



Research article

Testing consumer propensity towards novel optional quality terms: An explorative assessment of “mountain” labelled honey

Filippo Brun, Raffaele Zanchini*, Angela Mosso and Giuseppe Di Vita

Department of Agricultural, Forestry and Food Sciences (DISAFA), University of Turin, Turin, Italy

* **Correspondence:** Email: raffaele.zanchini@unito.it; Tel: +390116708872.

Abstract: The present study provides some preliminary reflections of the honey market and explores Italian consumer attitude towards the “mountain” quality term. Moreover, it also takes the organic and PDO labels into consideration, in addition to the generic “local” label, evaluating the relationships that exist between mountain honey and other products. Data were obtained through questionnaires using a face-to-face method and the econometric study was carried out using correlation analysis as a first step and then the one-way ANOVA and t-test, based on the socio-demographic and lifestyle characteristics; moreover, interactions among the characteristics mentioned above were evaluated using a two-way ANOVA with interaction. The results show that Italian consumers have a positive attitude towards “mountain” honey; however, their response changes according to the socio-demographic and lifestyle characteristics. An appreciable relationship was observed between mountain product and local product, suggesting that the mountain quality label could be a useful tool for the valorisation of honey.

Keywords: honey demand; “mountain product” label; PDO; local; organic; two-way ANOVA

1. Introduction

Empirical evidences on consumer preferences towards mountain labelled products are scarce. Several authors have highlighted the limited knowledge consumers possess about this rather novel quality system. However, this label, which is generally well-regarded by consumers, can represent a useful tool to improve the economy and the spillovers of mountain territories, by promoting their quality food products and their sustainable development [1,2].

The introduction of a new label can reasonably be considered an innovative process, as this usually occurs in a confined area, as it is subject to more restrictive production rules than traditional products and is also regulated by a control system.

Our paper is based on the hypothesis that the “mountain” label can positively influence honey consumer preferences. To prove this assumption, we decided to test the honey demand through a study case.

Honey is considered by many authors to be a healthy and highly sustainable product [3,4] however it appears to be scarcely differentiable and therefore, as such, innovation processes are not easily put into effect [5].

Thus, in recent years, the need for a thorough review of the product, in terms of its focal differentiation, has been highlighted by several sources [6,7], not least because the competitiveness of Italy and European countries in the honey trade is still poorly consolidated [8]. In this regard, some hypotheses of product differentiation have been considered, in order to identify possible actions to be implemented in relation to individual and specific segments of the Italian market.

It is our opinion that studies on labelled honey have so far proven to be not entirely adequate, perhaps because of the low weight that this niche product has on the market [9]. However, a recent study on the mountain brand showed that both producers and retailers were very interested in such a brand [1]. Moreover, in the producers’ opinion, mountain products are generally considered to be ecological, high quality, fresh and genuine products. In fact, it is not by chance that they have been awarded special policies such as the “Italian mountain product” logo, which was created through article 15 of the “Italian Law n. 97 dated 1994, referring to mountains and mountainous areas” [10] and recently resumed.

1.1. EU legislation on the quality term “mountain product”

The term “mountain product” is an optional quality indication introduced by Article 31 of Regulation (EU) No 1151/2012 of the European Parliament and of the Council [11].

This term refers to food products intended for human consumption and includes “raw materials and the feedstuffs for farm animals that come from mountain areas”; in addition to processed products, the processing of which “takes place in mountain areas”. As regards mountain areas in EU countries, they are defined in EU Regulation (EC) No 1257/1999, whereas for products from third countries, mountain areas include regions officially designated as “mountain areas by the third country or that meet criteria equivalent to those set out in Article 18(1) of Regulation (EC) No 1257/1999” [12].

According to the Regulation 1151/2012, integrated by Commission Delegated Regulation (EU) No 665/2014 of the European Parliament and of the Council, the quality term “Mountain product” is a tool that farmers, including beekeepers, can use to enhance the value and marketing of their products. In this respect, policy makers intend to reward the efforts of producers in disadvantaged rural areas, such as upland areas, where the agricultural sector is characterised by higher production costs, given that these areas correspond to a significant part of the UE territory and population. Indeed, the objective of this quality label is “to facilitate the communication within the internal market of the value-adding characteristics or attributes of agricultural products by the producers thereof” and as such to have positive effects on the rural economy, in particular for the less-advantaged areas [13].

In the case of beekeeping, the adoption of this quality marker imposes certain constraints, since

the label “mountain product” can only be applied if the bees have collected pollen and nectar exclusively from mountain areas, as defined by Article 18 of Council Regulation (EC) No 1257/1999.

