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Splitting consumer's willingness to pay premium price for organic products over main purchase motivations¹

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Abstract. Recently, Italian agriculture has been widely characterised by the increasing number of farms and land converting to organic farming. In the slow process of shifting from a “niche” to a broader consumption in the organic products market deep differences between conventional and organic production, distribution and consumption became evident. In such a context, the consumer's behaviour about organic products analysis transpires to be complex as it involves either social- economic and psychographic characteristics. In order to address this issue a research has been carried out in two steps: in the first one, a qualitative analysis step, 45 consumers of organic products were interviewed by phone using laddering techniques; then, in the second quantitative step, data from a 203 consumers sample, representative of a region of South of Italy, was analysed by means of a multinomial logit.

The research main innovative aspect resides in the two- step approach (qualitative - quantitative analysis), that enabled researchers to identify and quantify the environmental and hygienic component importance in consumer preferences on organic products.

Keywords Organic products, Preference analysis, Laddering interviews, Choice model

1 Introduction

In recent years, organic farming has dramatically developed in Italy. On the other hand, organic products consumption has not increased at the same rate. Then, strategies meant to improve competitiveness must mainly focus on consumers as well as on large retailers, in order to understand how they place organic products in their trade policies. In Italy, big retailers seem to be less interested in this products and more focused on other “safe products” typologies. Consequently, conventional food, pesticides zero residues and organic products are in the same “competitors group”. This scenario, as highlighted by some authors (Cicia et al, 2002, Scarpa et al., 2003), makes consumer preferences on these different food typologies analysis particularly important and its aim has to be focusing not only on credence attributes or intrinsic characteristics (Scarpa and Del Giudice, 2004), but also on deeper consumer purchase motivations (Zanoli and Naspetti 2004a; Zanoli and Naspetti 2004b).

In order to achieve such an aim, the methodology here implemented is based on two analysis steps, first qualitative, then quantitative. The qualitative analysis, based on Laddering interviews, is aimed to elicit deep consumer motivations in buying organic products. This result has been used in the quantitative analysis, where willingness to pay for these motivations has been estimated by a choice model.

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² Although the paper stems from shared research work, G. Cicia coordinated research steps and drew the two questionnaires, T. Del Giudice elaborated the Multinomial Logit econometric model, I. Ramunno developed the Laddering analysis, C. Tagliafierro analysed the questionnaire data to define consumer's profile

Results can suggest specific strategies to improve competitiveness for organic products. The second section illustrates theory underlying methods and the integrated approach here implemented; the third section discusses Laddering interviews results; choice model results are presented in the fourth section. Finally, in the fifth section some conclusions are discussed.

2 Survey scheme and methodology applied: laddering interviews and Multinomial Logit

In this research two different techniques have been applied in order to investigate consumer willingness to pay for organic products. In the first analysis step, Laddering interviews were administered to 45 organic products consumers to understand their motivations. Then, in the following step a sample of 203 consumers were interviewed. The sample was formed by the persons in charge of shopping within the family and was representative of the region, where the research has been conducted, Campania, in the South of Italy. The aim of the latter was to valuate a monetary measure for individuals' different motivations, distributing by a Random Utility Model the price consumers are willing to pay over the different motivations identified. Results show that this distribution is feasible and useful to predict consumer behaviour towards new potential organic products competitors, like "zero residue" products.

2.1 Laddering Interviews technique

Laddering technique grounds on the utmost importance acknowledged to decisional process understanding within consumer behaviour research. In the past, research methods for consumer behaviour were greatly affected by the lack of a proper analysis tool able to link consumer knowledge about products and his personal needs and characteristics.

Indeed, consumer is used to act and make their choices driven by unconscious motivations, not directly observable; however, they can be explored by analysing consumer aims and connections with their behaviour. In fact, according to motivation psychology theory, consumer behaviour is generally directed to an aim (Rheinberg, 1997). Then, understanding this finalized decisional process can lead researchers to identify consumer motivations and aims in purchasing and, consequently, what consumer means to achieve from it.

