

# Analysis of Italian consumer preferences for beef

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Jel Classification: D12, Q11

## 1. Introduction

Producers, traders and policy makers are increasingly more interested in knowing the importance and the value consumers attribute to particular products and information on food quality and safety associated with them. The need for producers and traders to survive on the market, establishing and incrementing their competitiveness, and for the public decision makers to orientate agricultural, territorial and food policies are some of the main reasons why knowing the consumers' needs and their perceptions about food products is becoming increasingly more important and strategic (Grunert *et al.*, 2004). A more in-depth understanding of the aspects tied to consumers' choices can in fact influence important decisions on the level of policies aimed, for example, at promoting particular typical territories. It can also orientate production systems (choice of particular breeds, choice of production techniques, etc.), and even encourage industries to invest in research and development in view of obtaining particular physical and organoleptic characteristics in the products they place on the market.

In this context, it becomes fundamental for the aforementioned subjects to create an efficient communication system concerning the elements of food quality and safety that the consumer seems to be most sensitive to (Golan *et al.*, 2000; Tonsor, 2011),

## Abstract

*The evolution of food demand is strictly linked to the change in consumer preferences. In the beef sector people's attention is growing for specific aspects related to food quality, safety, environmental issues and animal welfare. In this framework, it is more and more important to understand the consumer's choice dynamics in order to develop differentiated marketing, commercial and communication strategies. The purpose of this paper is to analyse and to point out the Italian consumer preferences for beef. This research uses the choice model approach to assess consumer behaviour. In November 2011, a visual discrete choice experiment was administered online by a specific provider to a sample of 1500 consumers, representative of the Italian population for sex, age and residence. The results highlight the crucial importance of beef cut in the final choice, and reaffirm the central role played by the country of origin labelling (COOL). On the contrary, breed information and price marginally affect the final purchasing decision. These insights provide strategic information for public and private agents involved in the beef sector.*

**Keywords:** beef, consumer preferences, choice model, Italy.

## Résumé

L'évolution de la demande alimentaire est étroitement liée à l'évolution des préférences des consommateurs. Dans le secteur de la viande bovine l'attention des consommateurs est de plus en plus tournée vers des aspects spécifiques comme la qualité, sa sécurité, les questions environnementales et le bien-être animal. Dans ce contexte, il est plus important de comprendre quelles sont les dynamiques de choix des consommateurs afin de développer différentes stratégies de marketing, de commercialisation et de communication. L'objectif de ce travail est d'analyser et de définir les préférences des consommateurs italiens de viande bovine. La recherche est basée sur l'approche des modèles de choix pour prédire le comportement du consommateur: nous avons développé un «visual discrete choice experiment», qui a été soumis par un provider à un échantillon de 1500 consommateurs de viande de bœuf, représentatif de la population italienne par sexe, âge et lieu de résidence. Les résultats mettent en évidence l'importance de la coupe primaire de la viande par rapport au choix final; ils confirment le rôle central de l'information sur l'origine du produit. En revanche, les informations sur la race et le prix n'influencent que marginalement sur la décision d'achat finale. Cette analyse nous a permis d'identifier et de fournir des informations stratégiques pour les entités publiques et privées impliquées dans le secteur de la viande bovine.

**Mots-clés:** viande bovine, préférence des consommateurs, modèle de choix, Italie.

in view of proposing a product as close as possible to the demands of the final user. Consequently, it becomes increasingly important to know the tastes and preferences of consumers.

These demands are even more evident with complex products with a greater environmental impact, such as those of animal origin, which still represent one of the principal foods of our diet (Grunert, 2006). It is precisely with fresh products (Cicia *et al.*, 2012) and meat in particular that we witness the consumer's growing interest in origin, certifications and environmentally sustainable productions obtained in respect of animal well-being (Viegas *et al.*, 2011; Tonsor and Olynk, 2011; Lusk, 2004). Acebron and Dopico (2000) have shown how meat quality is a construct perceived on the basis of the available intrinsic and extrinsic elements, such as price, visible fat, freshness, colour, etc.

