

Full Length Research Paper

Modelling the honey consumption behaviour in Romania by using socio-demographic determinants

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A honey consumption model represents an integrated set of specific behaviours of a certain population category, in terms of purchase or production of the product through their own resources, in order to meet specific consumption needs. Honey consumption fulfils several needs: nutrition, health maintenance and rehabilitation as well as physical embellishment. Modelling the honey consumption behaviour in Romania is extremely important for entrepreneurs who develop managerial strategies in the field of apiculture, strategies mainly designed to meet the demands of the target market. The research indicates that in Romania, honey consumption does not fall into the category of general food habits, being associated with a medium to high level of welfare.

Key words: Modelling, honey, consumption behaviour, frequency, management decision.

INTRODUCTION

In a globalized world, with extremely diversified and complex informational flow, any managerial decision has to be grounded in complete and rigorous information derived from a very accurate analysis of reality. In this context, apiculture is a vast scientific subject, related to agriculture, food, nutrition, medicine, industrial products and environment (Saha, 2005) and (Melaku and Collab, 2008). The assessment of the real situation of Romanian apiculture is based on the analysis of the production obtained, of the consumption market inputs, and also on the investigation concerning the honey consumption, of the outputs derived from the consumption behaviour of the population (Arvanitoyannis and Krystallis, 2006). From the point of view of the production obtained, Romania is among the most important honey producers in Europe, after Spain, Germany, France and Greece (Table 1). In the 2003 to 2007 period, the total honey production at the European Union level (27 countries) decreased slightly due to climate change, reduction of the surfaces of agricultural lands, the use of pesticides and bee diseases (CBI Market Information Database, 2010).

Despite all this, honey production is stable in the main producing countries. As compared to many West-European countries, where the beekeeping sector is in decline, some countries from Eastern Europe, such as

Romania, Hungary, Poland and Bulgaria, have recorded a considerable growth of the honey production in the last decade. The accession of Romania and Bulgaria to the European Union has increased the EU self-supply with honey from 10 to 60%. The European Union honey production is expected to decrease in the future, due to the decline in the number of colonies of bees. Therefore, the majority of the EU member states will have to import large quantities of honey in order to meet the domestic demand. The auto-sufficiency rate of the EU honey market is approximately 60%. Only a few European Union countries (Spain, Hungary and Romania) manage to have a self-supply rate of 100% (CBI Market Information Database, 2010). In Romania, honey production has increased during the last decade (Table 2) – from 12.6 thousand tons in 2001 to 17.4 thousand tons in 2003 and up to 20 thousand tons in 2009 (Pocol et al., 2011). The increasing honey production was a result of the reorganization of the Romanian Beekeepers' Association, the expansion of scientific research, prevention and control of certain bee diseases, as well as a more efficient use of the melliferous base. Depending on its origin, in Romania there are two categories of honey: floral honey (nectar honey) that can be either monofloral or polyfloral and extrafloral honey (honeydew

Table 1. Time series data of honey production in the EU, 2003-2007, in tones.

Country	2003	2005	2007	Annual change %
Spain	35.279	27.230	31.250	-3.0
Germany	23.691	21.232	-	1.6
France	15.000	15.000	16.000	1.6
Greece	15.700	16.267	15.900	0.3
Romania	17.409	19.200	15.000	-3.7
Hungary	21.000	19.714	14.000	-9.6
Poland	11.620	9.955	13.600	4.0
Italy	7.000	13.000	12.000	14.4
Bulgaria	8.500	11.221	8.600	0.3
Czech Republic	6.303	8.371	-	-
United Kingdom	7.000	5.000	7.200	0.7
Austria	7.100	6.100	6.100	-3.7
Portugal	7.310	5.686	6.100	-4.4
Slovakia	3.202	4.258	4.500	8.9
Sweden	3.400	3.400	3.400	0.0
Finland	1.700	2.300	3.000	15.3
Belgium	1.600	2.150	-	-
Slovenia	1.850	1.650	2.100	3.2
Denmark	-	1.500	1.400	-
Lithuania	1.156	1.333	1.300	3.0
Latvia	552	916	900	13.0
Estonia	535	638	700	7.0
Cyprus	780	562	-	-
Ireland	200	200	200	0
Luxembourg	137	137	150	2.3
Malta	0	0	0	-
The Netherlands	-	-	-	-
EU	198.024	197.020	188.600	-1.2

Source: FAOSTAT, 2009; CBI Market Information Database, 2010.

or forest honey). The most common types of monofloral honey are those of: acacia, linden, sunflower, mint and raspberry (Mărghitaş et al., 2010). The most common types of polyfloral honey found in Romania are the pasture honey, clover polyfloral honey and the honey that is specific to the Danube Delta. The extrafloral honey is of superior quality and the main harvest areas are the deciduous and coniferous forests.

The research undertaken by Assefa (2009) has identified several honey distribution channels and several actors involved (producers/farmers, honey collectors/assemblers, retailers, processors and final consumers of the product):

Channel I: Farmers - honey collector - retailer – consumer.