Laddering Technique elicits connection between attributes, consequences and values, so to structure the Means- End Chain.

The Means- End Chain Model is concerned with consumer perception about relevant consequences arising from products consumption (Grunert et al., 1995; Peter et al., 1999; Reynolds and Gutman, 1988): it represents a cognitive structure that links what consumer knows about products with what he knows about himself. This consumer - product linkage is built through relationships between actual and abstract attributes, functional and psychological consequences related to product use and, finally, instrumental and final values.

The product is defined as a set of attributes; the consumer is defined as a values holder. The linkage is built specifying characteristics (attributes) important to the consumer in choosing products and then relating them to a sequential model of motivations (Zanoli, Naspetti, 2004).

In this model, consumers consider product attributes as means to satisfy their own values, i.e. aims, through consequences or benefits obtained from them: in other words, goods/services are used to satisfy conscious or unconscious needs.

Laddering Technique leads consumers to reflect about attributes- consequences- values relationships and then express spontaneously personal reasons behind product choices.

In doing that, consumers build a cognitive connections sequence (associative network or ladder) (Gutman, 1982), that represents their productive orientation or opinion with reference to a specific product.

In this research, Laddering Technique has been used for 45 individuals to identify unconscious motivations underlying organic products purchase.

They were interviewed in three different stores located in Campania, after they bought at least one organic product. Stores were a hypermarket (Auchan), a little organic products specialized store (Natukost) and the most important specialized store in Campania for organic products (Naturamica).

It is important to stress that the sample is not a statistic one as the aim of LT is the understanding of purchasing decisional process and, as qualitative step, to provide useful information to design the questionnaire for the following quantitative step.

The first section of the interview were concerned with interviewees social-demographic characteristics (gender, age, job) to apply sample segmentation next. In the main part of the questionnaire, consumers were asked: "Why are you buying a organic product?", and then with a sequence of "why" questions until interviewees did not know how to answer, being forced in this way to reflect deeply about their personal situations. The aim was to build each consumer's ladders.

After all the interviews took place, it was necessary to assign each chunk (significant phrase) to correspondent element of Means-End Chain (attribute or consequences or value), later semantic codify of all the answers obtained was done, so that it was possible to assign the same substantive to the information with the same significance.

The ladders so obtained were input in the software Laddermap 5.4.

2.2 Multinomial Logit methodology

As stated above, laddering interviews results, in terms of main individuals' motivations in the purchase decisional process, were used to set up the questionnaire for the quantitative step.

The questionnaire was then submitted to a statistical sample, representative of the case study area, the region of Campania. The aim was either to confirm laddering step results and investigate consumers' WTP (willingness to pay) distribution over such motivations. The questionnaire is organized in four sections.

Aim of the first section was to characterize consumer's food style with reference to food safety and environmental conservation issues.

The second section was concerned with interviewee's knowledge level about organic food, their purchase motivations and habits, as stores where they usually buy products.

Aim of the third section was to define a standard organic products consumer's profile from social-demographic characteristics of interviewees.

Finally, the fourth section was aimed to identify and value different price components of organic products consumer are willing to pay.

As from laddering interviews main purchase motivations transpired to be related to health and environment, a hypothetical choice set was set up presenting interviewees three alternatives, composed of the same product but with different price due to different cropping systems. The product was tomato and the alternatives were tomato from conventional, zero residue and organic farming: to date, zero residue products are still not present on Italian market, but it is likely they will be soon.

The scenario is reported below:

Hypothetical scenario

In order to match people's increasing need for food safety, zero residue products have been introduced in vegetables and fruits market. They are produced using new chemicals enhancing crops growth but not releasing any residuals harmful to health in the edible products although they are as harmful to environment as conventional ones

In the market organic tomatoes are present as well and they are produced with no chemicals.

