Analyzing Consumer Preferences for Honey: Empirical Evidence from Albania

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Abstract: The honey sector in Albania has experienced significant changes since the transition to a market economy, and the daily per capita consumption of natural honey is now among the highest in the Mediterranean area. A variety of forests and pastures makes possible the production of different types of honey. The main objective of this study consists in examining Albanian customers' buying habits with regard to natural honey in Tirana, Albania. For this purpose, an ordinal regression method is used to examine the relationship between the use of natural honey for medicinal purposes and a set of quality attributes of the same product such as taste, flavor, origin and color. In order to meet these objectives, a set of 353 questionnaires were implemented. Analysis shows that natural honey is clearly part of the diet of people from Tirana, and that the primary reason for consuming honey is to sustain health, not culinary purposes. Among the most important attributes considered in the buying process is the origin of the product, which is one of the attributes that has been demonstrated to generate expectations about other product attributes such as safety and nutritional value.

Keywords: Honey consumption, consumer preferences, safety attributes, ordinal regression

1. Introduction

Europe is the second largest producer of natural honey in the world. Among the largest producers within this area are Spain, Hungary and Romania. Albania produces quite modest amounts of honey compared to the largest producers in Europe, as well as other countries in the same region. The related level of production is also somewhat lower than in the vast majority of Mediterranean countries. Nonetheless, Albanian's per capita consumption of natural honey per

day is among the highest in the Mediterranean area, only being higher in Greece and Turkey (Table 1). However, consumer habits are notably different. In the latter countries, honey is frequently used for culinary purposes such as preparing traditional desserts, while in Albania honey is mostly used as a dietary product based on perceptions of its curative attributes.

Table 1

Production and Supply of Honey in selected Mediterranean Countries

Attribute	Europe	ALB	CYP	FRA	GRE	ITA	ESP	TUR
Production (tons in 2017)	390791	3614	515	12393	18000	9500	29393	114471
Consumption (g/capita/day in 2013)	1.8	2.6	1.68	1.51	4.24	0.74	1.82	3.33
Change in production (2007-2017%)	15	75	-28	-24	22	-21	-8	55

Source: http://www.fao.org/faostat/en/#data [1]

The keeping of bees and the production of honey have become common among farmers in Albania, since relief and climatic conditions favor this activity. However, despite the huge potential this activity has in Albania, most production occurs in family businesses which typically cultivate a modest number of hives. Beekeeping is a profitable activity, capable of improving the livelihoods of individuals and rural communities [2]. Albania has long tradition of beekeeping, which is commonly considered a supplementary activity for increasing the revenue of rural families and improving their livelihoods. During the last decade a significant increase in the number of beehives and production of natural honey has occurred. By the end of 2017, the number of beehives in Albania was estimated at 290,000, while in 2006 Albanian beekeepers counted 171,000 beehives. Over the period 2007–2017, natural honey production in Albania continuously increased. In 2017, total natural honey production rose to 3614 tons compared to 2071 tons in 2007 (Figure 1).
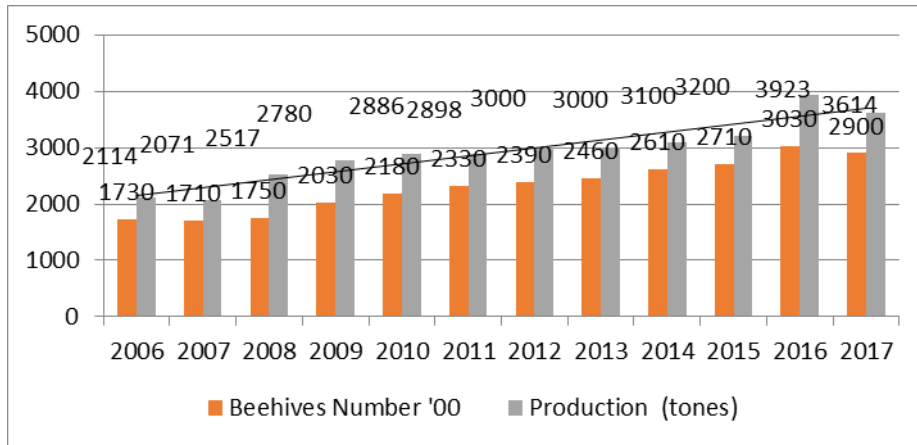
Figure 1