Channel II: Farmers - honey collectors' - processors – consumers.

Channel III: Farmers - retailers'- consumers.

Channel IV: Farmers – consumers.

Channel V: Farmer - honey collectors' – consumers.

Channel VI: Farmer - Processor - consumers.

All six distribution channels exist in Romania; however, until now, there is no statistical data concerning the share that each of them holds. Nevertheless, there is statistical data that indicates the distribution of the share of the main suppliers of honey in Romania (Figure 1). The main market for Romanian honey continues to be foreign, as more than 60% of the total local production is exported to the EU countries (Germany, Britain, Italy, France, Austria) and also to the USA, Canada, Japan or China. Access to the European market is easy, as there are no restrictions on honey trade between the member states, logistics being also less complicated. Romania also has the advantage of being able to meet the demand of organic honey better than other European Union

Table 2. Evolution of the beekeeping sector in Romania, during 2001-2009.

Beekeeping sector		2001	2002	2003	2004	2005	2006	2007	2008	2009
Bees	Thousand colonies	745	781	840	892	930	975	990	990	1109
Total honey production	Thousand tons	12.6	13.4	17.4	19.0	19.2	18.0	15.0	16.8	20.0
Per capita domestic consumption	Kg	0.300	0.400	0.370	0.500	0.580	0.400	0.420	0.500	0.640
Export	Thousand tons	6.9	5.7	9.6	12.3	6.6	9.6	10.5	10.5	7.0

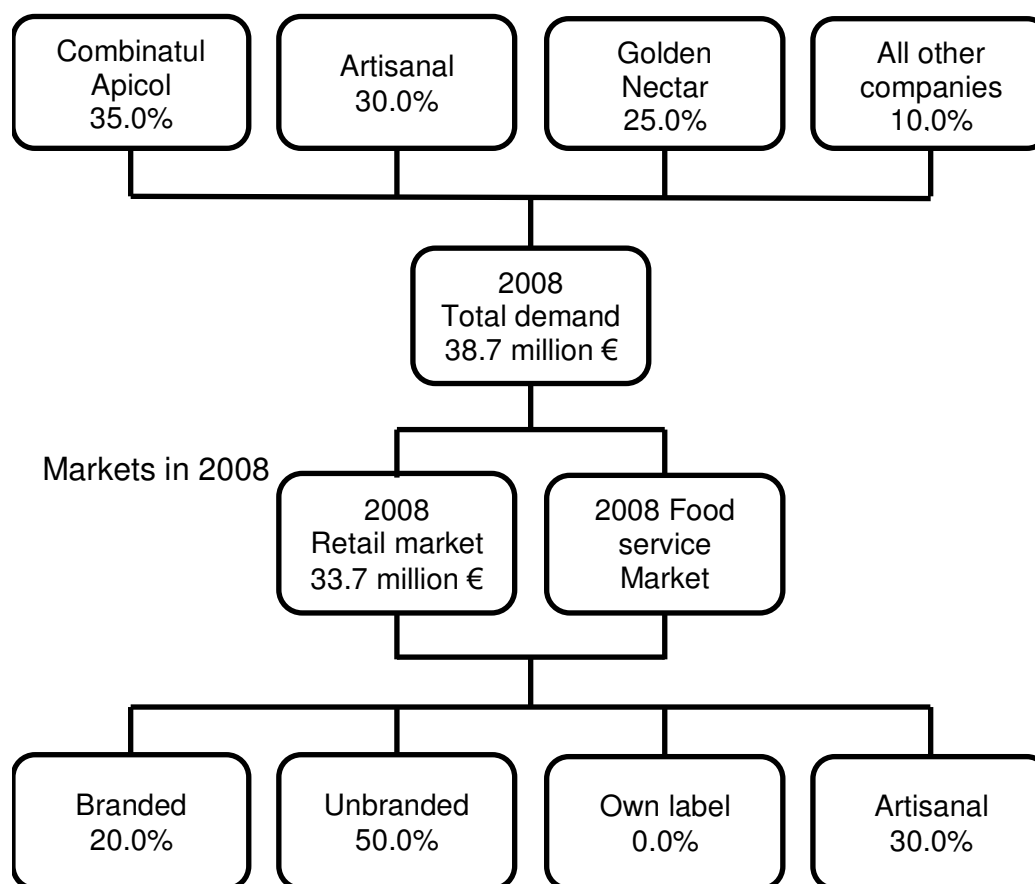


Figure 1. Major suppliers in 2010. Source: Food For Thought (FFT) Strategic Information Services Food and Drink Markets 2010, edition prepared for University of Agricultural Sciences and Veterinary Medicine of Cluj Napoca.

countries as a result of its favourable production conditions.