Thus, at the moment, a consumer can face three different alternatives on the market:

1. “conventional” tomatoes, produced by agricultural techniques causing some environmental impact and releasing, within fixed law limits, chemical residuals in the edible products;
2. zero residue tomatoes, produced by agricultural techniques causing as much environmental impact as conventional ones but releasing no residuals in the edible products;
3. organic tomatoes, produced using no chemicals and then being not harmful to the environment and releasing no residuals in edible products.

These three tomato types show the same appearance but, as they have been produced by different cropping systems, come with different prices.

Imagine that you need to buy tomatoes for salad and at the market you face these three alternatives:

1. conventional tomato at the price ... €/kg (the average tomato price at Naples market)
2. zero residue tomato ... €/kg
3. organic tomato ... €/kg

Which one would you choose, given that you could choose either no one of them?

.....

Why did you choose that?

.....

The sample was split in six groups (with equal distribution) and each one was presented with a different stimulus (table 1).

Table 1. Hypothetical payment scenario

	Tomatoes price (€)		
	Conventional	Zero residue	Organic
group A	1.00	1.25	1.50
group B	1.00	1.25	1.75
group C	1.00	1.25	2.00
group D	1.00	1.50	1.75
group E	1.00	1.50	2.00
group F	1.00	1.75	2.00

The different price levels shown in table 1 (1Euro, 1.25 Euro, 1.50 Euro, 1.75 Euro, 2 Euro) were selected on the basis of pre- test and previous research- group results.

A full- factorial design was used to build the choice set. However, combinations with organic product price lower than zero residue or conventional product price and with zero residue price lower than conventional product price were not considered. In fact, consumer could be confused by a better product associated with a lower price. As well known, zero residue and organic product characteristics are considered confidence³ attributes and, in this case, price is referred to as an important element for taking information about the product.

The questionnaire was administered by telephone to the 203 individuals sample. It was withdrawn with a random extraction system from province directories on the basis of population distribution (at 31 December 2003) to have it representative of the whole region

Interviews were carried on in different days of week and at different time.

In Appendix a description of Random Utility Model here used reported in more detail.

³ *Confidence attribute* is a product characteristic that cannot be checked either before or after the purchase

3 Results

3.1 Purchase motivations as identified by Laddering Interviews

A Hierarchical Value Map (HVM) represented in figure 1 has been obtained from interview to the 45 consumers as analysed in *Laddermap 5.4 Software*. In order to make final maps interpretation easier, maps are elaborated considering a predefined cut-off level that is minimum number of linkages to take into account and represent in maps.

They are ordered from the bottom to the top, so that attributes are in grey rings, consequences in dark grey rings and values in white rings. In this way, the whole process is exemplified starting from the first step, attributes, related to the more concrete concepts, then consequences, in an intermediate position as they are perceived in terms of benefits from attributes but at the same time contribute to form the final values, and finally, at the top of the map, values, that represent the final abstract concepts.

Each ring/knot's diameter size increases with the number of interviewees who cited the specific element in. The thickness of lines linking rings is determined by number of interviewees that identified that specific linkage between concepts.

For this research the cut-off level was established at 2.

The two numbers in each ring have different meaning. The number at the top represents all the terms used for semantic codifying (10 terms for map presents in figure 1) and the one at the bottom shows how many consumers used the same terms: for instance, the term *curiosity* was used by 15 consumers.

In the survey, the sample was first considered as a whole and then split in four homogenous groups on the basis of socio-demographic characteristics and of stores where consumers had been interviewed.

Here only the whole sample HVM (45 interviewees) is reported.

It transpired to be not extremely complex: it consists in long linear chain composed by ten concepts with strong linkages between values.

As it appears from figure 1, *Health* turns out to be the most important motivation to consumers buying organic products. The related chain starts from concrete attributes as *Taste*, *Aspect*, *Curiosity*. *Environment* and *Evocation* are two important values as well but with less significance. Moreover, the sample in its whole seems to give importance to personal well-being perceived through sensorial characteristics as *Genuineness*, *Safety*, *Naturalness*.

