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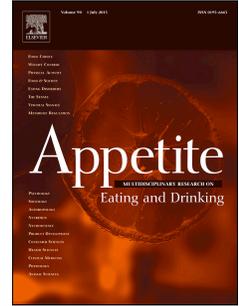
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Attitudes towards honey among Italian consumers: a choice experiment approach

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1 Attitudes towards honey among Italian consumers: a choice experiment
2 approach

3

4 Abstract

5 Honey is becoming increasingly popular with consumers for its nutritional benefits as well as

6 many other functions. The objective of this article is to determine which factors influence

7 consumers' purchase intentions and to assess the importance of certain honey characteristics to

8 enable identification of the constituents of an ideal honey profile. This information will lead to

9 satisfaction of consumers' preferences and formulation of marketing strategies that support

10 honey makers.

11 We applied a choice experiment to the Italian honey market to define the preferences and the

12 willingness to pay for key characteristics of the product. A face-to-face questionnaire survey

13 was conducted in 2014 (January–July) among Italian consumers; it was completed by 427

14 respondents. A latent class model was estimated and four classes were identified, with different

15 preferences, illustrating that respondents seem to be heterogeneous honey consumers Results

16 suggest the "organic" attribute was more important than others factors, such as the place where

17 the honey was produced (landscape), but less important than the country of origin; local Italian

18 honey was preferred to foreign honey. Respondents showed a higher willingness to pay (WTP)

19 for honey from their country of origin versus the production method used. Our results suggest

20 that while organic beekeeping might be an important strategy for diversification, if suitable

21 communication is not taken into consideration, the added value of the production method

22 might not be perceived by consumers.

23

24 *Keywords:* honey, consumer preferences, choice experiment, marketing.

25

26 Introduction

27   In 2013, global production of honey was about 1.66 million metric tons, and in

28 Europe, annual production reaches about 372 thousand tons (204 thousand tons in the

29 European Union) (FAOSTAT, 2015). The average production of honey in Italy ranges from 9

30 to 12 thousand tons (FAOSTAT, 2015), depending on meteorological conditions during the

31 year.

32   Honey is becoming increasingly popular with consumers for its nutritional benefits as

33   well as many other functions (Aparna & Rajalakshmi, 1999; Al-Qassemi & Robinson, 2003;

34   Bogdanov *et al.*, 2008; Ismaiel *et al.*, 2014; Joshi, 2008). Moreover, as health consciousness

35   has increased and concerns have focused on food processing technologies (Anton *et al.*,

36   2010), consumption of honey has increased because it is not subjected to any technological

37   processes (Ghorbani & Khajehroshanaee, 2009; Pocol & Teselios, 2012).

38   Despite this positive consumption situation, the beekeeping sector in Italy has not yet learned

39   to understand the consumers' needs in order to increase their product satisfaction and earnings

40   (Sillani & Grillenzoni, 2007).

41   According to the literature, there are various factors that influence consumers when

42   purchasing honey. However, the decision is often habitual and dictated by knowledge of the

43   honey's value. For example, Yeow *et al.* (2013) have determined several factors that

44   influence consumers' purchasing behaviours regarding honey-related products such as bee

45   pollen, royal jelly and honey drinks. In detail, they stated that medical conditions, quality of

46   the product, brand reputation and pricing have a positive and significant relationship with

47   Asian consumers' purchasing behaviour. Likewise, Ismaiel *et al.* (2014) and Zulail *et al.*

48   (2014) analysed the major factors influencing consumption, expenditure patterns and demand

49   for honey in Saudi Arabia, finding the major motivations for consuming honey are its

50   medicinal and nutritional values. While investigating consumer behaviour in Romania,

51   Arvanitoyannis and Krystallis (2006) identified four main dimensions in honey-purchasing

52   motivation: medical benefits of its consumption, dietary quality, the ethical character of honey

53   and suitability with food consumption lifestyle.

54   Unnevehr & Gouzou's (1998) analysis of the US retail honey market indicated that

55   consumers were willing to pay substantial premiums for honey based on form, container,

56   brand and, in particular, unique monofloral sources. Similarly, Swanson & Lewis (1991)

57   demonstrated that consumers were willing to pay for the unique characteristics of honey

58   associated with particular floral sources, while Gambaro *et al.* (2007) found that consumers

59   showed significantly different degrees of approval of the colour of the evaluated honeys.

