



# The effect of sequential information on consumers' willingness to pay for credence food attributes



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## ABSTRACT

The use of experimental methods to determine consumers' willingness to pay for "quality" food has been gaining importance in scientific research. In most of the empirical literature on this issue the experimental design starts with blind tasting, after which information is introduced. It is assumed that this approach allows consumers to elicit the real value that they attach to each of the features added through specific information. In this paper, the starting hypothesis is that this technique overestimates the weight of the features introduced by information in consumers' willingness to pay when compared to a real market situation, in which consumers are confronted with all the information at once. The data obtained through contingent valuation in an in-store setting was used to estimate a hedonic model aiming at assessing consumers' willingness to pay (WTP) for the feature "geographical origin of the variety" of pears and apples in different information scenarios: i) blind tasting followed by extrinsic information and ii) full information provided at once. The results show that, in fact, features are more valued when gradually added to background information than when consumers receive all the information from the beginning.

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## 1. Introduction

When buying food products, many aspects can contribute to determine consumers' choices. It is widely agreed that while taste and other sensory qualities are very important, they only partially account for consumer's food related behaviour. Among others, absolute and relative price of the good, perception of quality, the good and substitute goods availability, origin and production methods are attributes often cited in the literature. In a more systematized way, using the classification proposed by Nelson (1970, 1974) and Darby and Karni (1973) and followed by Sloof, Tijskens, and Wilkinson (1996), attributes can be grouped into *search attributes*, *experience attributes* and *credence attributes*. Unlike search

attributes (e.g. price, size, colour) and experience attributes (e.g. taste, firmness, durability) which can be observed during purchase procedures or determined after consumption, respectively, credence attributes (e.g. healthiness, mode of production, origin) are less apparent and involve a high level of uncertainty from the consumers' perspective. As pointed out by Napolitano et al. (2010), credence attributes are extrinsic and must be communicated to be perceived by consumers as they cannot be confirmed neither before nor after purchase. The provision of information may therefore increase consumers' awareness and expectations, and probably impact their willingness to pay (WTP) for products with specific intangible attributes.

The use of experimental methods to determine consumers' preferences for food with specific credence attributes has been gaining importance in scientific research. Often, tasting is combined with a survey, as sensory characteristics usually have a significant weight in the final decision and should not be overlooked

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(Combris, Bazoche, Giraud-Héraud, & Issanchou, 2009). In most of the empirical literature on this issue the experimental design starts with blind tasting, after which information is sequentially introduced. (Combris, Pinto, Fragata, & Giraud-Héraud, 2009; Lange, Martin, Chabanet, Combris, & Issanchou, 2002; Mueller & Szolnoki, 2010; Stefani, Romano, & Cavicchi, 2006). It is assumed that this approach allows eliciting the real value that consumers attach to each of the features added through specific information. In most studies the WTP elicitation in each condition of information are independent, although some exceptions exist (e.g., Noussair, Robin, & Ruffieux, 2004).

The major advantage of performing blind tasting is that it eliminates the potential effect of information and resulting expectations on the hedonic scores since intrinsic attributes evaluation may be influenced by previous information. Expectations generated from the mental representations of a product, particularly those induced by information, can affect quality perception. For instance, if consumers know that a product was ecologically grown they may overestimate its organoleptic attributes (Johansson, Haglund, Berglund, Lea, & Risvik, 1999). As pointed out by Sester, Dacremont, Derooy, and Valentin (2013) in their study about beer consumer's behaviour, extrinsic information directly interacts with expectations resulting in an impact on the experience of the beer itself, influencing consumers' liking of a beer. These findings are in line with the study by Woods et al. (2011). Hedonic ratings tend to move towards the expectations when external information is given compared to tasting without external information (Cardello & Sawyer, 1992; Costell, Tárrega, & Bayarri, 2009; Napolitano, Girolami, & Braghieri, 2010).