Beehives number (hundred) and production of natural honey in Albania (2007 -2017) [1]

Albania's climate and landscape provide ideal conditions for beekeeping [3]. The most important types of honey in Albania are a mixed flower honey, based on mixed flowers and medicinal herbs, and chestnut honey. The production of natural honey is mainly concentrated in south-east Albania (around 50% of the total production). Despite its modest share of production (7% of total production), North Albania is noted for its chestnut honey, unique for its medicinal attributes [4].

2. Methodology

The main aim of the research described herein was to examine customers' purchasing habits in Tirana with regard to natural honey. Examination of the relationship between the consumption of honey for medicinal purposes, the demographic characteristics of the sample, and quality attributes (taste, flavor, origin and color) of the former was a further objective of the study. In order to fulfil these objectives, both primary and secondary data were used. For the primary data collection, a questionnaire was designed and developed with a set of questions targeting consumer habits and decisions in relation to the purchase of natural honey in Tirana. Three hundred and fifty-three face-to-face interviews were conducted with primary buyers (customers in charge of purchasing for a household). Furthermore, ordered regression was used to model the relationship between *response variables* and a set of *explanatory variables*. Our dependent variable was *honey consumption for medicinal purposes.*

The link function is a transformation of the cumulative probabilities that allows estimation of the model. Cauchit (inverse Cauchy) tan (π (x−0.5) was selected as the link function because the latent variable has many extreme values.

Ordinal regression was used to model the relationship between response variables and a set of explanatory variables: this approach was considered appropriate for measuring individual preferences [5].

Our dependent variable is an ordinal outcome with five levels (1, 2, 3, 4, 5), thus five logits were modeled: one for each cut point. f_i (x_i)...f_k (x_k) was used to denote the response probabilities at values for a set of explanatory variables. Cumulative probabilities were formed as follows:

$$Fk = P(Y<k/xi) = f_i(x_i)+...f_k(x_i), k=1,2.... K-1 (1)$$

Cumulative logits were then formulated:

$$L_k=\text{Logit} [(F_k (x_i)]=\log \quad k=1,2....K-1 \quad \text{Let } L_k(x_i)=\text{logit}[(F_k (x_i)], (2)$$

where F_k (x_i) is the cumulative probability up to and including category k, thus the proportional odds model [6] can be expressed as follows:

$$L_k (x_i)= \alpha_k+\beta_k(x_i), \qquad k=1,2....K-1 (3)$$

The α parameters are the intercepts of cut-points. The parameter vector β expresses the regression coefficients for the covariate vector x_i. Inherent in this model is the proportional odds assumption, which states that the cumulative odds ratio for any two values of the covariate is constant across response categories. The interpretation of the estimates is as follows:

- for $\beta>0$ the odds ratio $e^{-\beta}$ <1, meaning that higher cumulative scores are more likely than lower cumulative scores;
- for $\beta=0$ the odds ratio $e^{-\beta}$ =1, meaning that high cumulative scores are equally as likely as low cumulative scores, and finally;
- for $\beta<0$ the odds ratio $e^{-\beta}$ >1, indicating that lower cumulative scores are more likely than higher cumulative scores.

Data analysis was carried out using the SPSS software package.

3. Literature review

3.1 Customer preferences and attitudes toward traditional foods and honey

According to Guerrero et al. (2009, p. 348.): "A traditional food product is a product frequently consumed or associated with specific celebrations and/or

seasons, normally transmitted from one generation to another, made with care in a specific way according to the gastronomic heritage, with little or no processing/manipulation, that is distinguished and known because of its sensory properties and associated with a certain local area, region or country." [7]

Such foods include primary vegetables, fruits and animal products eaten in their natural form or after some basic processing techniques (cooking, drying or natural fermentation) [8]. Traditional food is often obtained through artisanal procedures so its production and commercialization is unlikely to follow the same criteria and rules as industrial food. Two of the most important characteristics of traditional food are local origin and the method of production (typically homemade, or on a farm) [9][10]. Nowadays, consumers increasingly value the origin of products. They associate food quality with a specific origin and consider this factor to be an attribute of products [11][12][13][14][15]. Traditional products constitute an important element of Balkan countries' culture and culinary traditions. Results of qualitative studies in six Balkan countries indicated that consumers in Balkan countries perceive traditional foods to be natural, domestic, healthy and tasty [16].