60   Jensen & Mørkbak (2013) used principal components analysis and multinomial logit

61   analysis to explore the role of gastronomic, externality and feasibility dimensions in the

62   formation of consumers' values and product perceptions. They also used these methods to

63   determine the importance of the respective dimensions in consumers' choices of local and/or

64   organic varieties of honey and apples. They found that perceived gastronomic quality is the

65   most important determinant for food choice, but externality and feasibility aspects are also

2

66 important correlates. Ghorbani & Khajehroshanaee (2009) surveyed the consumer demand for

67 qualitative factors of honey using the hedonic pricing (HP) model and cross-sectional data

68 from a consumer sample. Their results showed that the type of honey, as well as its packing

69 conditions, colour, aroma and protraction, have positive effects on its price. Murphy *et al.*

70 (2000) used least squares regression to estimate part worths for the conjoint analysis and

71 found that price and texture were felt to be the most important product attributes, followed by

72 packaging, scale of production and, finally, the honey's colour. Mohamadi-Nejad (2013),

73 using the qualitative pricing model, studied the demand for honey in urban areas of the

74 Kermanshah province of Iran. This study showed that physical and chemical characteristics of

75 honey affect its market price. Characteristics such as scent, production location and high

76 traction significantly positively affect its price, while characteristics like proper packaging,

77 bright colours and types of honey (with wax) can have significant negative effects on its

78 market price. As one of the few studies to analyse willingness to pay (WTP) for honey, Wu *et*

79 *al.* (2014) used auction experiments. They elicited consumer WTP for honey to compare

80 auction and posted-price mechanisms and found that WTP estimates generated by an auction

81 were approximately 50% lower than those from a posted-price mechanism.

82 Many studies have also stated that a honey's origin is the most important factor

83 considered prior to purchase. Batt & Liu (2012) found that in purchasing honey from a retail

84 store (exploratory factor analysis revealed), there were three principal constructs most

85 influential in the purchase decision: brand reputation, origin and value for the money. A study

86 conducted by Roman *et al.* (2013) showed that most consumers said they only purchase honey

87 with domestic origin, although almost half of them said they had not checked the provenance

88 on the label. Likewise, Pocol & Bolboacă (2013) found that respondents preferred to buy

89 honey from a local Romanian producer and had more knowledge in domestic rather than

90 imported honey. Gyau *et al.* (2014) identified key consumer characteristics that influence

91 preferences of honey consumers in the Democratic Republic of Congo; they showed that

92 consumers who are married and have reached at least the level of secondary education have a

93 strong preference for local forest and savannah honey. Moreover, Wu *et al.* (2014) evaluated

94 consumer behaviour related to informational messages about honey that is produced locally,

95 domestically and internationally and demonstrated that consumers prefer locally produced

96 honey.

97 Nevertheless, sufficient clarification has not been established as to which is the best

98 strategy for differentiating honey productions that emphasise increasing producers' earnings.

99 A number of studies have investigated processing, storage and shelf life of organic honey.

100 Parvanov & Dinkov (2012) recommended more specific conditions for processing, storage

101 and production of honey to preserve its natural organoleptic, physical, chemical and

102 antibacterial features. According to Belay *et al*. (2015), many consumers still think that if

103 honey has crystallized it has gone bad or has been adulterated with sugar, but granulation is

104 one of the characteristics for honey. In fact, the ongoing process of crystallization applies to

105 all honeys (Roman *et al*., 2013).

106 Few studies have investigated consumer attitudes towards organic honey, yet this

107 could be an alternative strategy to verify whether organic production would be preferred to

108 other strategies such as geographic origin. For example, Ványi *et al.* (2011) suggested that (in

109 addition to price, food quality, healthy lifestyle and nutrition) food safety, organic options and

110 animal welfare awareness influenced consumer decision-making.

111 Perception of landscape feature of production is quite a complex phenomenon as it

112 involves a number of components of the human mind, and has an important emotional value

113 (Tempesta *et al*., 2010). While the international literature (Tempesta *et al*., 2010; Veale and

114 Quester, 2008) has demonstrated that associating wine to an image of greater visual impact

115 can positively affect the wine quality perception, the analysis of the premium price for

116 landscape features of beekeeping has not yet been investigated.