Despite the fact that Romanian honey is very appreciated on foreign markets, it is valued at a low price because external processors offer low prices that do not cover all expenses involved in beekeeping. The low prices can also be attributed to the fact that the preferred way to export Romanian honey is in the wholesale system, at a price lower than the one for retail distribution

(Figure 2). During 2008 to 2009, a general upward trend in the price of honey in Romania is observed, the price being influenced by various factors such as: overall progress in the world market, exchange rate movements, increase in living standards, healthy eating awareness of the Romanian population (Romanian Ministry of Agriculture and Rural Development, 2011). Regarding consumption, the EU registers around 20 to 25% of the honey consumed worldwide. Table 3 presents total and

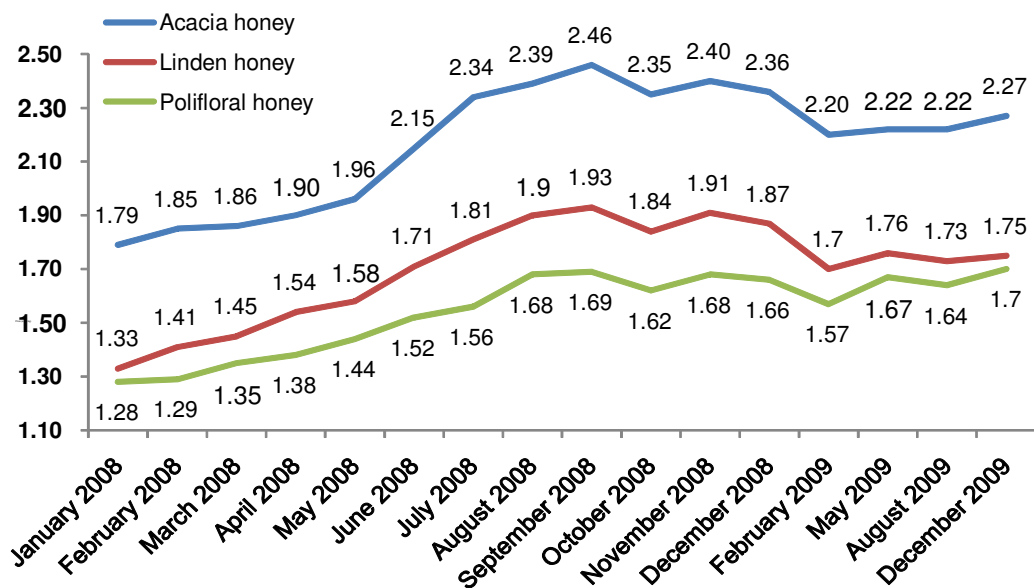


Figure 2. Evolution of average price of honey in bulk in Romania, 2008. Source: Romanian Ministry of Agriculture and Rural Development (2011). The situation of beekeeping sector in Romania, www.madr.ro.

“per capita” honey consumption among the EU countries during 2003 to 2007. Total consumption of honey in the European Union was estimated at about 309,933 tons in 2007. The average annual consumption of honey per capita in the European Union amounts to about 0.7 kg. Consumption differs greatly among EU countries (Loon and Koekoek, 2006). Greece and Austria have the highest consumption per capita, but because of their population size, they rank sixth and eight, respectively, in the list of honey markets in Europe. With an estimated amount of 96,000 tons in 2003, Germany is the largest consumer of honey in the European Union. The German volume accounts for 30% of total EU consumption. Since domestic production is insufficient, 70% of the honey for domestic consumption has to be imported. Other important consumption markets are Spain (34,000 tons), France (28,000 tons), the United Kingdom (28,000 tons), and Italy (19,000 tons) (Loon and Koekoek, 2006). From the point of view of the consumption, Romania is situated among the last places (0.42 kg/capita in 2007) (CBI Market Information Database, 2010).

The discrepancy between production and consumption has to generate a set of managerial strategies among producers, whether they are individual, associated or as a corporate enterprise, and the development of the national honey market is possible either by penetrating external markets or by stimulating internal consumption. One of the most important actions for stimulation of honey consumption is to use positive health messages for honey as a marketing tool. According to Phipps

(2008), when industries selling natural products link a positive health message to the product, such linkage can help transform an industry. An effective health message tends to have several effects:

- 1) Consumption increases;
- 2) New products are introduced and developed;
- 3) Re-formulation of products occurs;
- 4) Consumer perception of value increases;
- 5) New varieties and higher qualities enter the market; and
- 6) New entrepreneurial companies emerge responding to the health message.

Following the research undertaken at a national level concerning honey consumption in Romania, a possible connection between the socio-economic characteristics of the population and the consumption behaviour was identified (Pocol and Marghitas, 2010). The present article analyses this dependency and emphasizes its possible role in the configuration of the honey consumption pattern in Romania.

MATERIALS AND METHODS

The study concerning the honey consumption behaviour in Romania was based on a complex research that was conducted during 2007 to 2010. In order to elaborate a more laborious study, various research techniques, both quantitative and qualitative, were integrated within the present analysis. The research methods used were the survey and the focus group. Thus, two quantitative studies were undertaken, using the questionnaire as a research instrument.