In recent years, many researchers have studied consumer preferences and attitudes towards honey [17][18][19]. A study conducted among Italian consumers showed strong positive preferences for locally produced honey [17]. Another piece of research conducted in Croatia showed that intrinsic attributes such as taste, aroma, and scent are most important to consumers when they choose honey. Based on the results of the same study it was claimed that Croatian consumers prefer domestic honey which they buy and consume primarily for its medicinal benefits [18]. Gyau et al. (2014) argue that price, packaging and color are the main attributes that strongly influence consumers' choice of honey in the Democratic Republic of Congo, while quality, taste and origin have a moderate influence on such choices [20]. Price and value for money are the key purchasing criteria among consumers in Western Australia [21]. Furthermore, a survey conducted with educated urban inhabitants in Romania revealed that the main motivation for purchasing honey was its perceived medicinal benefits and related dietary characteristics, such as healthiness, taste, and nutritional quality [22].

4. Results

4.1 Socio-demographic characteristics of the sample

The socio-demographic characteristics of the sample are presented in Table 2. Each sample distribution factor converges to a normal distribution except for employment. About two-thirds of the respondents are female. Most of the participants (mode) may be classified into the age category 46-60 years old, who together with those 36-45 years old comprise 67% of the sample. Half of all

respondents report to have completed an undergraduate degree. With regard to monthly income, the majority of respondents claim to have a household monthly income of 50001 – 70000 ALL (ca. 400–570 euro) (34%). This category of respondents together with those who report to having a household monthly income of 30001 – 50000 ALL (ca. 245–400 euro) comprise 62% of the sample. More than half of respondents (58%) are full-time employees and 48% live in a family with 3–4 members. Taking into consideration all these factors, we assume that the average profile of the person in charge of food purchasing in households in Tirana is female, between 36-60 years old, a graduate, is full-time employed and lives in a family with 3–4 members with a household income of between 30001 and 70000 (ALL) (ca. 245–570 euro).

Table 2.

Socio-demographic characteristics of the sample

Variable	Category	Frequency	Frequency %
Gender	Male	85	24
	Female	268	76
Age	18 - 35	83	23
	36 - 45	102	29
	46 - 60	134	38
	over 60	34	10
Education	Primary + Secondary	41	12
	Undergraduate	177	50
	Graduate	135	38
Average household monthly income*	Up to 30,000 ALL/ month	59	17
	30,001 - 50,000 ALL/month	100	28
	50,001 - 70,000 ALL/month	121	34
	70,001 - 90,000 ALL/ month	48	14
	over 90,001 ALL/month	25	7
Employment	Full-time employed	204	58
	Part-time employed	40	11
	Seasonal Employment	16	4
	Unemployed	62	18
	Retired	31	9
Household size	up to 2 persons	34	10
	3-4 persons	173	49
	5-6 persons	128	36
	7+	18	5

*1EUR = 126 ALL

Source: Authors' construction (N=353)

4.2 Consumption characteristics and buying habits in relation to natural honey

Natural honey is popular among consumers in Tirana (Albania). Seventy-nine percent of respondents stated that they had natural honey at home at the time of the interview. About 60% of interviewees and their families consume only natural (non-industrially produced) honey. However, the total share of consumers of both natural and industrial honey is 85%. Honey consumption within the household is not limited to a specific age group or type of household member (children, adults, or elderly people). Fifty-five percent of respondents report that all family members can be considered the primary consumers of honey. Among the reasons for consuming natural honey, the majority (74%) of respondents refer to its curative attributes. The rest (26%) use honey as a sweetener for tea, coffee etc., (21%) or as an ingredient in different dishes / desserts (5%). These results indicate that the consumption of honey in Albania is most strongly related to its dietary attributes and perceived health benefits. In terms of the frequency of honey consumption in the household, this varies from several times a week to once a week (79%).