117 Moreover, to our knowledge, there are only a few studies regarding honey and choice

118 experiments (CE). CEs have been extensively used to understand the determinants of

119 consumers' choice of food products. So far, CE has not been used to investigate the factors

120 potentially shaping the choice of honey in Italy or other countries. The objective of this study

121 is to determine the factors that influence consumers' purchase intentions and to assess the

122 importance given by consumers regarding honey's five primary characteristics: country of

123 origin, landscape features of production, crystallisation, production method—organic or

124 conventional—and price. These are needed to identify an ideal honey profile to satisfy

125 consumers' preferences and formulate marketing strategies that support honey makers.

126 Specifically, we used a choice experiment approach to evaluate Italian consumers' WTP to

127 select honey attributes, incorporating consumer preference heterogeneity in a latent class

128 model (LC). In accordance with this objective, we carried out a survey in Friuli Venezia

129 Giulia, a North-Eastern region in Italy.

130 This study contributes to the literature not only by providing estimates on Italian

131 consumer WTP for premium honey, but also examines consumers' preferences towards local

132 honey compared to domestic and international alternatives. Additionally, it provides insights

133 on their specific perceptions about the organic and local origin of honey. To better assess

4

134 WTP for local origin, it was decided to conduct interviews in a single region. Understanding

135 these product-organic-origin interactions may illustrate the best marketing opportunities for

136 domestic growers, especially for small farms in particular, who would otherwise compete

137 with foreign producers on simple low-cost criteria. The paper is organized as follows: Section

138 2 provides a short overview of the theoretical background; section 3 describes the methods

139 and materials used; section 4 presents the results; and section 5 includes the discussion of

140 results and concluding remarks.

141

Material and methods

142

143 This study used, for exploratory purposes, the Multinomial Logit Model (MNL) and

144 examined a random effect specification by implementing an LC model. Unlike the traditional

145 MNL, where consumers are assumed to be homogeneous, here, heterogeneity in consumer

146 preferences for honey attributes was measured using the LC model. In spite of the traditional

147 logit, this model relaxed the limitations by offering particular flexibility to accommodate

148 respondents' differences in decision strategies and choice consistency, which would otherwise

149 lead to biased part worth utilities (Hensher, 2010; Hess *et al*., 2013; McFadden & Train,

150 2000). The increasing use of LC and random parameter logit (RPL) models for the analysis of

151 choice experiments in food contexts has been underpinned by a recognition of the

152 heterogeneity in consumers' preferences and the desire to make this heterogeneity relevant for

153 marketing segmentation purposes. In the context of segmented samples of respondents, LC

154 analysis proves to be particularly suited. It groups respondents by looking at common choice

155 patterns rather than clustering the sample on socio-economic characteristics.

156 By looking at the marginal rate of substitution between non-monetary and monetary

157 attributes included in the indirect utility function (IUF)it was possible to estimate the premium

158 price (or willingness to pay – WTP) for each attribute level by dividing β coefficients by

159 βprice:

160 WTP = - β/ βprice

161 As the utility function is assumed to be linear in cost, the marginal WTP for the

162 attribute is the ratio between the parameter of the attribute and the cost parameter in the utility

163 function.

164

165 *Experimental Design*

166   A face-to-face questionnaire survey, divided into three parts, was conducted in 2014
167 (January-July) among Italian consumers. Data were collected in shopping centers so that the
168 survey could at least partly mirror the point-of-sale context. People were addressed according
169 to a simple random rule. In accordance with the objectives of our study, the survey, including
170 the CE, was administered in Friuli Venezia Giulia. It was completed by 427 respondents.

171   The first part of questionnaire collected respondents' socio-economic information,
172 and they were also asked about their general opinions and experience regarding honey-related
173 consumption habits. It was decided to insert a number of questions about organic produced
174 food and -honey, asking the frequency and place for the purchase. These questions, along with
175 those on the consumption of honey, constitute our reference framework for the potential
176 consumer of organic honey in order to verify if organic beekeeping might be a strategy for
177 diversification. Next, the CE was introduced, and the attributes with corresponding levels
178 were repeated briefly before each respondent was faced with the choice sets.

179   A focus group was conducted in a single round with a number of consumers and
180 producers of honey in order to identify the attributes and discuss questions in the
181 questionnaire. Based on the focus group discussion, five attributes were identified (Table 1),
182 which were considered to be important for consumers, but which did not make them
183 differentiate between various types of honey.