Table 3. Total and per capita honey consumption in the European Union during 2003-2007.

Country	2003		2005		2007		Average annual % change in total consumption
	Total (tones)	Per capita (kg)	Total (tones)	Per capita (kg)	Total (tones)	Per capita (kg)	
Germany	96.050	1.16	90.741	1.10	95.506	1.16	-0.1
United Kingdom	27.914	0.47	32.383	0.54	36.069	0.59	6.6
France	28.457	0.46	31.462	0.50	34.869	0.55	5.2
Spain	34.028	0.82	31.867	0.74	28.927	0.65	-4.0
Italy	18.879	0.33	23.210	0.40	18.803	0.32	-0.1
Greece	16.643	1.51	18.318	1.65	18.151	1.62	2.2
Poland	15.725	0.41	14.847	0.39	16.192	0.42	0.7
Austria	10.739	1.33	9.825	1.20	9.876	1.19	-2.1
Romania	8.007	0.37	12.589	0.58	9.061	0.42	3.1
Czech Republic	6.037	0.59	7.124	0.70	-	-	-
The Netherlands	7.876	0.49	6.272	0.38	7.890	0.48	0
Belgium	5.769	0.56	5.311	0.51	-	-	-
Portugal	7.513	0.72	6.319	0.60	6.234	0.59	-4.6
Sweden	6.017	0.67	6.015	0.67	6.067	0.67	0.2
Bulgaria	2.497	0.32	7.614	0.98	5.027	0.65	19.1
Finland	2.702	0.52	3.214	0.61	3.933	0.75	9.9
Slovakia	2.012	0.37	4.349	0.81	3.709	0.69	16.5
Denmark	3.000	0.56	3.892	0.72	3.043	0.56	0.4
Slovenia	1.703	0.85	2.088	1.05	2.350	1.17	8.4
Ireland	1.314	0.33	1.822	0.44	1.906	0.44	9.7
Hungary	4.000	0.39	4.300	0.43	1.800	0.18	-18.1
Lithuania	1.132	0.33	1.534	0.45	1.253	0.37	2.6
Latvia	696	0.30	1.258	0.55	928	0.41	7.5
Estonia	672	0.50	780	0.58	817	0.61	5.0
Cyprus	804	1.12	837	1.12	-	-	-
Luxembourg	283	0.63	243	0.53	250	0.53	-3.0
Malta	4	0.01	36	0.09	39	0.09	74.1
EU average	312.071	0.64	324.923	0.66	309.933	0.63	-0.2

Source: FAOSTAT, 2009, CBI market information database, 2010.

The first study was carried out in 2007, at a national level, on a sample of 2023 adult subjects (18 years old+). The sample was probabilistic, two-stage, stratified according to the cultural area (18 cultural areas of Romania) and the area of residence (three types of rural localities and four types of urban localities) allowing a margin of error of + / - 2.2%, at a confidence level of 95%. The stratification criteria used were the following: 18 cultural areas were identified, grouped according to historical provinces and type of community. Seven categories of communities were taken into consideration: poor communities, medium developed communities, developed communities, towns with up to 30 thousand inhabitants, towns with 30 to 100 thousand inhabitants, towns with 100 to 200 inhabitants and cities with over 200,000 inhabitants. The questionnaires were administered on a face-to-face basis, at the subjects' households. Some subjects were recruited, based on screening questionnaire, after the interviews for focus groups.

At the same time, in order to test certain guiding hypothesis that should bring to light a wide range of motivations, implications and opinions associated with honey consumption, qualitative research

methods were used, namely the focus group. The focus groups were held in Cluj-Napoca, the second largest city as size and economic importance in Romania, with honey consumers, who were selected according to a set of socio-demographic variables: gender, age, level of education. Individuals were recruited randomly in the streets and places where it was assumed that there is a higher incidence of people consuming honey (supermarkets, markets, shops belonging to the National Beekeepers' Association). The data was analysed using SPSS Programme. Modelling the honey consumption behaviour in Romania was based on primary and secondary analysis of the data collected. Thus, relevant variables underlying honey consumption were identified and correlations were established between the frequency of honey consumption and certain demographic, cultural, environmental, occupational status and economic determinants (Table 5). In order to test the association between these determinants and honey consumption frequency, Pearson χ^2 (Chi square) test was used. For a more accurate analysis, an exact test was applied through the Monte Carlo method.

Table 4. Distribution of the answers to the question: How much honey do you consume per year, approximately?

Variable		Frequency	Percent	Valid percent	Cumulative percent
Valid	Increased honey consumption	470	23.2	23.7	23.7
	Average honey consumption	610	30.2	30.8	54.5
	Reduced honey consumption	682	33.7	34.4	88.9
	Non-consumption	220	10.9	11.1	100.0
	Total	1982	98.0	100.0	
Missing	DK/NA	41	2.0		
Total		2.023	100.0		

Table 5. Categories of socio-economic variables.