As mentioned, Italian legislation introduced the “Italian mountain product” label for the first time through Law no. 97 of 31 January 1994 “New measures for mountain areas” [10], which established special protection for typical products and ensured the right, for PGI and PDO productions, to add the statement “produced in the Italian mountains”. This measure was not particularly successful because it needed to be implemented individually by each Region, however, this implementation was largely delayed and with divergent approaches.

Much more recently, the idea of such a quality scheme has returned into the mainstream, thanks to a clearer European direction, which has manifested itself through the adoption of the Ministerial Decree dated 26 July 2017 n. 57167, which established the definition of “mountain product” (Article 6) [14]. Subsequently, the logo was established by the Italian Ministerial Decree dated 2 August 2018 [15].

Interest in this label has therefore suddenly increased and in August 2019, according to the latest data published by the Ministry of Agricultural, Food and Forestry Policies [16], the number of certified mountain producers rose from 353 in 2018 to 474, as shown in Table 1. Of this group, certified beekeepers represent 14.6% of the total Italian producers of mountain labelled products.

Table 1. Number of certified mountain producers and beekeepers (August 2019).

Areas	Labelled food producers (n)	Labelled beekeepers (n)
North east	224	42
North west	126	17
Centre	8	3
South and Islands	116	7
Italy	474	69

Note: Source: [16].

1.2. Aims and research questions

In this context, this paper aims to verify the degree of appreciation for a “mountain” label for honey and to make a comparison with the common EU agro-food quality labels, in the event of the introduction of a mountain certification for Italian honey producers. With this objective in mind, the paper attempts to provide answers to the following research questions:

1. Can a process innovation, as a result of the introduction of a new European Regulation, influence consumer preferences?
2. Does a relationship exist between the mountain product label and other Community quality labels (PDOs)?
3. Are there different perceptions of current quality markers (organic, local and traditional)?
4. Does a correlation exist between the socio-demographic characteristics of consumers and the appreciation of the “mountain” quality marker?

The remainder of the paper is organised as follows: The first section describes the process of consumer recruitment, data collection and adopted methodologies. The second part presents and discusses the main findings; lastly, the final section concludes the document by highlighting the implications and limitations of this study.

2. Materials and methods

2.1. Data collection

The data were collected through direct interviews with a random sample of honey consumers. Prior to conducting the survey, a pre-test was carried out on a sub-sample of 40 consumers to fine-tune the questionnaire. Respondents answered a questionnaire with questions about honey consumption habits, beliefs related to intrinsic and extrinsic characteristics influencing the quality of the product and attitudes towards honey with a quality label, such as Geographical Indications (PDO and PGI), or local and organic labels. At the end of the questionnaires, the main socio-demographic characteristics of the sample, which are presumed to influence the choices, were also collected.

All the interviews were conducted anonymously, in a period between October and November 2018, using the face-to-face method, both at large-scale retail outlets and at farmers markets of Piedmont, in northern Italy. At the end of the survey, 1026 valid questionnaires were obtained, of which 654 respondents, or 63.74% of the total, were used for subsequent analyses, as they were honey consumers. In order to characterise the sample examined, the main socio-demographic and lifestyle traits of honey consumers were studied (Table 2) and are briefly described below. With regard to the age cohort, according to Brosdahl and Carpenter, (2011) [17], respondents were classified into “Millennials” (born between 1982 and 2000) and “Generation X” (born between 1961 and 1981). On the other hand, the generations prior to Generation X, called “Baby boomers” (born between 1943 and 1960), and the “Silent generation” (born before 1943) were merged into a single group called “Older generations”. For descriptive purposes, monthly income distribution of respondents was also collected, and data in income classes used in the questionnaire are listed in Table 2. We also reported the number of respondents who did not answer the income question. In detail, it can be observed that the income class > 4000 euros per month, due to the lack of information and the resulting absence of a group of responses, was cut off for subsequent analysis.

Table 2. Socio-demographic and lifestyle characteristics of the sample.

	Category	Frequency	Sample %
Gender	Male	274	41.9
	Female	380	58.1
Sport activity	No	265	40.5
	Yes	389	59.5
Diet	Omnivorous	561	85.8
	Other diets	93	14.2
Age cohort	Millennials	175	26.8
	Generation x	297	45.4
	Older people	182	27.8
Monthly income €	<1000	106	16.2
	1000–2000	297	45.4
	2000–4000	111	17.0
	>4000	6	0.9
	No answer	134	20.5

2.2. Explorative statistics

In order to evaluate the attitude towards mountain honey, observing whether the mountain label is associated with other quality markers, such as PDO, organic and local product, an initial analysis was carried out using the correlation matrix. As is widely acknowledged, the correlation matrix is a tool used to analyse the non-causal relationships between variables and, as such, it has recently been used to study the honey market [18] and other agri-food products [19,20].