Results of descriptive analyses show that short distribution channels dominate sales of natural honey (Table 3). Seventy-eight percent of the interviewees state that they buy natural honey directly from farmers who are either not known to them personally (21%) or who are known personally / have been recommended by relatives and/or friends (57%). It may be presumed that consumers are more confident with producers they know because they feel they have more of a guarantee that the product is locally produced and really natural. As per quantity and frequency of purchasing, it appears that quantity "compensates" partially for the low frequency of purchasing. The majority of food products are purchased quite frequently, even on a daily basis. However, this is not the case with natural honey in Tirana. More than half of respondents (56%) buy such products 2–4 times a year. Almost the same share (54%) of respondents confirm that they buy from 1 kg to 3 kg of honey per purchase.

Table 3

Descriptive statistics for honey consumption characteristics and purchasing habits

	Frequency	%
Presence in the household of honey at the time of interview *n=353*		
Natural honey (artisanal)	236	79
Type of honey consumed *n=353*		
Only industrial honey	41	11
Only natural / artisanal honey	212	60
Both	87	25
Do not consume honey at all	13	4
Frequency of consuming natural honey *n=299*		
On a daily basis	24	8
Several times a week	127	42
more or less once a week	110	37
Less frequently	38	13
Reasons for consuming natural honey in the household *n=299*		
For its curative attributes	221	74
As a sweetener for milk, tea, etc.	64	21
For cooking	14	5
Primary consumers of natural honey in the household *n=299*		
Children	84	28
Mature people	29	10
Elderly people	22	7
All	164	55
Place of purchasing natural honey *n=299*		
Unknown bee-keepers	63	21
Bee-keepers known personally / suggested by friends	169	57
Grocery stores	66	22
Frequency of purchasing natural honey *n=299*		
Every month	54	18
Every 3 months	76	25
Every 6 months	91	31
Once a year	63	21
Less frequently	15	5
Quantity purchased *n=299*		
250 - 500 gr	22	8
501 gr - 1 kg	96	32
1,001 kg - 3 kg	161	54
More than 3kg	20	6
Characteristics considered while buying natural honey *n=299*		
Color	41	14
Origin	143	48
Smell	38	12
Taste	77	26

Source: Authors' construction (N=353)

4.3 Ordered regression model results

Our dependent variable is: *Honey consumption for medicinal purposes; the independent variables are demographics, consumption patterns, and the importance of honey attributes.* The question addressed to consumers was the following: "*Do you agree with the statement that 'I consume honey because of its medicinal features'?*" Agreement with this statement was based on responses using a 5-point Likert scale (totally do not agree – totally agree).

Ordinal regression was used to model the relationship between response variables and a set of explanatory variables. Our dependent variable is an ordinal outcome with five levels (1, 2, 3, 4, 5) thus five logits were modeled, one for each cut point. fi (xi)...fk (xk) denoted the response probabilities at values for a set of explanatory variables:

$Y = \beta_0 + \beta_1 Gender + \beta_2 Age + \beta_3 Education + \beta_4 Income + \beta_4 Household + \beta_5 Consumption frequency + \beta_6$ Purpose of use$+ \beta_7 Consumer + \beta_7 Place$ of purchase$+ \beta_8 Buying frequency + \ldots\ldots + \beta_9 attribute$ importance (5)

The test of parallel lines is designed to help with judging the adequacy of the model. The null hypothesis is that the corresponding regression coefficient is equal across all levels of the response variable. The results -2 Log Likelihood=284.994, Chi-square=205.695, p(value)=.000 show that the parameters differ across the levels of the response variable.

In addition, the significant Chi-square statistic (Chi-square =167.166; p(value)=.000) indicates that the model is a significant improvement over the baseline intercept-only model. Chi-square describes the difference between -2 times the log-likelihood for the intercept-only model and that for the final model.

The R^2 Nagelkerke coefficient of determination is about 53%, even though this does not have the same meaning as R^2 in the linear regression model; the approximated R^2 shows the important variation that is explained by the variables of the model.