The intrinsic characteristics, including taste, tenderness, presence of fat, freshness and succulence, prove to be the most appreciated (Banović *et al.*, 2010; Brunsø *et al.* 2005; Krystallis *et al.* 2007; Verbeke and Viaene, 1999a, 1999b), though the consumer can hardly recognise them at the moment of purchase. This fact increases the importance of the extrinsic characteristics in the final choice on one side and, on the other, suggests that the analysis conducted with visual presentation could provide results that interpret consumers' behaviour in a better way (Umberger and Mueller, 2010).

Numerous studies on meat, and on beef in particular, have as-

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sessed consumer preferences with respect to the certification of origin, the production process, animal feed and breed (Alfnes, 2004; Oliver *et al.*, 2006; Verbeke and Ward, 2006). In particular, Schnettler *et al.* (2004, 2008) have pointed out how the origin of beef is at times more important than price, packaging or quantity of fat. Grunert (2005b), however, notes that the information about origin has no effect on product quality evaluations when consumers do not have sufficient information about the region of origin or when they make trial purchases.

Tonsor *et al.* (2005) anyhow note that consumers' preferences change also in relation to their citizenship and it seems very important to point out which are the main differences between them. Alfnes (2003) conducted surveys and auction experiments on Scandinavian consumers in view of analysing their preferences regarding beef origin and whether the animals were raised with or without hormones. The results showed that while the Swedes seem to prefer meat from other countries, the Norwegians prefer domestic beef, and the typologies of animal farming employing hormones drew a negative reaction from all consumers.

Van Wezemael *et al.* (2010) employed an online questionnaire to analyse the effect of the increase of food safety levels on French, German, British, Polish and Spanish consumers in three phases of the beef supply chain: production, butchery and processing. The results show a greater trust in the food safety of beef among Spanish and British consumers who are also the ones most interested in further actions to improve the level of food safety. German and Polish consumers, on the other hand, seem to be less interested in actions aimed at incrementing the food safety of beef. According to Lusk *et al.* (2003), who were among the first to utilise discrete choice experiments (DCEs) to assess consumers' WTP for particular beef attributes, French and German consumers are particularly mindful of indication of origin, which they consider the most important attribute of all, including brand, prices or visible fat. For British consumers, though, the most important attributes are price, colour and fat content. As for marbling, their study concludes that the French and Germans prefer higher levels compared to the British and Americans.

By means of direct surveys, Verbeke and Ward (2003) pointed out that Belgian consumers consider meat traceability secondary compared to other more specific characteristics directly connected with the concept of quality which do not only concern obligatory information such as expiration date or breed name. Through focus groups, Verbeke *et al.* (2010) conducted a quality study on consumers of beef in France, Spain, the United Kingdom and Germany in order to assess their opinions on different beef muscle profiles, and their interest in a beef eating-quality guarantee system. This case points out how the concept of eating-quality guarantee is more appreciated by French and Spanish consumers compared to British and German consumers.

Gao *et al.* (2010) show that American consumers' willingness

to pay is heavily influenced by the presence or absence of the indication of origin on the label, and it grows if this information is present and Umberger *et al.* (2003) evaluated an increase of the consumers' willingness to pay of 11% and 24% for steak and hamburger, respectively, with a certified national origin. On the other hand, the study Steiner *et al.* (2010) conducted on beef and buffalo steaks by means of a choice experiment on a sample of Canadian consumers, reveals that traceability only has a significant and positive effect on consumers' choice probability in the case of families with one or more children. At the same time, the wording GMO-free has a positive effect for both beef and buffalo meat, while consumers who regularly purchase organic products are less likely to purchase meat in general.

As for studies in the Italian ambit, Banterle and Stranieri (2008) conducted an explorative analysis on the meat supply chain and consumers' preferences expressed via a telephone survey. It emerged that on the side of supply, a greater traceability resulted in a better distribution of responsibility among the agents of the meat supply chain and a strengthening of vertical agreements. On the side of demand, the results showed the consumer's marked interest in information on the label, such as meat origin, information concerning the breeding system, the animal's diet and date of slaughter. However, our literature search did not produce any other relevant results regarding specific studies on the preferences of Italian beef consumers.

Most of the studies in the sector, even those using different methodological approaches, usually consider only generic beef without specifying a specific cut (Sans *et al.*, 2008; Aizaki *et al.*, 2012; Chung, 2009), or they usually consider a single cut of meat (Greibitus *et al.*, 2009; Aaslyng *et al.*, 2010; Reicks *et al.*, 2011). This does not allow to assess the effect that relevant cues could have with respect to the different beef cut.