184

185

Attribute	Levels
Geographic origin	Friuli Venezia Giulia Region; other Italian regions; other countries
Honey crystallisation	Liquid (runny) state; semi-solid state
Organic	Yes; no
Landscape	Evocative landscape; beehives near industrial buildings; skyscraper hives
Price (€/500 gr.)	3; 5; 9

186 *Table 1 – Attributes and their corresponding levels*

187

188   The first attribute we considered was the geographic origin of honey, which seemed to
189 be a preferred characteristic of consumers across all countries (Kehagia *et al*., 2007). The
190 country of origin attribute had three levels of study: Friuli Venezia Giulia Region, other
191 Italian regions, and other countries.

192   The second attribute offered respondents the opportunity to choose between liquid
193 (runny) state honey or semi-solid state honey. Honey is susceptible to crystallisation, which

6

194   occurs naturally. Crystallisation is affected by three major factors: floral origin of the nectar;

195   high contents of fructose (generally, honeys with very high contents of fructose remain liquid

196   for a longer time (Yao *et al*., 2003); and the organic honey production method.

197   An increasing interest and concern among consumers in the ways in which food is

198   produced has led to a need for differentiation in production methods. Consequently, we

199   considered two different levels for this attribute: organic or non-organic. Organic production

200   means the production process has followed the rules established by EU Regulations (CE) N.

201   834/2007 and 889/2008.

202   With regard to landscape features of beekeeping, the fourth attribute, we used three

203   levels: i) intensive beekeeping carried out with a large numbers of colonies concentrated in

204   small areas, which enables large yields but damages landscape beauties; ii) an industrial site

205   where an apiary is located; and iii) traditional bee hives in a beautiful mountain landscape.

206   The proposed landscapes were all created with Gymp software tools (http://www.gimp.org).

207   They were selected among a larger group of images, which were shown to focus group

208   participants according to the hypothesis that the landscape in which the honey is produced

209   could affect quality product perception (Kaplan, 1985). According to Daniel (2001), the

210   selected images were then shown to a sample of 50 citizens to obtain their appreciation. A 5

211   point Likert scale was used to score each image (ranging from 1, "not pleasant", to 5, "very

212   pleasant"). The mountain landscape reached the highest average score, while the environment

213   with intensive beekeeping obtained the lowest result. By using appropriate statistical tests the

214   global significance difference among the three levels of the landscape attribute was

215   confirmed. In addition the differences among the average scores were shown to be statistically

216   significant. Consequently we decided to use the selected images for the CE.

217   The price attribute had the levels € 3, € 5 and € 9. This corresponded to a 550 gr. glass

218   jar.

219   To elicit consumer preferences for the attributes efficiently, a fractional factorial

220   design was used to vary all attributes among the scenarios. A final set of 18 treatment

221   combinations has been derived. Respondents had to face 6 choice sets with 3 treatment

222   combinations each plus the opt-out alternative ("None of these"). The choice sets were shown

223   in colour pictures to the respondents. In detail, the respondents were asked to choose among

224   three jars of honey. An example of a choice set is illustrated in Figure 1.

225

Scenario 1	Option A	Option B	Option C	Option D
Price (€/500 g.)	**€ 3**	**€ 5**	**€ 9**	
Geographic **origin**	**Friuli Venezia Giulia Region**	**Other Italian regions**	**Other countries**	**None**
Honey crystallisation	**Semi-solid state**	**Semi-solid state**	**Liquid (runny) state**	**of these**
Organic		Organic		
Landscape				
I would choose: (Please mark only one box) ➔	☐	☐	☐	☐

Fig. 1 – Graphical example of a choice set

About 50 pre-tests of the questionnaire were made before it was administered to the final respondents. The pre-tests resulted in a number of minor changes in the formulation of questions.

Results

The majority of the respondents were female (55%). Most respondents (45%) were aged between 41–55 years. 51% of respondents lived in a household with three to four members. Respondents were mainly employed (68%). Table 2 presents the descriptive statistics used in the estimations.