Considering that the variables we investigated were collected on an ordinal scale, in a similar manner to Kowalczyk et al. (2017), we used Spearman's rank correlation coefficient to conduct the analysis. In a second step, some statistical analyses were conducted to evaluate and compare the level of consumer appreciation respectively, for mountain, local, certified PDO and organic honey. Therefore, all the analyses carried out so far, serve to objectively quantify the importance that consumers attach to the various quality labels, as a part of a synthetic assessment of the quality of honey. These variables were evaluated through a 5-point Likert scale, where 1 means "not important" while 5 "very important".

2.3. Consumer attitudes assessment

In a subsequent analysis phase, based on the outputs of the correlation matrix, in order to further the analyses, we selected the socio-demographic variables that had at least one significant correlation ($\alpha = 0.05$) to the quality labels and the local product label. For this purpose we used a t-test for two independent samples and a one-way ANOVA, to compare more than two groups; both tests have been widely used in similar consumer studies [21–23] to verify if significant differences exist among the socio-demographic characteristics of the sample. The ANOVA analysis was followed by the post-hoc LSD test to identify which groups actually have a significant difference, similar to other previous studies [22,24].

Based on the empirical evidence derived from the t-test and the ANOVA, it was decided to expand the analysis using a two-way ANOVA model with interaction (eq. 1), in order to identify the interaction effect. This is a kind of analysis that has been widely used in consumer studies [25,26] to verify whether when combining the socio-demographic characteristics, the variables have an additive effect, typical of the absence of interaction or whether the combination of the socio-demographic characteristics leads to a non-additive effect, which is symptomatic of the presence of interactions [27].

$$Y = \mu + A + B + AB + \varepsilon \quad (1)$$

where:

- μ is the general average of the variable being investigated, that is, the average value of the quality attributed by consumers to mountain, organic, local and PDO honeys;
- A and B are the main effects for two generic factors;
- AB represents the correspondent interaction;
- ε represents the residual error.

All the analyses in this study were carried out using R statistical software, and specifically by means of the R Commander package [28].

3. Results and discussion

The importance that consumers attach to three different quality markers and the local origin of the product has been previously investigated, through descriptive statistics. Table 3 shows the different average importance of these four variables among consumers. The analysis indicates that the local product is the most popular among respondents, in line with other studies that have highlighted the importance of local honey for consumers [23,29]; the mountain product label follows the local one showing a good level of appreciation from consumers. On the other hand, PDO and organic labelled products achieve a lower result when compared to local and mountain quality cues, with an average score above 3.3, which however underlines a certain degree of interest in these products, as reported in recent literature [30].

Table 3. Importance attached by consumers to investigated quality cues (n = 654).

	Mean	Std. Deviation
Mountain	3.76	1.293
Organic	3.31	1.392
PDO	3.37	1.354
Local	4.35	0.988

In the next phase, we used correlation analysis as an exploratory survey tool and Table 4 highlights the results of this analysis, showing the relationships between the appreciation of mountain products and the socio-demographic and lifestyle variables of the respondents, in addition to the relationships with other quality labels and the local honey cues. The results show that mountain honey has a fair level of correlation with local honey (0.214), probably due to the fact that the mountain product has some affinities with local products. As reported in previous studies, these characteristics are often linked to the high quality of production, environmental compatibility and support that these small-scale productions provide to local economies [31]. In particular, in the case of local honey, Cosmina et al. (2016) described the environmental friendliness, respect for traditions and support for the local economy, while Jensen and Mørkbak (2013) emphasised the high quality of local productions. Furthermore, in an exploratory study carried out in six European countries, through a Principal Component Analysis, the authors argued a factorial dimension, in which the perception of mountain products is strongly associated with local production, development of the local economy and respect for the environment [32].

Mountain honey also shows a weak but significant correlation with organic honey (0.081) and the PDO marker (0.085). This link can be explained by the fact that the perception of product quality and environmental sustainability have proven to be attributes that contribute significantly to the purchase of organic honey [4], and are common in the perception of environmental compatibility attributed to mountain honey [3].