The parameter estimates table (Table 4) summarizes the effect of each predictor. While interpretation of the coefficients in this model is difficult due to the nature of the link function, the signs of the coefficients for covariates and relative values of the coefficients for factor levels give important insight into the effect of the predictors in the model. For covariates, positive (negative) coefficients indicate positive (inverse) relationships between predictors and outcomes. An increase in the value of a covariate with a positive coefficient corresponds to an increase in the probability of it being in one of the "higher" cumulative outcome categories. For factors, a factor level with a larger coefficient indicates a greater probability of it being in one of the "higher" cumulative outcome categories. The sign of a coefficient for a factor level is dependent upon that factor level's effect relative to the reference category. Demographic variables did not appear to have any

statistical significance in terms of the dependent variable; those variables that had significant effects are presented in Table 4.

Table 4

The parameter estimation

Variables	Parameters estimates	Sig.
Color	-144,391	,000
Flavor	-138,535	,000
Taste	-137,438	,000
Origin	-4,308	,031
Consumption frequency	6,233	,003
N° of children in household	5,333	,001
Standardized packaged traditional honey is sold in supermarkets **Neutral**	3,664	,030
Standardized packaged traditional honey is sold in supermarkets **Do not agree**	4,600	,011
Bulk traditional honey is better than standardized traditional honey **Do not agree**	3,366	,065
Solid traditional honey is better **Strongly agree**	-3,151	,025
Solid traditional honey is better **Agree**	-5,927	,001

Source: Authors' construction (N=353)

The results of the model for attributes such as color, flavor and taste show that consumers that consider these attributes very important in their buying decisions do not buy traditional honey for health reasons. Those that consider the above-mentioned as less important are more likely to consume traditional honey for medicinal reasons.

Consumers with a higher consumption frequency and large households with children are more likely to buy traditional honey because of its medicinal properties.

In relation to the origin attribute, there is a strong link with propensity to consume honey because of its medicinal properties: those who consider origin as the second most important attribute are less likely to consume honey for health reasons. Those who consider this attribute to be the most important attribute in honey buying decisions are more likely to focus on the product's health properties.

Those consumers who are neutral in relation to the statement *Standardized packaged traditional honey is sold in supermarkets* are 3.6 times more likely to buy traditional honey because of its medicinal properties than those who agree with it. This result implies that those whose focus is the medicinal properties of honey do not buy honey in supermarkets. Consumers that agree/strongly agree with the statement: "*Solid traditional honey is better*" are less likely to buy honey because of its health properties.

Consumers that do not agree with the statement *Bulk traditional honey is better than standardized traditional honey* (1=strongly agree, 5=strongly disagree) are 4.6 more likely to buy traditional honey for medicinal purposes than those who agree with this statement. This result suggests that standardized honey cannot be used for medicinal properties and implies that consumers think that bulk[5] honey is better in terms of health. This may be because of the lack of information that consumers have about honey production process and the meaning of the term "standardized."

Conclusions

Traditional honey production in Albania is mainly linked with specific ideas about origin, which is one of the attributes that has been shown to generate expectations about other product attributes, such as safety and nutritional value [12][23].

The most important consumption-related driver for buying honey is better health, not culinary reasons. Natural honey is strongly present in the diets of consumers in Tirana and domestic market demand is the only driving force behind the increase in domestic production. Direct sales are dominant in terms of marketing traditional honey in Albania. This result shows that direct selling is preferred by consumers because of the trust that they display in honey producers.

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[5] A bulk product is a product which is not packaged in any type of container and is stored, transported, and sold in large quantities. Natural honey commercialization in Albania mainly uses short channels of distribution (farmer/producer – final consumer) and it is sold with minimal packaging (farmers put it in plastic containers of 1.5 – 2l formerly used as containers for beverages such as Coca-Cola, or bottled mineral water).

Concerning the practical implications of the study, the results suggest that in order to achieve a shift in consumer thinking and buying habits with regard to packaged goods and enhancing retailing, significant marketing activity is required, whereby the emphasis should be put on personal persuasion and tasting.

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