		Sample		Friuli V.G. Region	Italy
		N°	%	%	%
Gender	Male	192	44.96	48.2	48.8
	Female	235	55.04	51.8	51.1
Age	Less than 25 years	40	9.37	20.9	24.0
	Between 25 and 40 years	136	31.85	20.0	21.2
	Between 41 and 55 years	192	44.96	23.2	22.8
	Between 56 and 70 years	52	12.18	19.3	17.5
	More than 70 years	7	1.64	16.5	14.5
Family members	1-2		40.52	65.1	51.9
	3-4		50.82	31.1	40.6
	5 and more		8.67	3.8	7.5

Educational level	Primary and lower secondary	50	11.71	49.4	55.0
	Secondary	188	44.03	37.9	33.9
	Graduate	164	38.41	12.7	11.1
	Other	25	5.85	/	/
Employment status	Employed	355	83.14	63.2	56.8
	Non-employed	72	16.86	36.8	43.2

240 *Table 2 – Interviewee and population characteristics*

241

242   More than 90% of the respondents stated that they consumed honey, however, the

243 majority (49.35%) consumed it only occasionally. Buying honey directly from the beekeeper

244 was widespread among respondents, but for 36.20%, the supermarket was the primary place

245 of purchase. Of the 65.71% who declared their preference for liquid (runny) honey, 72.95% of

246 them regularly or rarely bought organic honey.

247   By means of the program NLogit4®, MNL and LC models were estimated. Both

248 models shared the same following linear utility function.

249   In Table 5, the relative marginal utility of the attributes of the entire sample can be

250 analysed. The coefficients were all significant at a 90 or 95% confidence level (P value). The

251 marginal utility of local honey production was higher than that of organic production.

252 Estimates indicate that respondents are also concerned about landscape features of production

253 and liquid state of honey. The coefficient of the price attribute is negative as expected and

254 postulated by theory as consumer prefers the less expensive alternative *ceteris paribus*.

255   According to Lancsar et al. (2007) the relative impact of each honey attribute was

256 analysed using partial log-likelihood values (Table 3). The results indicate that the geographic

257 origin was ranked at the top, and accounted for 72.9% of the log-likelihood. This attribute was

258 followed by price, organic, landscape of production, and honey crystallization.

259

260

Honey attributes	Partial effect	Attribute importance (%)
Origin	-272.26	72.9
Price	-69.75	18.7
Organic	-27.00	7.2
Landscape	-2.88	0.8
Crystallization	-1.57	0.4

261 *Table 3 – Ranking of attribute importance*

262

263   A LC model was estimated on the respondents for testing for latent heterogeneity in

264 honey choices and preferences in order to consider the possibility of segmentation of

9

265 preferences into different consumer groups. In fact, LC model is quite informative and
266 interesting when studying preferences heterogeneity of respondents In detail, LC model
267 determines empirically the typologies of consumers/respondents according to their
268 homogeneity of preferences derived from the choices made, independently of their socio-
269 economic characteristics.

270   Results from the LC model are reported in Table 5. The number of segments was
271 defined exogenously. The class four model was then selected by comparing LL function, AIC
272 and BIC for different numbers of classes (Table 4).

273

274

	LCM-2	LCM-3	LCM-4	LCM-5
LL	-2780.398	-2665.518	-2576.875	-2562.647
AIC	2.184	2.103	2.041	2.038
BIC	2.223	2.167	2.128	2.148
HQIC	2.199	2.126	2.072	2.078
McFadden pseudo R^2	.217	.249	.274	.278

275 *Table 4 – Latent class model statistics*

276

277   While LC model results confirm the MNL results trend, they highlight a differentiated
278 set of preferences among respondents. The class four LCM model (LCM-4) showed that the
279 sample had heterogeneous preferences and respondents could be divided into four classes,
280 representing 19%, 35%, 20% and 26%, respectively. It is interesting to observe how the
281 coefficients for class one are not significant (p > 0.05) apart from the local origin. The
282 members of this class who chose the most preferred alternatives considered only the local
283 origin of honey and seemed indifferent to the other attributes considered in our experiment
284 ("localists").

285   Each of the other three classes were characterised by a different structure of
286 preferences: members of class two were more concerned about organic beekeeping and
287 negative landscape externalities of intensive production, while members of class three
288 preferred more liquid (runny) honey and intensive beekeeping. We will refer to members of
289 class two as ''environmentally friendly consumers'' and members of class three as "pro-
290 intensive production consumers", although they had a positive WTP for organic production.
291 Furthermore, members of class three had, on average, a higher WTP for all attributes except
292 local origin. Looking at class four, we noticed that people belonging to that class gave more
293 importance to the physical property of "liquid" honey and organic beekeeping. They could be

294 defined as "organic consumers". Regarding product origin, all the groups preferred honey
295 produced in Friuli Venezia Giulia. Considering the landscape externalities of production
296 attribute, classes three and four preferred intensive beekeeping (WTP € 7.02 and € 4.51,
297 respectively), while members of class two had a negative WTP. Consumers belonging to class
298 two preferred crystallised honey, while members of classes three and four showed a positive
299 WTP for a liquid consistency (WTP € 8.02 and € 6.20 respectively).