In light of this, the primary aim of this study is to analyse Italian beef consumer preferences in order to provide strategic information for the development of marketing and commercial strategies. In this study we consider different beef cuts as we want to analyse if willingness to pay varies also in respect to the cut. Our investigation was based on a visual choice experiment approach conducted by means of an on-line questionnaire-based survey with a sample of 1500 Italian beef consumers. In the experiment, respondents were asked to choose their favourite packaging of beef among five alternatives<sup>1</sup>, plus the no-choice option, as recommended by Adamowicz *et al.* (1998), inasmuch as this represents a normal element in the consumer's behaviour. The stated choices were analysed using a multinomial conditional logit model to derive estimates of preferences for beef.

Results describe Italian beef consumer as an "ethnocentric" subject who strictly prefers beef with a local certification of origin while dislikes foreign origin, as well as he does not appreciate foreign breeds. Furthermore, beef cut plays a very important role in the final choice, price seems not to interfere so much.

## 2. The survey

A sample of 1500 completed and valid questionnaires was recruited in November 2011 by a web market research company, in order to outline Italian consumer preferences for beef. Partic-

<sup>1</sup> The five alternatives are images of beef packages with different combination of information on the label.

Table 1 - Knowledge about the main brands and certifications used in the Italian beef sector.

	NO	YES
PGI	46%	54%
ORGANIC	55%	45%
No GMO	60%	40%
5R* Brand	90%	10%
COALVI* Brand	72%	28%
Mugello CAF* Brand	74%	26%

\* Italian local brand for beef.

Participants were randomly chosen with the aim of obtaining a representative sample of Italian population for age, sex and residence.

The questionnaire was structured in several sections, the first of which consisted of filter questions to select the subjects to exclude such as, for example, people who do not eat and do not buy beef. The second section consisted of questions concerning the modalities of purchase, preparation and level of beef consumption, while the third section concerned the familiarity with the protected quality certifications principle in the animal farming sector.

According to the survey, Italian consumers can be generally defined as frequent consumers of beef, approximately 55% of the sampled individuals consumes beef more than four times a week. The most frequently consumed beef cuts are cutlets, minced meat, hamburgers and steak, while those that are less cooked are marrowbone, stew and boiling meat. Pre-cooked beef, although its use is growing in recent years due to the ease of preparation and rapidity of use, results to be used more than once per week only by 21% of the sample.

With regard to the knowledge of the main brands and certifications normally used on beef packaging labels in Italy, consumers have shown deep deficiencies. Table 1 shows the results about knowledge of the main brands.

The fourth part of the questionnaire was devoted to the visual discrete choice experiment.

The hypothetical scenario for the choice experiment was presented as follows:

<sup>2</sup> Our aim is to test the effect on consumers choices of a very well-known Region for beef production. As a matter of fact, Tuscany is considered a leader in this field: it is the area of Chianina breed and the most famous Tuscan dish (known also at international level) is the "Florentine Steak".

<sup>3</sup> ° = In the choice experiment a visual logo was associated to this level.

<sup>4</sup> The level "Conventional" was repeated three times to build up a design more consistent with the situation of a real beef market in which the frequency of products bred through conventional methods exceeds the other techniques.

<sup>5</sup> The average market price of each cut was considered by sampling beef prices in major retail channels and butchers shop in the period September-October 2011 in Florence.

Imagine you are in a shop where you normally purchase beef: the following 500 gr packages are available. Would you buy any of them? If yes, which one in particular?

Respondents had to choose between five packages of beef (plus the no-choice option) representing every time five cuts (Cutlet, Minced meat, Minced meat with fat, Steak, Marbled Steak) with different levels of the following attributes: Certification of Origin, Production Technique, Price and Breed, according to the structure of the orthogonal design. Important insights emerging from the literature review and focus group were instrumental for designing the experiment and identifying attribute levels:

- **Certification of Origin:** Italy, Tuscany<sup>2</sup>, European Union, Italy PGI<sup>3</sup>, Mugello CAF.
- **Production technique:** Organic, GMO Free, Conventional, Conventional, Conventional<sup>4</sup>.
- **Price:** -20%, -10%, Average Price of each cut<sup>5</sup>, +10%, +20%.
- **Breed:** Limousine, Chianina, Romagnola, Charolaise, No breed information.