Although blind tasting has clear potentialities in the assessment of WTP for food, particularly in avoiding misestimating of sensory scores, it is hypothesized that the presentation of particular features in an explicit and isolated way after tasting may draw particular attention of participants to these features and possibly lead to overestimating their importance. This means that the marginal effect in the WTP of a particular feature will be affected by the timing of information disclosure. It may also be expected that adding information will increase WTP value if a sub-additivity effect takes place. This effect, reported in previous research, occurs when the holistic WTP for a good is smaller than the sum of partial WTP. In the field of food economics Tagbata & Sirieix (2008) show that the joint application of the organic and Fair Trade labels on the same product induces a sub-additivity to the WTP compared with WTP for the two labels considered separately. Empirical evidence found in the health economic literature (Berwick & Weinstein, 1985; Hammerschmidt, Zeitler, & Leidl, 2004; Klose, 1999) also supports the existence of sub-additivity effect for health-care technologies. In the area of environmental and natural resources economics several authors also address this question (Diamond & Hausman, 1994; Jakobsson & Dragun, 1996; Kahneman & Knetsch, 1992) showing that WTP for environmental goods or environmental improvements varies depending on whether they are evaluated on its own or as part of a broader good.

In everyday life, food choices are, for the most part, a question of routine and habits. As pointed out by Combris et al. (2009), consumers cannot and do not process new information to make a thoughtful decision each time they have to buy or choose a food product. Such behaviour is usually associated with foods considered a staple part of the diet, and which evoke low levels of involvement or thought when consumers select a product (Harker, Gunson, & Jaeger, 2003). As suggested by several authors cited by Grankvist and Biel (2007) and by Menozzi and Mora (2012), the purchase of everyday food, such as apples and other fruits, is a behaviour often executed with little or no cognitive evaluation, often guided by habits. Receiving information regarding specific

product attributes after a blind tasting is far from actual purchase conditions, that is, when consumers make their choices based on a general set of information and perceived quality. Usually no one is present to draw consumers' attention to special features of the product that he or she wishes to purchase.

As Caporale, Policastro, Carlucci, and Monteleone (2006) highlighted, traditional and typical products are particularly prone to expectation effects. The information about origin has been showed to influence tasting scores in several local food products, such as olive oil (Caporale et al., 2006), wine (Wansink, Payne, & North, 2007), spelt (Stefani et al., 2006) and apple juice (Stolzenbach, Bredie, Christensen, & Byrne, 2013). While hedonic measurement under blind condition appears to be more valuable to assess "the intrinsic value" of a product (Lange et al., 2002), the present study hypothesizes that individuals will assign a higher/lower WTP to the fruit when they know it is a Portuguese variety/foreign variety, relative to those tasting it without information.

Moreover, we will try to discover if blind tasting followed by information on a food's special features overestimates consumers' WTP for these features because it draws attention to that particular information. To test these hypotheses, two groups of consumers were invited to participate in an in-store experiment aimed at tasting and evaluating Portuguese and foreign varieties of apples and pears in two different experimental settings: (A) blind tasting followed by information about the variety origin; (B) tasting with provision of this information. Participants were randomly selected among stores' clients.

## 2. Materials and methods

### 2.1. Experimental overview

This study was conducted between November 2012 and December 2013 in two fruit stores in each of the Portuguese cities of Coimbra, Oporto and Lisbon. A total of 545 participants were randomly recruited among the stores' clients that usually consume apples and pears in order to assess their WTP for two distinct varieties, using the contingent valuation method. Every client of each fruit store had an equal chance of being selected, since data collection was distributed along daytime and day of the week. On a daytime basis the second client to enter the store after the previous participant completed the evaluation tasks was asked to participate. If he/she declined the next client showing up was invited. As Lusk and Fox (2001) mention, in-store valuation has several advantages when compared to a lab setting. First, in selecting subjects, it allows intercepting the relevant consumer population and, second, although not every shopper will participate, it is likely to reduce sample selection bias because participation involves less inconvenience for the subjects. Finally, compensating participants for the inconvenience of laboratory sessions requires financial incentives. The downside is the limited amount of time and attention that participants have in the context of a realistic shopping situation, which imposes simplicity and limits control over the experiment.

For each participant, the contingent valuation procedure started by a brief explanation about the objectives of the study and the tasks to be performed so that he or she could decide whether or not to participate. Then the participant was asked to carefully read and sign a consent form. After that, the questionnaire was delivered and a more detailed description of the procedure was made. Since only one person at a time performed the tasks, instructions were given individually and participants started only after no doubt remained that they had perfectly understood the procedure and the questions, specifically the ones involving the elicitation of their maximum WTP. All the participants evaluated one fruit of a foreign

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