300 Although in a preliminary step we included socio-demographic and behavioural
301 variables in the LC model to better explain class probability, we found that they were not
302 generally significant in explaining the probability of class membership. We retained the most
303 significant socio-demographic variable, the 25-40 age group. This variable had a positive
304 coefficient relative to the first class.

305

306

Variable	MNL Coeff. (S.E.)	Latent Class Model Class 1 Coeff. (S.E.)	WTP (€/jar)	Class 2 Coeff. (S.E.)	WTP (€/jar)	Class 3 Coeff. (S.E.)	WTP (€/jar)	Class 4 Coeff. (S.E.)	WTP (€/jar)
ASC	-0.25 (0.12)***	0.46 (0.97)	/	-2. 86 (0.22)***	/	-0.56 (0.23)***	/	2.51 (0.24)***	/
Price	-0.15 (0.01)***	-0.08 (0.14)	/	-0.27 (0.02)***	/	-0.10 (0.02)***	/	-0.26 (0.03)***	/
FriuliV.G.	1.04 (0.07)***	5.73 (2.07)***	/	1.04 (0.11)***	3.91	0.51 (0.11)***	4.97	1.28 (0.15)***	4.86
Foreign	-0.58 (0.12)***	0.11 (1.46)	/	-1.69 (0.21)***	-6.31	0.25 (0.16)	/	-0.83 (0.27)***	-3.14
Liquid	0.16 (0.09)**	1.13 (0.99)	/	1.15 (0.21)***	4.29	0.68 (0.18)***	6.65	1.57 (0.23)***	5.95
Organic	0.81 (0.11)***	-2.42 (1.64)	/	-1.28 (0.19)***	-4.81	0.82 (0.13)***	8.02	1.64 (0.16)***	6.20
Evocative	0.14 (0.08)**	-0.32 (0.71)	/	0.23 (0.17)	/	0.34 (0.11)***	3.30	0.63 (0.16)***	2.40
Intensive	0.16 (0.10)**	-1.01 (1.77)	/	-0.40 (0.14)***	-1.51	0.72 (0.15)***	7.02	1.19 (0.19)***	4.51
Average probability		0.19		0.35		0.20		0.26	
Theta in class probability model: 25-40 age group		0.61 (0.33)**		-0.01 (0.30)		0.10 (0.36)		0.00 (fixed parameter)	

307 *** Significant at a 95% conf. level; ** Significant at a 90% conf. level.

308 *Table 5 – Base model and latent class model results*

309

310 The ASC was significant (P < 0.05) for classes two, three and four, but negative for
311 classes two and three, meaning there were preferences towards the 'none' option, which could
312 not be explained by the variables contained in the model. For class four, the ASC was
313 positive.

314

Discussion and Conclusions

316   The Italian beekeeping sector has not yet learned to understand the consumers' needs

317 in order to increase their product satisfaction and earnings. In this context, new strategies like

318 organic beekeeping could be an opportunity to diversify the product and acquire a margin to

319 improve earning capacity.

320   Our study provides initial empirical evidence for this opportunity.

321   Four classes were identified, with different preferences, illustrating that respondents

322 seem to be heterogeneous honey consumers.

323 The results revealed strong positive preferences for locally produced honey. In fact, the

324 country of origin had a substantial effect on the interviewees' utility along all classes. This

325 result also emerged in other research, where respondents tended to prefer products from their

326 home region (Al-Ghamdi, 2007; Troiano, *et al.*, 2014; Wu, *et al.*, 2014; Zulail *et al.*, 2014).

327 The WTP estimates for honey produced in Friuli Venezia Giulia were positive and quite

328 consistent in comparison to production abroad. The propensity to purchase food of local

329 origin may have a plurality of explanations (Troiano *et al.*, 2014). It could be assumed that

330 local food products are preferred especially by environmentally-conscious consumers because

331 they are more environmentally benign. In addition, they are generally produced by local

332 producers respecting local traditions. Moreover, it could be also assumed the presence of an

333 altruistic component regarding the opportunity to empower local socio-economic system

334 through the purchase of local products.