The DCE utilises an orthogonal main effect plan design (OMEPE) consisting of 125 choice sets formed by five alternatives (plus the no-choice) with a statistical efficiency of 99% (Street and Burgess, 2007).

The experimental design is structured so that the price is considered as specific for each alternative (for each cut), and was built by inserting all of the possible price level combinations for each cut of meat. This procedure produced an elevated number of choice sets, which made the division into blocks (Hess and Rose, 2009) necessary. As a matter of fact, if an orthogonal design has been found, it may still be too large to give all choice situations to a single respondent. An often used procedure called blocking can split the orthogonal design into smaller

designs. Each block is not orthogonal by itself, only the combination of all blocks is orthogonal.

Blocking mainly ensures that attribute level balance is satisfied within each block, such that respondents do not just face only low or high attribute levels for a certain attribute. Blocks are typically determined by using an extra uncorrelated column with a number of levels equal to the number of blocks (Rose and Bleimer, 2008).

In our case, nine blocks were randomly obtained, eight of which were composed of fourteen choice sets, and one of thirteen. Each block was randomly assigned to an interviewee, so as to guarantee, in any event, an equal numerosness of replies per block.

The last section of the questionnaire was dedicated to collecting socio-demographic information on the interviewees.

### 3. Methodology

Discrete choice experiments represent a valid approach for the analysis of consumers preferences as these models offer the opportunity to investigate many aspects that influence consumer behaviour, especially if applied in the field of food demand research (Louviere *et al.*, 2000; Adamowicz and Swait, 2011). D-

CEs make it possible to overcome many limitations of contingent valuation and enable to derive willingness to pay highlighting the trade-off that each individual makes between attributes. If one of the attributes is the money that a person would have to pay to secure the change, it is possible to generate estimates of the marginal value of changes in each attribute. Moreover a single DCE application can be used to generate estimates of compensating surpluses for an array of specific environmental qualitative or quantitative changes relative to the “business-as-usual” situation (Hanley *et al.*, 2001). DCEs are consistent with random utility model (RUM) (Thurstone, 1927; McFadden, 1973).

The theoretical model of reference implies that for each individual  $i$ , a given level of utility is associated to each alternative  $j$ . The alternative  $j$  will be chosen if and only if the relative utility, in the group of choices, is higher. This utility can depend on the characteristics (attributes) of the product and on the socio-economic characteristics of the individuals. Hanemann was the first to point out that the structure of the function of utility is made up of an observable deterministic element and a stochastic element representing the unobservable component of the individual choice. The random nature of the error can be explained, for example, by unobserved attributes, tastes and unobserved preferences, errors in measurement, and the use of instrumental variables (Ben-Akiva and Lerman, 1985).

Formula (1) represents the utility of the  $i$ -nth individual associated with the choice of the  $j$ -th alternative:

$$U_{i,j} = \hat{U}_{i,j} + \varepsilon_{i,j} \quad (1)$$

where  $\hat{U}_{i,j}$  is the deterministic portion of the utility modelled by the researcher, while  $\varepsilon_{i,j}$  represents the random error component that makes the true utility  $U_{i,j}$  unobservable.

The most diffused functional form of the utility’s deterministic part  $\hat{U}_{i,j}$  is the linear functional form in parameters (2).

$$\hat{U}_{i,j} = X_{i,j} \beta \quad (2)$$

where  $X_{i,j}$  is the vector of the values of the variables that represent the characteristics of the alternative  $j$ -th and of the socio-demographic characteristics of the  $i$ -th individual, while  $\beta$  is the vector of the coefficients that weighs the effect of the exogenous variables on the utility.

