciding together with somebody else what types of food products are bought in the household; while in France, 64% of respondents make this decision on their own. In terms of food purchasing frequency, the majority of respondents in all three countries go grocery shopping weekly or more often. The favourite places to buy food supplies are hypermarkets and supermarkets, with nine out of ten consumers visiting a big retail store to buy groceries. The traditional market is the second favourite place for all Romanian, French and Turkish respondents. The one-way ANOVA analysis revealed that women are more likely to be responsible for shopping, alone or with somebody else ($\sigma < 0.02$).

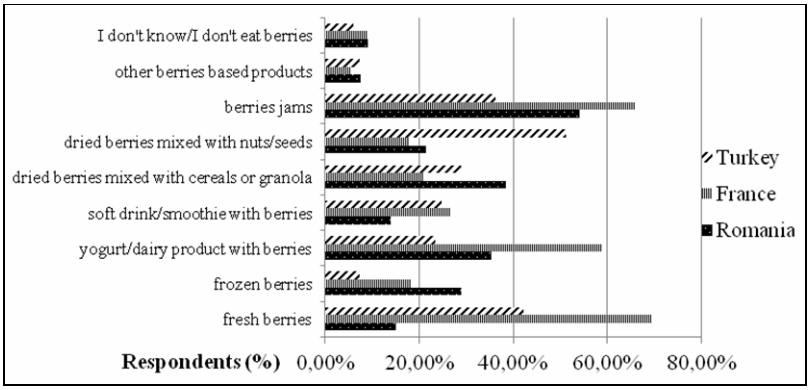


**Figure 1.** Consumer preferences for berries based products

**Consumption of berries-based products.** In terms of berries-based products consumption, 70% of French respondents prefer fresh berries (bulk or packaged), 54% of Romanians prefer jams and marmalades, and 51% of Turkish respondents prefer dried berries mixed with nuts or seeds, as depicted in Figure 1. On the second place, 38% of Romanian consumers prefer dried berries mixed with cereals or cereal bars, 66% of French respondents prefer berries

jams, and 42% of Turkish respondents prefer fresh berries. Soft drinks and smoothies based on berries and frozen berries appear to be the least consumed products, preferred by only a third of consumers at most.

The highest levels of consumption for berries-based products appear for French respondents, as it was expected compared to Romania and Turkey, France being a mature market with higher purchasing power. These consumers acknowledge and appreciate the sensory characteristics and the nutrient value of berries, together with their health benefits (see Table 3).

**Table 3.** Consumer attitudes and beliefs regarding berries-based products on a 5 points Likert-scale, where disagreement is the sum of 'totally disagree' and 'disagree' and agreement is the sum of 'totally agree' and 'agree'

| Statements | Romania | France | Turkey |
|---|---|---|---|
| *It happened to buy fresh berries that were already spoiled* | | | |
| disagreement | 40.73% | 29.17% | 78.92% |
| neither agreement or disagreement | 9.09% | 18.25% | 10.24% |
| agreement | 34.18% | **51.96%** | 10.84% |
| not applicable | 16.00% | 0.71% | - |
| ***I prefer to buy food products with locally sourced berries.*** | | | |
| disagreement | 4.36% | 7.46% | **27.71%** |
| neither agreement or disagreement | 9.82% | 12.46% | 13.86% |
| agreement | 73.09% | 79.72% | 58.43% |
| not applicable | 12.73% | 0.36% | - |
| *I think frozen berries are a convenient choice.* | | | |
| disagreement | 18.18% | 16.72% | **50.00%** |
| neither agreement or disagreement | 13.82% | 23.13% | 27.71% |
| agreement | 56.36% | 59.79% | 22.29% |
| not applicable | 11.64% | 0.36% | - |
| *I seldom buy fresh berries because they get spoiled too fast.* | | | |
| disagreement | 44.72% | 63.70% | 66.87% |
| neither agreement or disagreement | 16.00% | 21.35% | 12.65% |
| agreement | 26.55% | 14.59% | 20.48% |
| not applicable | 12.73% | 0.36% | - |
| *When I read on the label that berries have other origin than local, I avoid buying them.* | | | |
| disagreement | 31.27% | 23.85% | **69.28%** |
| neither agreement or disagreement | 29.45% | 29.18% | 14.46% |
| agreement | 28.73% | 46.26% | 16.26% |
| not applicable | 10.55% | 0.71% | - |
| *I am willing to pay more in order to have a healthy diet.* | | | |
| disagreement | 4.72% | 8.19% | **15.66%** |
| neither agreement or disagreement | 6.55% | 18.85% | 9.64% |
| agreement | 74.91% | 72.25% | 74.70% |
| not applicable | 13.82% | 0.71% | - |
| *I am actively interested into having a healthy diet.* | | | |
| disagreement | 1.82% | 5.33% | **20.48%** |
| neither agreement or disagreement | 4.73% | 14.23% | 28.92% |
| agreement | 79.63% | 79.73% | 50.60% |
| not applicable | 13.82% | 0.71% | - |
| *I feel that I have trouble finding berries based food products.* | | | |
| disagreement | 24.00% | 56.23% | 53.01% |
| neither agreement or disagreement | 20.73% | 29.89% | 24.70% |
| agreement | **44.36%** | 13.17% | 22.29% |
| not applicable | 10.91% | 0.71% | - |