On the other hand, on the basis of the literature regarding the consumption of PDO honey, it can be concluded that the correlation between this indication of origin and mountain honey can be linked to the higher perceived quality attributed to PDO products, similar to the perception of honey produced by local beekeepers [21].

Another interesting correlation is the one between PDO and organic honey (0.533). This link suggests a strong association between the two quality labels and it can be assumed that consumers

who attribute a higher perception of quality to organic products, also tend to acknowledge its PDO certification, confirming what has already been noted by Bryla (2017) [33].

With regard to the socio-demographic characteristics of consumers, we found some weak but significant correlations, such as in the case of young people who show a negative link (mountain label vs Millennials -0.118), or women who show a positive link to the local label (0.09) and the organic label (0.083). Conversely, we did not observe any correlation between socio-demographic characteristics or lifestyle with the appreciation of PDO honeys.

Table 4. Correlation matrix among the investigated variables.

	Mountain	Organic	PDO	Local
Mountain	1.000			
Organic	0.081*	1.000		
PDO	0.085*	0.533**	1.000	
Local	0.214**	0.073	0.059	1.000
Millennials	-0.118^{**}	-0.024	-0.036	-0.055
Generation x	0.034	0.031	0.007	0.099*
Older generations	0.079*	-0.011	0.028	-0.055
Female	0.053	0.083*	-0.007	0.090*
Sport Activity (Yes)	0.004	0.039	-0.025	0.011
Omnivorous	-0.017	-0.076	0.026	-0.086^*
<1000	-0.025	0.041	0.043	-0.056
1000–2000	0.034	-0.007	-0.046	0.041
2000–4000	-0.016	-0.031	0.013	0.007

Note: *, ** Correlation is significant respectively at the levels 0.05 and 0.01 (2-tailed).

Since these correlations among different quality cues are significant but not so robust, we decided to investigate whether these links were sufficient to manifest significant differences between the averages of the groups. Therefore, as indicated above, ANOVA and t-tests were performed, testing socio-demographic and lifestyle variables that showed significant correlations for at least one type of cue. More specifically, the variables: age cohort, gender and Diet were tested.

As could be expected, the results of ANOVA, shown in Table 5, are consistent with the results of the correlation analysis. In addition, it can be observed that mountain honey is more greatly appreciated by Older generations. In fact, based on the LSD test, there is a marked difference between millennials and Older generations, while no significant differences were obtained when taking into account the age cohorts for organic and PDO products. Conversely, ANOVA identifies significant differences regarding the local product; in particular, through the LSD test it is possible to note the difference between “Generation X” and “Older generations”. This last result is rather controversial: in fact, although our study revealed that Generation X has a greater attitude towards local honey, Gyau et al., (2014) reported a lower attitude towards local honey from middle-aged consumers. However, this discrepancy may be due to the geographical origin of the consumers, since this latest study was conducted in Congo. In this sense, previous literature agrees that food choices vary according to the country of origin of the consumers, both for the honey sector [34] and for other processed products [34,35]. In any case, it has been shown that older people have a greater preference for local products due to their roots with the territory [31].

Table 5. Results of one way ANOVA and LSD post-hoc for Age cohort.

	Millennials mean (sd)	Generation X mean (sd)	Older gen. mean (sd)	p-value
Mountain	3.54 (1.294)b	3.82 (1.246)ab	3.87 (1.350)a	0.027*
Organic	3.28 (1.311)	3.36 (1.359)	3.24 (1.519)	0.650
PDO	3.32 (1.287)	3.39 (1.303)	3.37 (1.498)	0.861
Local	4.32 (0.891)ab	4.46 (0.870)a	4.18 (1.215)b	0.009**

Note: *, ** ANOVA is significant respectively at the levels 0.05 and 0.01.

Based on the gender and diet typologies of consumers, comparisons have been made with the t-test and the results are shown in table 6. As can be observed, with reference to mountain honey and PDO honey, there are no significant differences between genders, consistent to the results of the correlation matrix, whereas regarding local and organic honeys significant and highly significant differences were found respectively.

Therefore, organic honey was more appreciated by women than men, in line with the results reported in other studies, in which a greater preference of the female gender towards organic products is recognised, thanks to their greater attitude towards health aspects [36–38]. Another interesting result concerns local honey, where significant differences by gender were also obtained, with a greater appreciation again by women. This result is also supported by the results of other studies in which similar behaviour was found, in relation to a greater probability of women to purchase local products [39,40], suggesting a greater attitude and attention to environmental issues by women [38,41].