Category of variables			
Demographic	Cultural and environmental	Status	Economic
Gender	Residence medium	Education	Personal monthly income
Age group	Cultural area	Occupational status	Monthly income per household member
The presence of teenagers (15-18 years) in the household	Religion	Self placement in a social class	Monthly expenditure per household member
The presence of children (0-14 years) in the household	Nationality	Self placement in the poor-rich scale	1) Estimation of the household revenues. 2) Estimation of the monthly income of the household, necessary for a decent living.

RESULTS AND DISCUSSION

The most important indicator of the honey consumption habit is the frequency of honey consumption. Therefore, within the questionnaire of the study, an evaluation indicator of the frequency of consumption was included, using an 8-point ordinal scale: "I do not consume", "once a year or more rarely", "once every five to six months", "once every two to three months", "1 or 2 times per month", "three or four times per month", "three or four times per week", "daily", to which it was added "I cannot estimate, I do not respond". Essentially, each step represents a consumption frequency, approximately double than the previous. Data distribution within the sample and, by extension, to the entire population of reference was a balanced one, each valid category having between 9 and 17% of mentions. However, in Figure 1 we observe the agglomeration of individuals around a frequency of consumption of three to four times per month (about once a week) and then there is a uniform distribution of individuals into categories of average and high frequency of consumption. Only 2% of

the respondents could not or would not indicate a consumption frequency, the normal value when the question concerns an eating habit. For ease of data interpretation, the 8-point ordinal scale was recoded in a 4-point ordinal scale (marked with different colours in Figure 1):

1. "I do not consume", corresponding to non-consumption;
2. "I consume with a frequency of maximum once every 2 to 3 months", corresponding to reduced honey consumption;
3. "I consume with a frequency of minimum 1 to 2 times per month and maximum 3 to 4 times per month", corresponding to average honey consumption;
4. "I consume with a frequency of minimum 3-4 times per week", corresponding to increased honey consumption.

Therefore, we see that the percentage of people who do not consume honey is approximately 11% of the adult population, while reduced consumption of honey (maximum 750 g per year) is recorded in a group of approximately 35% of the population (Table 4). The average

Table 6. Sample structure.

Variable	Category	%
Gender	Male	46
	Female	54
Age category	18-30 years	19
	31-45 years	28
	46-60 years	33
	61 years and over	21
Are there children (0-14 years) in your household?	Yes	28
Are there teenagers (15-18 years) in your household?	Yes	17
Type of town/city	Rural	45
	Town with maximum 100.000 inhabitants	25
	City with over 100.000 inhabitants	31
Cultural area	Moldavia	22
	Muntenia	35
	Transylvania	33
	Bucharest	10
Religion	Orthodox	88
	Catholic	6
	Protestant	4
	Other	2
Nationality	Romanian	92
	Hungarian	6
	other	2
Education level	Maximum secondary education	23
	Vocational education	27
	high school and post-high school education	39
	Higher education	11
Occupational status	Pupil-student	5
	Domestic activities, unemployed	14
	Retired	34
	employed	39
	Employer, free lancer	5
	Farmer, day labour	4
People sometimes describe themselves as belonging to the working class, middle class, the bottom or the top. Where would you place yourself?	Top class	1
	In the top of the middle class	16
	In the bottom of the middle class	30
	Working class	34
	Bottom class	18
Personal monthly income	Maximum 100 €	29

Table 6. Contd.

	101-200 €	30
	201-300 €	23
	301-400 €	7
	over 400 €	11
Household monthly income	Maximum 50 € / member	18
	51-100 € / member	30
	101-200 € / member	34
	201-300 € / member	13
	Over 300 € / member	5
Value of monthly expenditure	Maxim 50 € / member	22
	51-100 € / member	37
	101-200 € / member	30
	201-300 € / member	9
	Over 300 € / member	2
Do you consider yourself rich, well off, middle class, poor?	Poor	31
	Middle class	39
	Well off	25
	Rich	6

All distributions mirror those of the population, the differences being located in the corresponding error margins.

consumption, between 750 g and 2 kg per year, has a rate of approximately 27%, while 20% of the population consumes over 2 kg of honey per year. Only 7% of the subjects cannot estimate or do not answer to this question. Developing a model for honey consumption habits, learning the configuration of the profile of honey consumers, is one of the most important tasks that need to be undertaken in order to make the elaboration of managerial strategies for entrepreneurs in the beekeeping sector possible. The identification of socio-economic determinants (broad term that covers a more complex set of categories, as detailed subsequently) of the consumption frequency provides, from an epistemic point of view, useful information concerning the impact of certain public policies or information campaigns carried out to encourage a healthy diet. Moreover, these variables can be distributed according to personal, individual, household, group or environmental reference. Four categories were identified in which the socio-economic variables included in the survey can be grouped and tested as determinants of the honey consumption per year, marking the reference as well.