Environment value represents consumer concerns about environmental issues and its link with well-being is likely related to individual's awareness to give a contribution to environmental protection by choosing organic products. Individual's well-being, then, hangs not only on a physical component, related to eating or using organic products, but also on a psychological component, related to environmental positive effects.

Evocation value, instead, expresses a more idealistic approach, as it may represent nostalgic feelings: organic products can likely recall consumers past food habits, healthier and more genuine.

Then, organic consumer aims at achieving a good quality life standard, both in terms of health safety and environmental protection.

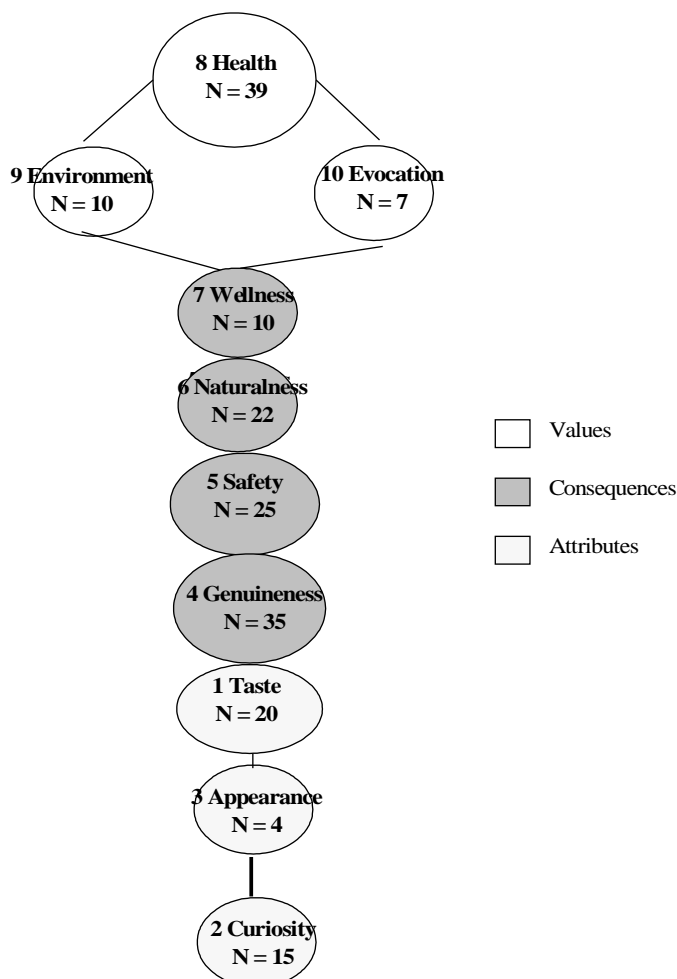


Figure 1. HVM –Global Sample

One of the most significant sample segmentations was done on the basis of the store where consumers buy organic products (the hypermarket Auchan, the little specialized store, Natukost, the most important regional specialized store, Naturamica), highlighting the huge importance given in choice to health motivations.

Hypermarket Auchan customers are used to do mostly the whole weekly shopping, food and house items. Here, organic products range is always wider but they are often positioned within dietetic and healthy food section.

The little specialized store (Naturkost) represents a reference point for all the consumers who want to buy organic products as it seems to emphasize philosophy (environmental protection) underlying, especially in the past, organic products consumption. However, it is small and offers a small products stock; moreover, as the store is situated in Pompei, a small tourist town, organic market is not so spread and purchases are often fortuitous. Finally, customers patronizing the big specialized store (Naturamica), that offers a wide range of products, are often environmentalist, vegetarian, using alternative medicine. In these cases, organic products are part of a specific life style.

Then, the two first stores' customers can be described as occasional consumers.

In conclusion, although this research step was not based on a statistical sample, some important results have been obtained: consumers associate organic products purchase to values like *Health* and *Environment*. This conclusion applies to regular as well as to not regular consumer. In fact, sample individuals show to get physical well-being from organic food genuineness and safety and psychological well-being from contributing by this choice to environmental protection.