The results obtained by comparing omnivorous consumers with all other diets, (vegetarians, sports diets and diets for health reasons), show that diet is an important characterising factor of honey consumption. Diet, in fact, can induce a certain sensitivity of consumers to issues related to sustainability and perceived health aspects of production. Consistently, a positive attitude towards organic and local products has been observed in the literature of vegetarian consumers and people with healthier dietary patterns [37,42].

Table 6. T-test results for Gender and Diet.

	Male mean (sd)	Female mean (sd)	p-value
Mountain	3.7 (1.273)	3.80 (1.308)	0.311
Organic	3.17 (1.399)	3.41 (1.380)	0.033*
DOP/IGP	3.39 (1.329)	3.35 (1.373)	0.738
Local	4.22 (1.079)	4.43 (0.909)	0.008**
	Omnivorous mean (sd)	Other diets mean (sd)	p-value
Mountain	3.74 (1.309)	3.85 (1.197)	0.468
Organic	3.27 (1.382)	3.54 (1.434)	0.084'
DOP/IGP	3.38 (1.357)	3.29 (1.340)	0.566
Local	4.31 (1.017)	4.57 (0.758)	0.018*

Note: ', *, ** ANOVA is significant respectively at the levels 0.1, 0.05 and 0.01.

Finally, in order to better understand the attitude towards mountain honey, the interaction between the socio-demographic characteristics of the interviewees was evaluated through a two-way ANOVA with interaction, to verify whether their combination could cause a deviation from additivity [27]. The results of the analysis of the tested interaction are presented in Table 7, which confirms the result of previous analysis and clearly highlights the presence of a significant interaction between age cohort and gender.

Table 7. Results of the two way ANOVA with interaction.

Model	Category	Df	F statistic	p-value
Age cohort* Gender	Age cohort	2	3.677	0.026 *
	Gender	1	1.065	0.303
	Age cohort* Gender	2	3.235	0.040 *
Age cohort* Diet	Age cohort	2	3.573	0.029 *
	Diet	1	0.397	0.529
	Age cohort* Diet	2	1.340	0.263
Gender* Sport	Gender	1	0.866	0.354
	Sport	1	0.368	0.544
	Gender* Diet	1	0.745	0.390

Note: * ANOVA is significant at the 0.05 level.

Figure 1 shows the significant interaction between the analysed variables, quantifying its effect and illustrating its characteristics. It can be seen that when transitioning from Millennials to the successive age cohort, the appreciation for mountain honey increases for both the male and female genders. On the other hand, when moving from Generation X to the Older generations, we can see how the appreciation of men increases steadily, whereas for women there is a reversal of the trend for the older cohort, highlighting a crossover interaction [43].

These results allow us to assume that the combined effect of age vs. gender shows a sharp decrease in women's appreciation for mountain honey, passing from Generation X to Older generations, whereas for men a steady positive attitude towards mountain honey is maintained with age.

As a fact, it emerges that women belonging to Millennials and Generation X show a higher level of appreciation for mountain honey than men; on the contrary, men express a more favourable attitude towards mountain honey only in the Older generation class. Our results partly confirm the higher attitude of women towards more environmentally [38,44] and locally produced food [41], but this is not the case for older generations. On the contrary the increasing appreciation of mountain honey by men, as they grow older, suggests that older generations tend to attach greater importance to local products because of their strong ties with the territory [31].

Finally, we found that the importance attached to local origin is more felt by older men than by older women. However, this outcome should be verified in further studies, since the interaction effect of the link between the territory and the gender/age cohort has not yet been explored in the literature.