Maximising the consumer’s utility consists in his choosing the alternative that the highest utility is associated with. If the consumer  $i$ -th selects the alternative  $j$ -th, this means that  $U_{i,j}$  is the highest utility obtainable among the possible chosen  $J$ s. Therefore, the probability ( $P_{i,j}$ ) that the alternative  $j$  will be chosen by the individual  $i$  is given by (3):

$$P_{i,j} = \text{Prob}(U_{i,j} > U_{i,a}; a = 1, 2, \dots, J; a \neq j) \\ P_{i,j}(\varepsilon_{i,j} - \varepsilon_{i,a} > \hat{U}_{i,j} - \hat{U}_{i,a}; a = 1, 2, \dots, J; a \neq j), \quad (3)$$

The choice model that can be utilised depends on the assumptions adopted about the distribution of the stochastic part of the utility function. If we assume (Maddala, 1997) that each  $\varepsilon_{i,j}$  is independent and identically distributed (IID) according to an extreme value distribution represented by (4),

$$F(\varepsilon_{i,j}) = \exp(-e^{-\varepsilon_{i,j}}), \quad (4)$$

then it ensues that the differences of the errors reported in (3) are characterised by a logistic distribution. Consequently, a multinomial conditional logit model is capable of representing the probability (5) that the  $i$ -th consumer will choose the  $j$ -th alternative (pack of beef).

$$P(y_i = j) = \frac{e^{x_i \beta}}{\sum_{j=1}^J e^{x_i \beta}} \quad (5)$$

The log likelihood of the multinomial conditional logit model is given by (6):

$$L = \prod_{i=1}^n \prod_{j=1}^J \text{Prob}(y_i = j)^{y_{i,j}}, \quad (6)$$

where  $y_{i,j} = 1$  if the  $j$ -th alternative is chosen, and  $y_{i,j} = 0$  if it is not.

## 4. Results

The results of the multinomial conditional logit model (MNL) allow to assess the preferences of the Italian beef consumers. According to Table 2, the preferred cut is *Cutlet*, followed by *Minced meat* and *Marbled steak*. *Minced meat with fat* is the least appreciated cut and it produces a negative impact on the utility function of the consumer. As regards the certification of origin, *PGI Italy* is perceived as the best level while the European origin of beef is associated to a negative cue, as well as a generic Italian origin if it has not any brand. Consumers seem strongly encouraged to purchase as the no choice option is evaluated very negatively. Italian breeds have always a positive impact on consumers utility function whereas foreign breeds produce the opposite effect. As regards the production technique information, consumers show a predilection for *Organic* and *GMO free* beef.

The elaborations were conducted with *Latent Gold Choice®* (LGC) software. All variables were considered nominal and were effect-coded. This phase is automatic in LGC. While this procedure is mandatory for the categorical variables such as Cut, Certification of Origin, Breed and Production Technique, as regards Prices we chose to consider them as nominal because the overall model was more efficient. As a matter of fact, the model run with Prices as numeric variables had a lower value in the variance fit. Probably, the reason is that beef consumers do not show a linear behaviour with the increasing of prices (this is highlighted also by the not significance of the estimations of many Price level beta) (Casini *et al.*, 2013). Thus, assuming that prices are continuous variables decreases the ability of the model of explaining consumers choices.

From the estimation of the coefficient derives the assessment of the importance of the attributes (see Graph 1), which highlights the role played by each of them in affecting Italian consumers choices for beef.

The method implemented to estimate importance was that of the relative effect with respect to the Log-likelihood value of the model assessed without the attribute whose importance is subject to measurement (Louviere and Islam, 2008). All in all, the importance estimated in this manner is related to the marginal effect of an attribute in improving the estimate of the model as a whole.

Table 2 - Multinomial conditional logit model estimate.