The sample

The socio-demographic structure of the sample is as in Table 6. For each category of variables, the data analysis was meant to test the association between these

variables and the frequency of honey consumption. The statistical instrument used was Pearson's χ^2 (Chi square) and, for a more accurate measurement, we also used the Monte Carlo method. This accuracy test provides additional methods for calculating the levels of significance for the available statistics through the crosstabs, and provides a means for obtaining precise results when the data does not comply with any of the assumptions necessary for reliable results through the standard asymptotic method.

The relevant thresholds for the associations were considered in relation with the significance threshold value calculated with the Monte Carlo method, $\text{sigMC} < 0.05$. Table 7 presents Pearson's χ^2 values and the significance calculation with the Monte Carlo exact test, marking in italics the variables whose significance threshold for Pearson's χ^2 values is less than 0.05. The first conclusion we can draw from the above table is that there is a strong association between the frequency of consumption and these socio-economic variables, lending support to the hypothesis that cultural, environmental, status and economic variables determine honey consumption to a considerable degree.

Demographic determinants

According to Pearson's Chi square test of association,

Table 7. Pearson's chi square values and Monte Carlo exact test values.

Category	Variable	Pearson χ^2 value	df	Asymp. Sig. (2-sided)	Monte Carlo Sig. (2-sided)
Demographic	1) Gender	9.057	3	0.029	0.028 (0.024 - 0.032)*
	2) Age	64.445	9	0.000	0.000 (0.000 - 0.000)
	3) The presence of children (0-14 years) in the household	9.290	3	0.026	0.026 (0.022 - 0.030)
	4) The presence of teenagers (15-18 years) in the household	6.296	3	0.098	0.096 (0.089 - 0.104)
Cultural and environmental	1) Residence	33.237	6	0.000	0.000 (0.000 - 0.000)
	2) Cultural area	45.056	9	0.000	0.000 (0.000 - 0.000)
	3) Religion	8.612	9	0.474	0.479 (0.467 - 0.492)
	4) Nationality	14.046	6	0.029	0.029 (0.024 - 0.033)
Status	1) Education	72.617	9	0.000	0.000 (0.000 - 0.000)
	2) Occupational status	46.744	15	0.000	0.000 (0.000 - 0.000)
	3) Self placement in a social class	82.379	12	0.000	0.000 (0.000 - 0.0000)
	4) Self placement in the poor-rich scale	60.536	9	0.000	0.000 (0.000 - 0.000)
Economic	1) Personal monthly income	42.299	12	0.000	0.000 (0.000 - 0.000)
	2) Monthly income per household member	38.457	12	0.000	0.000 (0.000 - 0.000)
	3) Monthly expenditure per household member	32.553	12	0.001	0.001 (0.001 - 0.002)
	4) Estimation of the household income	137.326	12	0.000	0.000 (0.000 - 0.000)
	5) Estimation of the monthly income of the household, necessary for a decent living	27.556	12	0.006	0.007 (0.005 - 0.009)
No. of valid cases		1.982			

* In parenthesis 99% confidence interval lower bound and upper bound.

the demographic variables (gender, age group or the presence of children or teenagers in the household) (Table 7), with one exception (the presence of teenagers in the household), influence the frequency of honey consumption. The data indicate the following associations of age and consumption in the case of three out of the four age categories:

1. Women consume honey with a higher frequency (26%) than men (21%);
2. Young people (18 to 30 years) and the middle age category (31 to 45 years) are medium frequency consumers, while the middle to old age category (46 to 60 years) are to a greater extent high frequency consumers. The elderly (61 years and over) are in a proportion of 21% non-consumers (compared to 11%, that represents the average of the sample);
3. In the households where there are children under 14 years old, the distribution of medium frequency consumers (36%) is higher than in the other households (29%).

Moreover, the distribution of non-consumers in the households without children or teenagers is slightly higher than in the case of the other households. The data indicate a relatively stronger association in the case of the presence of children in the household ($\chi^2=9.290$, $df=3$, $sigMC=0.026$) than in the case of the presence of teenagers ($\chi^2=6.296$, $df=3$, $sigMC=0.096$). Therefore, the intensity of an influence due to the presence of a child in the household (0 to 14 years) on the individual honey consumption behaviour is greater than in the case of the presence of a teenager in the household (14 to 18 years), but the influence manifests itself only in the case of medium frequency consumers.