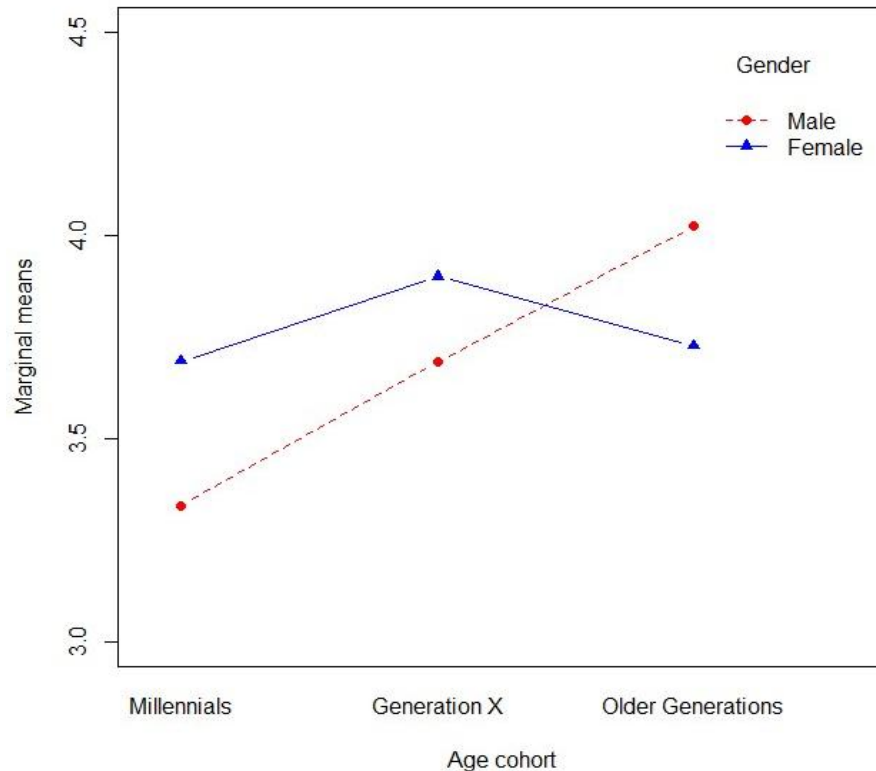


Figure 1. Interaction effect and marginal means for Age cohort * Gender.

4. Conclusions

Considering the scarcity of studies on mountain honey, for the first time, this article explores a specific type of innovation, related to the Italian honey market, through the evaluation of the appreciation by consumers of the introduction of the “mountain product” label.

This is a preliminary explorative approach, based on correlation analysis combined with inferential tests, on a sample of consumers collected through direct interviews at different point of sales in Northern Italy. The data analysis has allowed some determinants of the honey purchasing behaviour to be outlined, in connection to the perception that the consumer has towards this label and other indicators of honey packaging.

As a first result, we can provide a positive answer to our first research question, by stating that the introduction of this innovation, made possible by the recent approval of the European regulation, significantly influences consumer preferences. As a fact, consumers showed a high preference for mountain labelled honey, suggesting that this label has a worthy potential for appreciation among food consumers.

Regarding the second research question, linked to the existence of a potential relationship between the “mountain” marker and other European quality labels, our study corroborates this relationship and identifies a rather different consumer perception and appreciation for the current EU quality markers (organic, local, traditional). Our study also confirms the interest that consumers have in organic and PDO labels; nevertheless, mountain honey and honey defined as local, reach, on average, higher levels of appreciation. We are not able to deduce if these results are generally valid for other food products beyond honey; in fact, honey is a niche production, and this peculiarity could

explain the great attention to quality indication attributed by consumers [9].

Additionally, we found that the mountain label is also associated with the “local” cue and this link could be used to develop territorial marketing tools to enhance other niche products offered by a given territory, confirming the results of a previous study on mountain products [45,46].

Finally, this study has shown once more that consumer behaviour cannot be standardised or simplified, as there is a significant correlation between its socio-demographic characteristics and the appreciation of quality markers. In fact, consumption varies considerably according to age and gender and mountain honey seems to be more appreciated by men and the elderly, while women and young people are the least invested.

Considering that many future challenges related to the honey market may depend on the enhancement of the positive image that this product has, in terms of environmental characteristics, healthiness and ability to assist in the development of small local economies, our results can support actions in this direction by honey producers. Indeed, they enable us to state that the mountain label can be used to create a competitive advantage, similar to the traditional labels on which the European Union’s quality policy is based.

Finally, we must remember the limits of our study, which in our opinion do not affect its validity. The first aspect is related to its territorial limitation, in fact, for organisational reasons and specificity of funding (limited to eligible areas of Interreg Italy-France), this paper only refers to consumers in the Northwest of Italy. Another limit is linked to the previously described characteristics of honey, a niche product, *par excellence*, whose consumption has been scarcely studied. The suspicion is that the aspects of the honey market are markedly divergent from those of other Italian food products, and for this reason, it would be useful to direct future research to test the propensity of consumers towards the use of the “mountain” label, by examining other traditional products, such as wine, processed meat and olive oil.

Acknowledgment

The study was carried out thanks to funding from Interreg Alcotra project INNOV’API n. 1580.

Conflict of interest

The authors declare no conflict of interest.