	Class1	z-value	Wald	p-value
<b>CUT</b>			2474	1,8e-533
Minced meat	0,27	18,33		
Minced meat with fat	-0,30	-16,31		
Steak	0,04	2,57		
Marbled steak	0,26	16,96		
Cutlet	0,49	35,13		
No choice	-0,76	-34,58		
<b>CERTIFICATION OF ORIGIN</b>			1869	8,5e-404
Mugello CAF	0,37	24,65		
Tuscany	-0,03	-1,94		
PGI Italy	0,44	29,30		
Italy	-0,20	-11,30		
European Union	-0,59	-29,57		
<b>BREED</b>			153	0,00
Charolaise	-0,09	-5,18		
Limousine	-0,09	-5,58		
Chianina	0,16	9,74		
Romagnola	0,08	5,01		
No breed	-0,06	-3,34		
<b>PRODUCTION TECHNIQUE</b>			889	0,00
Organic	0,18	13,42		
Conventional	-0,33	-29,80		
GMO Free	0,16	11,75		
<b>MINCED MEAT PRICE</b>			15	0,00
4	0,11	3,30		
4,5	0,04	1,16*		
5	-0,03	-0,85*		
5,5	-0,05	-1,34*		
6	-0,08	-2,11		
<b>MINCED MEAT WITH FAT PRICE</b>			20	0,00
4	0,12	2,76		
4,5	0,11	2,52		
5	-0,04	-0,91*		
5,5	-0,05	-1,04*		
6	-0,14	-3,09		
<b>STEAK</b>			28	0,00
6,8	0,15	4,10		
7,65	0,04	0,99*		
8,5	0,03	0,79*		
9,35	-0,06	-1,66*		
10,2	-0,15	-3,88		
<b>MARBLED STEAK PRICE</b>			20	0,00
6,8	0,08	2,31		
7,65	0,09	2,68		
8,5	0,00	-0,11*		
9,35	-0,12	-3,42		
10,2	-0,05	-1,29*		
<b>CUTLET PRICE</b>			26	0,00
5,6	0,14	4,42		
6,3	0,04	1,17*		
7	-0,03	-0,90*		
7,7	-0,04	-1,34*		
8,4	-0,11	-3,15		

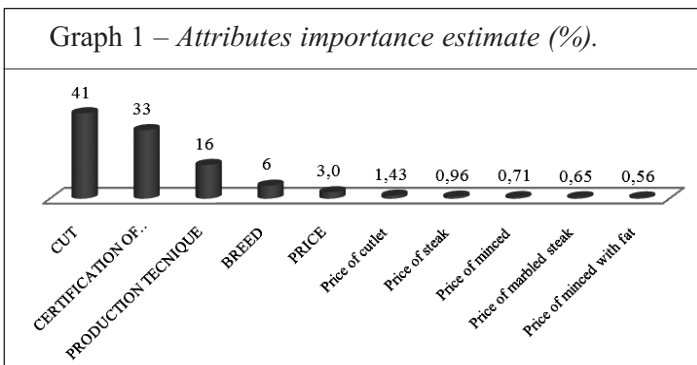
\* = not significant

LL	BIC(LL)	AIC(LL)	AIC3(LL)	CAIC(LL)	Npar	L <sup>2</sup>	BIC(L <sup>2</sup> )	AIC(L <sup>2</sup> )	AIC3(L <sup>2</sup> )	CAIC(L <sup>2</sup> )	df	p-value
-34509	69275	69089	69124	69310	35	69019	58305	66089	64624	56840	1465	7,9e-13448

The Italian beef consumer is focused on the type of cut he is willing to buy, but he considers the certification of origin very important for the final decision. He also accounts the production technique as a secondary criterion through which he decides the beef package to buy. Information about breed plays a marginal role in the final decision as well as the price.

Table 3 shows the willingness to pay (WTP) of the Italian beef consumers. The computation of the WTP was developed by applying the following formula:

$$WTP_a = - \frac{\beta_i}{\beta_p^c} \quad (7)$$



Where  $\beta_i$  is the estimated coefficient of the level  $i$ -th of the attribute  $a$ -th and  $\beta_p$  is the coefficient associated to the vector of prices for each cut. In the specific,  $\beta_p^c$  is calculated (Mueller *et al.*,2013) estimating the following function:

$$\beta_{ip}^c = \gamma + \beta_p^c Price_i + \epsilon \quad (8)$$

where  $\beta_{ip}^c$  is the estimated coefficient of  $i$ -th level of  $c$ -th beef cut price,  $\gamma$  is the intercept and  $Price$  is the price level of the  $c$ -th beef cut,  $\epsilon$  is the error term of the regression estimation.

In our study, as the variable Price is specific for each cut, we estimated five different  $\beta_p$ .

In this specific case, the differential values are put in perspective with respect to the “Italy” level in the case of certification of origin, “No Breed” as far as the attribute of Breed is concerned, and “Conventional” in the case of the Production Technique. The highest increment in average WTP occurs following the introduction of the “Italy PGI” level (average WTP 5,2 euro), while the minimum WTP concerns the “European Union” level (average WTP -3,5 euro). The willingness to pay deeply varies with respect to the beef cut and it is always higher for the marbled steak. Ground beef with fat, on the contrary, always shows the minimum

increase of willingness to pay, regardless of each attribute level.