| | | | |
|---|---|---|---|
| | | | *I eat organic food.* |
| disagreement | 19.64% | 28.82% | **35.54%** |
| neither agreement or disagreement | 28.00% | 24.20% | 26.51% |
| agreement | 40.36% | 45.91% | 37.95% |
| not applicable | 12.00% | 1.07% | - |
| | | | *I eat as much seasonal food products as possible.* |
| disagreement | 2.91% | 6.41% | **13.85%** |
| neither agreement or disagreement | 8.73% | 10.68% | 9.04% |
| agreement | 74.54% | 82.55% | 77.11% |
| not applicable | 13.82% | 0.36% | - |
| | | | *Berries are food produce with multiple health benefits.* |
| disagreement | 0.73% | 1.78% | 12.65% |
| neither agreement or disagreement | 2.18% | 27.40% | 7.23% |
| agreement | 82.54% | 70.46% | 80.12% |
| not applicable | 14.55% | 0.36% | - |
| | | | *I actively look to eat berries based food products.* |
| disagreement | 6.90% | **33.10%** | 22.89% |
| neither agreement or disagreement | 30.55% | 48.40% | 14.46% |
| agreement | 48.00% | 17.43% | 62.65% |
| not applicable | 14.55% | 1.07% | - |
| | | | *In the stores I usually shop for food, I have trouble finding fresh berries.* |
| disagreement | 26.91% | 40.57% | 45.18% |
| neither agreement or disagreement | 16.00% | 31.67% | 25.90% |
| agreement | **46.18%** | 27.40% | 28.92% |
| not applicable | 10.91% | 0.36% | - |

In both Romania and Turkey, the consumption of berries-based products is mostly occasional, due to lower incomes in these countries compared to France (e.g. at the same amount intervals of the income Turkish currency is almost fourth time and Romanian currency is almost five times less than French currency, as seen in the Table 1). Nonetheless, a higher consumption of dried berries occurs in Turkey, being part of the traditional food culture. There is a statistical significant difference according to marital status in Turkey ($\sigma = 0.010$), also employment status ($\sigma = 0.039$) and age ($\sigma = 0.000$) in Romania. The main beliefs held by non-consumers of products based on berries believe are related to their perishable nature, less fit to be sold in conventional retail. Moreover, when not locally sourced, berries are seen as less fresh and less healthy, thus with a premium price harder to justify. The results indicate a significant difference between the entire group of respondents and the countries group ($\sigma = 0.000$).

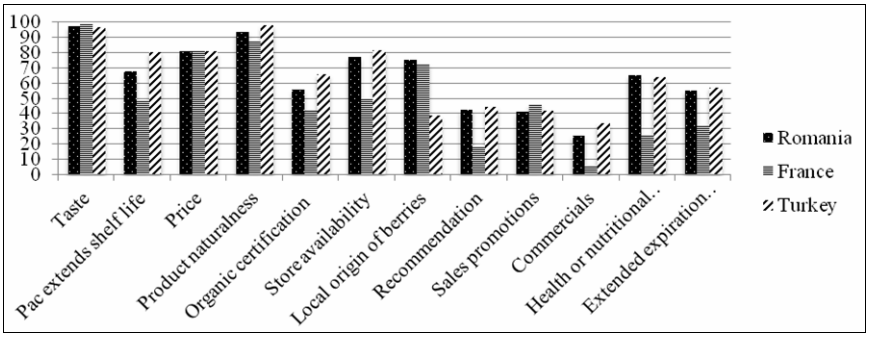


**Figure 2.** The most important determinants of choice for berries-based products (only responses that rate the factors on a 5 point scale as important and very important are depicted)

**Determinants and barriers of purchasing berries-based products.** Almost all consumers participating in the survey consider that taste and naturalness of the product are the most important aspects when buying products based on berries (Figure 2). Packaging, price, origin and the availability at the shelf are also important aspects. Less than half of French and Turkish respondents are not impressed by advertisements, health benefits and extended shelf life. They do not consider recommendations of other consumers while Romanians take into account the recommendations of other consumers and also the novelty of the products. The results indicate significant differences upon country of origin of respondents ($\sigma$ =0.000), exceptions occurred for the price and sales promotions.

## 4. Conclusion

This paper gives the first insight into berry-based products purchasing behaviour and consumers' attitude regarding berries in three different countries in Eastern and Western Europe. The market for berries-based products in Romania and Turkey, compared with the one in France, is still moderate and restrained by economic factors. Solutions that imply extending the shelf life of fresh berries, and consequently reducing prices, have potential to further encourage the consumption of berry-based products, especially in lower income countries. Nonetheless, the study offers valuable findings regarding the main target of berry-based products, namely consumers in urban areas, with higher education, higher income and more health consciousness. Berries are seen as healthy, yet perishable and costly. Solutions that imply extending the shelf life of fresh berries, and consequently reducing prices have potential to further encourage the consumption of berries-based products. According to the results, an important task for the producers will be to increase consumers' knowledge of the health benefits of berry based products and how to improve the shelf life of fresh berries in the market place. **Limitations and further research.** Due to the time and financial limitations of this study there are some discrepancies between the countries, on socio-demographic sample respondents' aspects. Limitations of the present study comprise of the high level of education of more than 90% of respondents in all three countries and the small sample size, making the results not representative at national and European level. Another limitation is connected to the non-probabilistic sampling and to the online survey method that carries important selection bias.

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