Cultural and environmental determinants

Taking into consideration the set of cultural and environmental variables (residence, cultural area, religion, nationality), the association test demonstrates that except for religion, all the other variables associate with honey

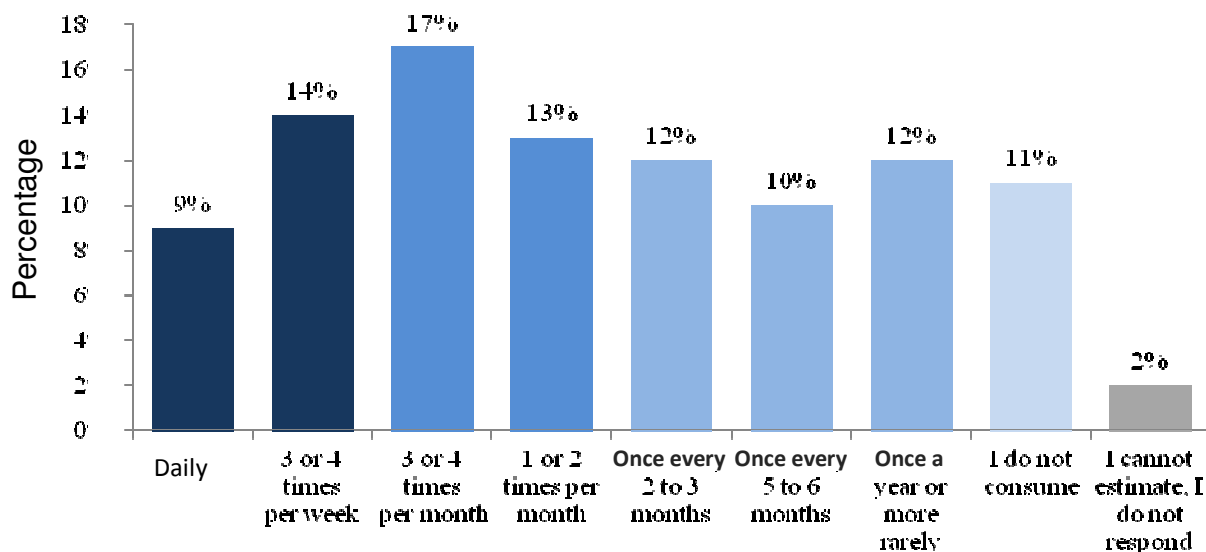


Figure 3. Distribution of the answers to the question: "How much honey do you consume per year, approximately?"

consumption frequency with an intensity whose significance threshold is less than 0.05 (Table 7). Residence ($\chi^2=33.237$, $df=6$, $sigMC=0.000$), cultural area ($\chi^2=45.056$, $df=9$, $sigMC=0.000$) and nationality ($\chi^2=14.046$, $df=6$, $sigMC=0.029$) are variables that influence honey consumption. The data indicate (Figure 3):

1. A smaller proportion of high frequency consumers (19%), but a greater one for the reduced frequency consumers (40%) is located in the rural area than in small towns (29% high frequency, 28% low frequency), despite the fact that the majority of beekeeping business are situated in the rural area;
2. A smaller proportion of medium frequency consumers (25%), but a greater one for reduced frequency consumers (39%) in the South of Romania (Muntenia) than in the Centre (Transylvania) (39% medium frequency, 28% reduced frequency);
3. A greater proportion of reduced frequency consumers among Romanians (35%) than for the ethnic Hungarians (25%).

Therefore, there are environmental determinants that influence to a great extent the honey consumption behaviour, determinants with a strong cultural and geographical identity.

Status determinants

The present research includes highly significant status determinants (education, occupational status, social

class, self placement in a social class and self placement in the poor-rich scale) that, as the statistical analysis demonstrates, are associated with honey consumption to a considerable degree (Table 7). Therefore:

1. Persons with medium and high education are to a greater extent medium and high frequency consumers, in comparison with those with vocational or elementary education. The incidence of non-consumers (16%) among those with elementary education is higher than for the other categories;
2. The employed consume greater quantities of honey than the other categories, while the retired are overrepresented in the non-consumer category;
3. Concerning the self-placement in a social class, the present data indicate high frequency consumption for those who place themselves in the middle class and a reduced one among those who place themselves in the lower class. Similar consumption behaviour can be found regarding the self-placement in the poor-rich scale, those who consider themselves as being poor are to a greater extent non-consumers and to lesser extent frequent consumers, while those who place themselves in the category of "medium to rich" are high frequency consumers.

Economic determinants

It can be stated that, according to the tests performed (Table 7), the economic variables are strongly associated with honey consumption. Concerning the factual variables (income, expenses) the data indicate that:

- 1) Persons with low income (maximum 200 euros per month) are more likely to be either non-consumers or reduced frequency consumers, while those with medium to high income (over 200 euros) are to a greater extent medium or high frequency consumers;
- 2) As for the household income, reported to the number of members, the data shows the same direction of association: those coming from families with a low income per member (maximum 100 euros / member) are often non-consumers or reduced frequency consumers, those with medium income (101 to 200 euro / member) are to a greater extent medium frequency consumers, while the majority of high consumers are those coming from medium to high income families reported to the number of members (over 200 euros / member);
- 3) The analysis of the association between the amount of household monthly expenditure and honey consumption leads to the same conclusion: that is those with a low income consume honey rarely, while those who consume honey frequently are not those with very high expenses, but those belonging to the medium-high expenses category.