References

1. Finco A, Bentivoglio D, Bucci G (2017) A label for mountain products? Let’s turn it over to producers and retailers. *Qual Success* 18: 198–205.
2. Bentivoglio D, Savini S, Finco A, et al. (2019) Quality and origin of mountain food products: the new European label as a strategy for sustainable development. *J Mt Sci* 16: 428–440.
3. Arvanitoyannis I, Krystallis A (2006) An empirical examination of the determinants of honey consumption in Romania. *Int J Food Sci Technol* 41: 1164–1176.
4. Jsenen JD, Mørkbak MR (2013) Role of gastronomic, externality and feasibility attributes in consumer demand for organic and local foods: The case of honey and apples. *Int J Consum Stud* 37: 634–641.

5. Blanc S, Brun F, Di Vita G, et al. (2018) Traditional beekeeping in rural areas: profitability analysis and feasibility of pollination service. *Qual Success* 19: 72–79.
6. Batt PJ, Liu A (2012) Consumer behaviour towards honey products in Western Australia. *Br Food J* 114: 285–297.
7. Wu S, Fooks JR, Messer KD, et al. (2015) Consumer demand for local honey. *Appl Econ* 47: 4377–4394.
8. Pippinato L, Di Vita G, Brun F (2019) Trade and comparative advantage analysis of the EU honey sector with a focus on the Italian market. *Qual Success* 20: 485–492.
9. Blanc S, Brun F, Mosso A, et al. (2019) An overview of the international beekeeping sector (in Italian), In: University of Turin, *An overview of the structure, production and trade of honey (in Italian)*, Turin, 27–42.
10. Italian Law No 97 of 31 January 1994 “New provisions for mountain areas” (in Italian). Official gazette of the Italian Republic, general series n.32.
11. EU (2012) Regulation No 1151/2012 of the European Parliament and of the Council of 21 November 2012 on quality schemes for agricultural products and foodstuffs. Official Journal of the European Union, L 343/1.
12. EC (1999) Council Regulation No 1257/1999 of 17 May 1999 on support for rural development from the European Agricultural Guidance and Guarantee Fund (EAGGF) and amending and repealing certain Regulations. Official Journal of the European Communities, L 160/80.
13. EU (2014) Commission Delegated Regulation No 665/2014 of 11 March 2014 supplementing Regulation (EU) No 1151/2012 of the European Parliament and of the Council with regard to conditions of use of the optional quality term “mountain product”. Official Journal of the European Union, L 179/23.
14. Decree of 26 July 2017 National provisions for the implementation of Regulation (EU) No 1151/2012 and Delegated Regulation (EU) No 665/2014 on the conditions of use of the optional quality term “mountain product” (in Italian). Official Gazette of the Italian Republic, general series n.214.
15. Decree of 2 August 2018. Establishment of the identification logo for the optional quality indication ‘mountain product’ in implementation of Ministerial Decree No 57167 of 26 July 2017 (in Italian)., Official Gazette of the Italian Republic, general series n.227.
16. MIPAAF (2019) List of products with optional quality indication “mountain product” (in Italian). Available from: <https://www.politicheagricole.it/flex/cm/pages/ServeBLOB.php/L/IT/IDPagina/11687>.
17. Brodsahl DJ, Carpenter JM (2011) Shopping orientations of US males: A generational cohort comparison. *J Retail Consum* 18: 548–554.
18. Kowalczyk I, Jeżewska-Zychowicz M, Trafiałek J (2017) Conditions of honey consumption in selected regions of Poland. *Acta Sci Pol Technol Aliment* 16: 101–112.
19. Scarpa R, Del Giudice T (2004) Market segmentation via mixed logit: extra-virgin olive oil in urban Italy. *J Agric Food Ind Organ* 2: 141–160.
20. Verbeke W, Pieniak Z, Guerrero L, et al. (2012) Consumers’ awareness and attitudinal determinants of European Union quality label use on traditional foods. *Bio-based Appl Econ J* 1: 213–229.
21. Brščić K, Šugar T, Poljuha D (2017) An empirical examination of consumer preferences for honey in Croatia. *Appl Econ* 49: 5877–5889.
22. Capitello R, Agnoli L, Begalli D (2016) Drivers of high-involvement consumers’ intention to buy PDO wines: Valpolicella PDO case study. *J Sci Food Agric* 96: 3407–3417.