It is interesting to note how the incremental effects of WTP of the various levels are always greater on steak with marbling than on steak without marbling, while the contrary occurs for ground beef: the WTP for each level is greater for ground beef without fat. As a matter of fact, the presence of fat has a different effect on quality with respect to the cut: marbling is a witness of high quality for the steak, while a high level of fat in minced meat has a negative impact on the perception of quality and on the relative WTP.

Table 3 - Relative willingness to pay for beef consumers.

	Minced meat	Minced meat with fat	Steak	Marbled Steak	Cutlets	Average WTP
<b>Indication of Origin</b>						
Italy	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0
PGI Italy	€ 5,0	€ 3,5	€ 4,7	€ 7,5	€ 5,2	€ 5,2
Mugello CAF	€ 4,6	€ 3,2	€ 4,3	€ 6,8	€ 4,7	€ 4,7
Tuscany	€ 1,0	€ 0,7	€ 0,9	€ 1,5	€ 1,0	€ 1,0
European Union	-€ 3,4	-€ 2,4	-€ 3,2	-€ 5,1	-€ 3,5	-€ 3,5
<b>Breed</b>						
No breed	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0
Charolaise	-€ 0,2	-€ 0,2	-€ 0,2	-€ 0,4	-€ 0,3	-€ 0,3
Chianina	€ 1,8	€ 1,3	€ 1,7	€ 2,7	€ 1,9	€ 1,9
Limousine	-€ 0,2	-€ 0,1	-€ 0,2	-€ 0,3	-€ 0,2	-€ 0,2
Romagnola	€ 1,4	€ 0,9	€ 1,3	€ 2,0	€ 1,4	€ 1,4
<b>Production System</b>						
Conventional	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0	€ 0,0
GMO Free	€ 3,9	€ 2,7	€ 3,7	€ 5,9	€ 4,1	€ 4,1
Organic	€ 4,1	€ 2,8	€ 3,8	€ 6,1	€ 4,2	€ 4,2

## 5. Conclusions

The research allows to define the preferences of Italian beef consumers and to highlight the importance of understanding how consumers process information when making food choices.

Only very few studies have explored the relative importance of such a wide variety of both intrinsic and extrinsic attributes both jointly and visually. We address two important issues that have potentially strong implications for the validity of estimated attribute values: intrinsic attributes are likely to be underestimated in their importance if not presented visually; DCEs that exclude important attributes (such as intrinsic characteristics) are likely to overestimate the value of product characteristics. This kind of approaches provides a very useful basis on which marketing and commercial strategies develop. What comes out from our study is a consumer primarily focused on the meat-cut he is willing to buy. This important aspect has never been analysed as normally similar studies are focused on the interpretation of consumer preferences of a specific cut, with the result of overestimating the importance of other attributes such as the Country of Origin Labelling (COOL), even if this attribute still plays a very important role also for Italians. In this framework it is interesting to note that the relative willingness to pay changes deeply with respect to the portion (beef cut) and to the fat level of the same cut. This aspect allows and leads producers and traders to differentiate their production and commercial policies. The Italian beef consumer can be defined as an “Ethnocentric consumer” as he strongly prefers certified and local Italian origin (PGI or local brands) and he dislikes foreign breeds, even if their organoleptic characteristics are usually very high. With the range of values that we used in this research, prices play a marginal role in interfering consumer choices. Furthermore, Italian consumer prefers to gain some information rather than buying a beef package with a minimal label.

In the light of these considerations, bearing in mind also the low level of awareness with respect to the brands and certification, it seems that the Italian consumer makes his choices more for “emotional” reasons than in relation to his real knowledge. Furthermore, he always shows a higher preference and willingness to pay for those elements that have a logo in the label (PGI, Mugello CAF, Organic, GMO-free), even if the consumer claims not to know their meaning. This aspect highlights on one side the opportunity for a greater product differentiation, but on the other it emphasizes the need of improving informative campaigns and underlines the potential risk of fraudulent communications. In this context the role of public bodies is crucial to ensure and monitor the appropriateness of the information contained on the label.

In the light of the results obtained and of the test developed a further improvement of this research is represented by the identification of different consumer segments. Thus, this process will provide even more important information for the producers and policy makers. From a methodological point of view this improvement will consist in the development of a latent class approach, that allow to differentiate consumers according to their preferences.

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