With reference to the set of subjective economic variables (the estimation of household income and the income level required for a decent living), the data indicate a strong association between honey consumption and the self-representation of the income level or of the decent living threshold. Those who consider themselves as having an income beyond the threshold of decency are most likely medium and high consumers of honey, while those who place themselves under this threshold are rather non-consumers or reduced consumers.

Conclusions

The development of the Romanian honey market is possible, on the one hand, by penetrating external markets, and, on the other hand, by stimulating internal consumption. More than half of the honey produced in Romania is sold in foreign markets; however, the selling price is still low due to wholesale. The management strategies should be based on the increase of the quality of the product (quality control, respect of norms, certification, promotion), on a better positioning on the retail market and on improving the product image. Furthermore, the stimulation of domestic honey consumption should be guided by strategies derived from familiarity with the characteristics of this consumption. For this reason, we should constantly conduct studies like the present one, in order to obtain useful information on quantitative and qualitative indicators of honey consumption. The present research represents evidence

supporting the hypothesis that the frequency of honey consumption in Romania is significantly determined by all four categories of variables that were analysed. With few exceptions, all the variables tested are strongly associated with the honey consumption behaviour. It should be noted that there does not exist a linear dependence between the consumption frequency and social status or economic variables, high consumption being associated with a positioning in the range of medium to high social status and income. It can be concluded that honey consumption in Romania does not come under the category of general food habits, being associated with a medium to high level of welfare.

Moreover, honey consumption is influenced by a wide range of motivational factors that include representations associated with the product and its perceived benefits. However, if modelling the honey consumption behaviour is based only on socio-economic segmentation, the honey market, as frequency / behaviour or amount of consumption, is notably influenced by welfare and income increase and also by the financial sustainability of healthy dietary consumption behaviour. Previous analyses indicate that honey industry managers must adjust their production and sales strategy to different acquisition characteristics and differential honey consumption behaviour. The information regarding consumers' profile and the motivations behind bee products consumption should be transferred into a strategic plan and used to guide promotion campaigns or sales towards those who intend to purchase them. The ability to negotiate the price of bee products on a market with relatively few players of caliber and also the ability to form strong product network sales would be possible if honey producers could succeed to suggest associative entities capable of representing a large production pool.

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REFERENCES

- Arvanitoyannis I, Krystallis A (2006). An empirical examination of the determinants of honey consumption in Romania. *Int. J. Food Sci. Technol.*, 41: 1164-1176.
- Assefa A (2009). Market chain analysis of honey production: in Atsbi Wemberta District, Eastern Zone of Tigray National Regional State, M.Sc. Thesis, pp. 56-57.
- Árváné Ványi G, Csapó Z (2009). Evaluation of honey consumption in the main cities of the North-Great Plain Region, *International*

- Congress on the Aspects and Visions of Applied Economics and Informatics, 26-27th March, 2009, Debrecen, pp. 510-515.
- Loon Mv, Koekoek FJ (2006). Export Opportunities for African Organic Honey and Beeswax. A survey of the markets in Germany, the United Kingdom, and the Netherlands. EPOPA. Bennekom. The Netherlands, pp. 9-11.
- Mărghitaş L, Desire D, Pocol CB, Ilea M, Bobiş O, Gergen I (2010). The development of a biochemical profile of Acacia honey by identifying biochemical determinants of its quality, *Notulae Botanicae Horti Agrobotanici Cluj Napoca*, 2(38): 84-90.
- Melaku G, collab (2008). Challenges and opportunities for market-oriented apiculture development: The case of Ada'a Liben district, Ethiopia, Conference on International Research on Food Security, Natural Resource Management and Rural Development 2008, University of Hohenheim.
- Phipps RP (2008). World Honey Market Report. Canadian Honey Council Annual General Meeting Calgary, CPNA International. Ltd. Alberta, pp. 7-9.
- Pocol CB (2008). The Management and the Marketing of bee products in Romania and European Union, PhD Thesis, pp. 100-110.
- Pocol CB, Mărghitaş L (2010). National and International trends regarding production and consumption of honey, Academic Press Publisher. Cluj Napoca. Romania, pp. 41-79.
- Pocol CB, Ilea M, Popa A (2011). Economic diagnosis of beekeeping in the North West Region of Romania: a case study of Cluj County, *Analele Universitatii din Oradea*, Editura Universitatii din Oradea, pp. 279-282.
- Saha JCH (2005). Beekeeping for rural development, its potentiality and beekeeping against poverty. Bangladesh perspective. Standing Commission of Beekeeping for Rural Development, APIACTA.
- Centre for the Promotion of Imports from Developing Countries (2010). Market Surveys, www.cbi.eu.
- Food For Thought (FFT) Strategic Information Services Food & Drink Markets (2010). Edition Prepared for University of Agricultural Sciences and Veterinary Medicine of Cluj Napoca.
- Romanian Ministry of Agriculture and Rural Development (2011). The situation of beekeeping sector in Romania, www.madr.ro.