23. Ismaiel S, Kahtani S, Adgaba S, et al. (2014) Factors That Affect Consumption Patterns and Market Demands for Honey in the Kingdom of Saudi Arabia. *Food Nutr Sci* 5: 1725–1737.
24. Sanlier N, Sezgin A, Sahin G, et al. (2018) A study about the young consumers' consumption behaviors of street foods. *Cien Saude Colet* 23: 1647–1656.
25. Vu TMH, Tu VP, Duerrschmid K (2016) Design factors influence consumers' gazing behaviour and decision time in an eye-tracking test: A study on food images. *Food Qual Prefer* 47: 130–138.
26. Jin SV, Phua J (2016) Making reservations online: The impact of consumer-written and system-aggregated User-Generated Content (UGC) in travel booking websites on consumers' behavioral intentions. *J Travel Tour Mark* 33: 101–117.
27. Rouder JN, Engelhardt CR, McCabe S, et al. (2016) Model comparison in ANOVA. *Psychon Bull Rev* 23: 1779–1786.
28. Fox J, Bouchet-Valat M (2019) Rcmdr: R Commander. R package version 2.5-2.
29. Cosmina M, Gallenti G, Marangon F, et al. (2016) Reprint of “Attitudes towards honey among Italian consumers: A choice experiment approach”. *Appetite* 106: 110–116.
30. Di Vita G, Caracciolo F, Brun F, et al. (2019) Picking out a wine: Consumer motivation behind different quality wines choice. *Wine Econ Policy* 8: 16–27.
31. Feldmann C, Hamm U (2015) Consumers' perceptions and preferences for local food: A review. *Food Qual Prefer* 40: 152–164.
32. Schjøll A, Amilien V, Arne Tufte P, et al. (2010) Promotion of mountain food: An explorative a study about consumers' and retailers' perception in six European countries, *9th European IFSA Symposium*, 1558–1567.
33. Bryła P (2017) The perception of EU quality signs for origin and organic food products among Polish consumers. *Qual Assur Saf Crop Foods* 9: 345–355.
34. Menozzi D, Halawany-Darson R, Mora C, et al. (2015) Motives towards traceable food choice: A comparison between French and Italian consumers. *Food Control* 49: 40–48.
35. Annunziata A, Pomarici E, Vecchio R, et al. (2016) Do consumers want more nutritional and health information on wine labels? Insights from the EU and USA. *Nutrients* 8: 416.
36. Di Vita G, Pappalardo G, Chinnici G, et al. (2019) Not everything has been still explored: Further thoughts on additional price for the organic wine. *J Clean Prod* 231: 520–528.
37. Pelletier JE, Laska MN, Neumark-Sztainer D, et al. (2013) Positive attitudes toward organic, local, and sustainable foods are associated with higher dietary quality among young adults. *J Acad Nutr Diet* 113: 127–132.
38. Irianto H (2015) Consumers' attitude and intention towards organic food purchase: An extension of theory of planned behavior in gender perspective. *Int J Manag Econ Soc Sci* 4: 17–31.
39. Illichmann R, Abdulai A (2013) Analysis of consumer preferences and willingness-to-pay for organic food products in Germany, *Agricultural & Applied Economics Association's 2013 AAEA & CAES Joint Annual Meeting*, Washington, DC, 24.
40. Cholette S, Ungson GR, Özlük Ö, et al. (2013) Exploring purchasing preferences: Local and ecologically labelled foods. *J Consum Mark* 30: 563–572.
41. Hempel C, Hamm U (2016) How important is local food to organic-minded consumers? *Appetite* 96: 309–318.
42. Di Vita G, Blanc S, Brun F, et al. (2019) Quality attributes and harmful components of cured meats: Exploring the attitudes of Italian consumers towards healthier cooked ham. *Meat Sci* 155: 8–15.

43. Roy S, Guha A, Biswas A (2015) Celebrity endorsements and women consumers in India: how generation-cohort affiliation and celebrity-product congruency moderate the benefits of chronological age congruency. *Mark Lett* 26: 363–376.
44. Pappalardo G, Di Vita G, Zanchini R, et al. (2019) Do consumers care about antioxidants in wine? The role of naturally resveratrol-enhanced wines in potential health-conscious drinkers' preferences. *Br Food J: ahead-of-print*.
45. Bentivoglio D, Bucci G, Finco A (2019) Farmers' general image and attitudes to traditional mountain food labelled: a swot analysis. *Calitatea* 20: 48–55.
46. McMorran R, Santini F, Guri F, et al. (2015) A mountain food label for Europe?. The role of food labelling and certification in delivering sustainable development in European mountain regions. *J Alp Res Rev g éographie Alp* 103: 1–22.



AIMS Press

©2020 the Author(s), licensee AIMS Press. This is an open access article distributed under the terms of the Creative Commons Attribution License (<http://creativecommons.org/licenses/by/4.0>)