4. Willingness to pay premium price distribution over the two main purchase motivations resulted from laddering interviews

The quantitative step analysis of the research was based on a 203 individuals sample, representative of the five Campania provinces.

First, an explorative analysis of interview results was carried out in order to describe sample general characteristics and consumption behavior.

Food safety turned out to be an issue of fundamental importance to consumers: most interviewees, in fact, accorded it the utmost importance for its strong linkage to personal health. Moreover, they showed to be greatly concerned with environmental problems through linkages between consume and environmental impact.

They claimed to be used to enquire about product characteristics and ingredients, reading label and according loyalty to some specific brands and retailers.

Half individuals stating to give great importance to food safety bought organic products, so that showing to rely on organic farming to assure it for themselves and their own family.

104 out of 203 interviewees (51%) declared to use organic products, 87 (43%) not to, although they knew about them, and, finally, 12 (6%) did not know organic products at all.

Organic consumers group generally reflected sample distribution in age classes, just slightly more concentrated in the younger classes. They belonged to a middle- high social class, mostly clerks and self-employed, with middle- high level of income (20,000 up to 40,000 euros per year). On the other hand, workers and pensioners seemed not to prefer organic products.

The organic consumer resulting from the sample turned out to be not regular, in the sense that, even though having bought organic products for some years, consumption was not constant in time: indeed, only 5 interviewees could be defined regular consumer. In almost all cases, organic food was only a part of the whole food bought.

Products chosen were basically vegetables and fruit, but also jam, honey, yogurt, milk, chocolate, oil, wine.

Some consumers preferred to buy only a specific kind of product (oil, wine, fruit or jam). Supermarket and, less, specialized store or both were the place where mostly products were bought, even if it was always difficult to find all the items in the same store.

In all, results from the first three sections of the quantitative questionnaire confirmed laddering hints: product attributes that generate preference towards organic products are “health” and “environment”.

The fourth section, instead, tackled price distribution consumers were willing to pay over these two different motivations.

Responses data highlighted that 63 interviewees (31%) would buy conventional tomato, because of lower price and, according to them, a discrete quality level of the product. 71 interviewees (35%) would prefer zero residue tomato because of the quality better than in conventional product and at the same time the price lower than the organic one; finally, 69 interviewees (34%) would buy organic tomato as it guarantees the best quality and the higher price is justified by a higher food safety level and a better environmental quality achieved in organic farming.

Given individuals' hypothetical choices, the following utility function was estimated:

$$U_p = \beta_{Bio} + \beta_{K0} + \beta_{Pr}$$

where:

U_p : utility consumer obtains choosing “tomato”;

β_{Bio} : contribution “organic production method” gives to utility;

$\beta_{R\emptyset}$: contribution “zero residue production method” give to utility;
 β_{Pr} : contribution “price” gives to utility.

In table 2 attributes used, β parameter estimates by *Multinomial Logit* consumers’ WTP for each attribute level are summarized: variable price parameter is negative while organic and zero residue production method variable parameters are positive.

Table 2. Parameters and individual WTP estimates from MNL

Attributes	Levels	Coefficient	WTP
Production method	Organic	2.707	0.860
	Zero residue	1.440	0.457
Price (€)		-3,149	

Willingness to pay, on the basis of β parameter estimates, is 0.86 euros for organic production method and 0.46 for zero residue production method.

The value attached to environment component is obtained by difference. In fact, as the estimated zero residue value, 0.46, can be related only to “health” component, the difference between the two implicit prices (0.86 €- 0.46 €= 0.40 €) can be assigned to the “environment protection” component.

It means that, in few words, Campania consumers prefer organic to zero residue tomato and attach a double value to its double components: health and environment.

5. Conclusions

Research results point out that premium price consumers are willing to pay for organic products can be split in different components.