335   Nevertheless, the results show that WTP for organic honey was higher, except in class

336 one, meaning that only a small fraction of the interviewees was not willing to pay a premium

337 price for organic production. These results are in line with Kehagia *et al*. (2007), who stated

338 that Italian respondents insisted on organic honey and considered the origin of honey to be

339 important as well. If organic honey buyers are considered more responsible for their own

340 health and more likely to undertake preventive health action than the general population

341 (Makatouni, 2002), our results identify organic production of honey as a driving opportunity

342 for beekeeping. In fact, Ismaiel *et al*. (2013) evidenced that the trend of consuming honey as a

343 health food has been steadily increasing. This could be a key factor of the expected growth in

344 the Italian demand for honey.

345   The implications of this findings for marketing are clear. The emphasis on local origin

346 of honey besides organic production logo may result in increasing demand

347   Moreover, our results suggest the "organic" attribute was more important than the

348   landscape features where production takes place. Although we used a well-known Dolomitian

349   landscape taken from the North-Eastern region in Italy to create one of the proposed

350   (photomontaged) images, we notice it has not developed a particular emotional tie. While

351   Tempesta et al. (2010) stated that associated wine to an evocative landscape induces a

352   significantly higher preference for the tested wine, our findings reveal that a consistent group

353   of respondents (class 3 and 4 - 45%) are more WTP for a landscape characterized by intensive

354   honey production. This may be due to the fact the landscape produced by intensive wine

355   production compared to the one obtained by intensive producing honey are really very

356   different. In detail, the landscape impacts of the intensive production of honey are not

357   permanent. Moreover Italian consumers pay attention on and appreciate winescape resulting

358   from sustainable (not intensive) production methods because of its positive impacts on

359   aesthetic and recreational values. In addition, wine production culture in Italy has a long-

360   standing tradition. However, a considerable group of respondents (class 2 – 35%) had a

361   negative WTP for degraded landscape, in which environmental resources had been obscured

362   by intensive beekeeping.

363   While Murphy et al. (2000) stated the ideal honey profile for Irish consumers of honey

364   was one with a thick texture, in our study findings reveal the presence of significant market

365   segments interested in the liquid consistency of honey, not taking into consideration that

366   crystallisation or granulation are natural phenomena. In fact, most pure raw or unheated honey

367   has a natural tendency to crystallise over time. There is no difference in taste or nutritional

368   value of these two states. Crystallised honey is not spoiled and preserves the characteristics of

369   liquid honey. It can also be restored to a liquid state. Nevertheless a consistent group of

370   respondents (class 3 and 4 – 45%) has a positive WTP for liquid honey. Our results are in

371   line with the study of Kabani *et al*. (2011), who stated that crystallization of honey makes it

372   less appealing to the consumer, who prefers it liquid and/or transparent. Maybe this is due to

373   aa lack of sufficient information regarding the quality properties and physical aspects of

374   honey in general.

375   Some limitations of our research merit emphasis. It is important to extend the research

376   to real consumer behaviour to better understand their preferences. Moreover, it may be useful

377   to extend this research to other states or regions. Despite the limitations of our study, we

378   believe our results add useful data to currently available literature on consumers' preferences

379   towards honey. In fact, as many of the characteristics of the examined study region may be

380   similar to the characteristics of other Italian and European Regions, the issues of this study

381 may be of interest to researchers and policy makers in such regions. In addition, our findings

382 should be useful for producers in areas where the development of organic honey as niche

383 market product can be an important element for the improvement of the competitiveness of

384 the beekeeping sector and therefore for the increase of its revenues.

385 In conclusion, our results suggest that organic beekeeping might be an important

386 strategy for diversification. Moreover, the findings help producers to understand the

387 opportunity posed by the local marketing trend to organic honey producers and sellers by

388 integrating local resources into their brand value.

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Highlights

We analyse the preferences of 427 consumers toward organic honey. ► Added value of the organic honey not perceived by consumers without information. ► Consumers show a higher WTP for the country of origin than for the production method. ► Emphasis on local origin besides organic production logo may result in increasing demand.