Unlike other studies where these components were only identified, here each component contribution to the premium price value has been attributed. This result has been obtained through first a qualitative analysis step, based on Laddering technique and aimed to identifying premium price components, then a quantitative analysis step, based on Multinomial Logit methodology and aimed to valuating each component contribution to the premium price.

The methodology has been applied to a representative sample of Italian region Campania.

“Health” and “environment protection” turned out to be the components mainly explaining consumer’s willingness to pay a premium price for organic products. If conventional tomato price is equal to 1 Euro/kg, consumers are willing to pay 0,86 euro/kg as premium price for an organic tomato.

This premium price’s value resulted to be comprised of the “health” component value, equal to 0.46 Euro/kg, and the “environment” component value, equal to 0.40 Euro/Kg.

Some interesting hints stem from these results in terms of relative position of organic products and their potential competitors. In fact, as “health” turns out to be always the main purchase motivation, organic products are likely to be affected by competition from other products complying with this purchase motivation. Then, in consumer’s preferences organic products seem to be close to integrate products, already available in the market, and to zero residue products, that will available in next future.

In conclusion, given the importance of the health component in consumer’s motivation, it is strongly evident the urge for a new definition of organic products’ competitors.

Appendix : Econometric model

Much empirical work from qualitative choice theory has made use of random utility-based discrete choice models (Ben-Akiva and Lerman, 1985; Train, 2003). This approach is widely adopted when modelling choices from sets of multi-attribute alternatives.

So, if a number J of alternative tomatoes are available, each observed choice j will represent the outcome of an income constrained utility maximization exercise. Which implies that each observed purchase will be such that $U(j^*) \geq U(j)$ for each alternative j in the choice set J . This theoretical framework is conducive to the classic well know random utility maximization analysis.

McFadden (1974) has shown that under the assumption that unobservable utility component u_{nj} or error term is assumed to have a type one extreme value distribution, observed discrete choices may be modelled using the conditional logit model consistently with the assumption of utility maximization.

The probability that choice j is made by consumer n is equal to the probability that the associated utility is greater than all the utilities associated with the other choices.

$$\begin{aligned}
 \Pr(j_{nj}) &= \Pr [V_{nj} + u_{nj} > V_{ni} + u_{ni}] \\
 &= \Pr [u_{nj} - u_{ni} > V_{ni} - V_{nj}] \\
 &= \Pr [\varepsilon_{nji} > V_{ni} - V_{nj}] \\
 &= \Pr [\varepsilon_{nji} < V_{nj} - V_{ni}] \text{ for all } i \neq j \text{ in } J.
 \end{aligned} \tag{1}$$

As a consequence:

$$\begin{aligned}
 \Pr(j_{nj}) &= \int [\prod_{i \neq j} F(V_{nj} - V_{ni})] f(\varepsilon_{nji}) d\varepsilon_{nji} \\
 &= \int [\prod_{i \neq j} \exp(-\exp(V_{ni} - V_{nj}))] \exp(-\varepsilon_{nji}) \exp(-\exp(-\varepsilon_{nji})) d\varepsilon_{nji}
 \end{aligned} \tag{2}$$

Fortunately, this multiple integral can be shown to be algebraically equal to:

$$\Pr(j_{nj}) = \exp(V_{nj}) / \sum_i \exp(V_{ni}) \tag{3}$$

Which is the recognizable multinomial logit probability equation.

The data on choices of tomatoes were therefore analysed using a conditional logit specification, where indirect utility for each choice alternative is assumed to be linear,

$$V_{nj} = \beta x \tag{4}$$

Where β is a row vector of $1 \times k$ utility weights (taste parameters) to be estimated from the data, and x is a conformable $k \times 1$ column vector of product attributes.

On these theoretical hypothesis It is possible estimate part- worth (implicit price) for each attribute ($i = \text{Bio}, \text{R}\emptyset$).

It is equal to :

$$P_i = - \beta_i / \beta_{price} \tag{5}$$

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