



The role of beliefs in purchasing process of functional foods



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ABSTRACT

This study utilizes food values in conjunction with willingness to pay (WTP) measures to identify consumers' subjective beliefs about functional foods. We conducted a non-hypothetical, second price experimental auction (i.e., a Vickrey auction) to estimate WTP for a new functional snack made with white lupine and citrus fiber. A sample of 156 consumers was surveyed in Catania, Sicily (Italy) in July 2015. The findings of the economic experiment reveal a WTP premium for the new functional snack, a premium which depends on functional components but also on other characteristics that go beyond intrinsic healthy properties. Consumers' WTP for functional foods significantly varies with food values related to origin, safety, naturalness, price, etc., which implies consumers have different subjective beliefs about functional and non-functional foods. These findings have implications for the food sector attempting to design and promote consumption of functional foods, and suggest health is not the only factor motivating functional food purchases.

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1. Introduction

According to the term first coined in Japan in 1994, functional foods are “food products fortified with special constituents that possess advantageous physiological effects” (Kubomara, 1998). Consumption of functional foods has subsequently spread throughout the world (Martirosyan & Singh, 2015), encouraged by the growing dietary interest of consumers (Hardy, 2000). Several studies have shown that consumers purchase functional foods because they recognize health promoting properties not found in conventional foods (Annunziata & Vecchio, 2011). However, consumption of functional foods depends not only on their healthful features but also on other factors like price and taste that influence consumer choice (Annunziata & Pascale, 2009; Falguera, Aliguer, & Falguera, 2012; Thornsby & Martinez, 2012).

Understanding the factors that affect consumer behavior in buying functional foods remains an unresolved issue. An unexplored issue relates to linking consumption of functional foods with specific “food values” (Lusk & Briggeman, 2009; Rokeach, 1973). Values are a potentially powerful driver for consumer behavior in a wide range of situations, including purchasing decisions (Gutman, 1982). Food values like safety or product origin

have been proposed in previous research as a method of identifying stable constructs of consumer preference (e.g. Adalja, Hanson, Towe, & Tselepidakis, 2013; McCluskey, Grimsrud, Ouchi, & Wahl, 2005). Buying a particular product or product attribute is conceptualized as a means to obtain some desirable end-state, and this could explain why consumers prefer a particular product over another (Lusk, 2011; Lusk & Briggeman, 2009). Linking the concept of “value”, as defined by Rokeach (1973), with consumption of functional foods might provide new insights into the drivers of functional food consumption.

Food values might affect willingness to pay (WTP) for buying functional foods, which according to Lusk (2011) would reveal insights into consumers' subjective beliefs about functional foods. However, previous WTP research has tended to ignore the effects of subjective beliefs. Failing to distinguish beliefs from preferences can lead to a misunderstanding of WTP (Lusk, Schroeder, & Tonsor, 2014). Thus, examining the connection between WTP for functional foods and food values represents the main objective of this paper. To reach this goal, we identified 10 food values and following Lusk's (2011) development of the expected utility theory's approach (Savage, 1954; Von Neumann & Morgenstern, 1944), we relate consumer's WTP for functional foods to both subjective beliefs about the benefits of functional foods and the values consumers' place on various issues. We tested the model by employing a non-hypothetical experimental auction using a sample of consumers in Sicily (Italy) who made choices involving a functional snack produced with white lupin and orange fiber.

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2. Background and research hypotheses

Several studies have analyzed the factors affecting purchases of functional foods. Many earlier analyses revealed a positive correlation between the consumption of functional foods and attention to the healthiness of foods, healthy lifestyle, healthy eating habits and certain socio-economic variables such as age and education. Consumers who consider health aspects of food important are more willing to consume functional foods (Henson, Masakure, & Cranfield, 2008; Moro, Veneziani, Sckokai, & Castellari, 2015) and they are also willing to give up other food characteristics e.g. taste or price (Verbeke, 2006) to attain healthiness. However, even for functional foods, neophobia may negatively affect the consumption of these products (Siegrist, Shi, Giusto, & Hartmann, 2015; Stratton, Vella, Sheeshka, & Duncan, 2015). Knowledge of the intrinsic properties of functional foods, like health and prevention of diseases, can counteract distrust (Ares, Giménez, & Gámbaro, 2008; Tudoran, Olsen, & Dopico, 2009).

Uncertainties related to scientific knowledge and moral nuances concerning “acceptable eating” can generate different perspectives on how consumers interpret functional foods (Niva, 2007). The presence of claims that effectively communicate the nutritional and physiological properties and health benefits positively affect the purchase of these foods (Aschemann-Witzel, Maroscheck, & Hamm, 2013; Siegrist, Stampfli, & Kastenholz, 2008; Van Kleef, Van Trijp, & Luning, 2005) especially when claims are verified by government agencies and not by the same producers (Hailu, Boecker, Henson, & Cranfield, 2009). However, different cultures, traditions and eating habits affect marketing strategies (Saba et al., 2010). More recently, some studies have shown an increased awareness of the health properties of functional foods (Žeželja, Milošević, Stojanović, & Ognjanov, 2012).

Another factor that positively affects the purchase of functional foods is the attention to lifestyle and healthy eating habits (Chen, 2011a, 2011b; Larue, West, & Lambert, 2004). This is true not only for consumers who traditionally focus on food health but also for the so-called “adventurous consumers” who look for new types of foods with innovative characteristics (Szakály, Szente, Kövér, Polereczki, & Szigeti, 2012). Consumers attentive to healthy eating habits are more willing to consume functional foods than those who do not show great attention to these issues (Devcich, Pedersen, & Petrie, 2007; Goetzke, Nitzko, & Spiller, 2014). However, it is difficult to generalize this result as the consumption of functional foods is perceived only necessary when people have health concerns, otherwise consumption of these foods is not justified (Landström, Hursti, & Magnusson, 2009).

Consumption of functional foods varies with demographic characteristics of consumers. Ares and Gámbaro (2007) found gender differences related to WTP for functional foods. These authors showed gender differences in preference for the functional foods with different carriers (honey, yogurt, marmalade) and enrichments (fiber, calcium, antioxidant and iron). For example, women gave significantly higher perceived healthiness scores to functional foods concepts with yogurt and marmalade than men. The findings of this study suggest that functional foods might not be accepted by all the consumers and that they could be tailored for certain groups.

The importance given to “nutritional enhancements” may also vary with other demographic characteristics like age, education, race, presence of children in the household, etc. For example, consumption of functional foods increases with age, education, and presence of kids (Gulseven & Wohlgenant, 2014). Consumption of these products can vary between older and younger subjects in terms of awareness of factors that raise the risk for heart disease, such as diabetes and stroke (Wądołowska, Danowska-Oziewicz,

Stewart-Knox, & Vaz de Almeida, 2009). Young people seem more interested in buying functional foods with claims that refer to health benefits, rather than similar products with claims relating to the reduction of disease risk, while the opposite was true for older people (Vassallo et al., 2009; Verbeke, 2005).

Overall, the results of previous studies have shown there is a positive perception of functional foods (Bonanno, 2013). However, knowledge of the relative importance factors that can affect the consumption of functional foods remains an open question. Coxa, Kosterb, and Russell (2004) showed that beyond the health and prevention of diseases, there are other factors affecting the consumption of functional foods such as taste, safety, and origin of the raw materials. Even some packaging features like package color or the presence of images can influence purchases of functional foods (Ares, Besio, Giménez, & Deliz, 2010). Convenience and price are key factors in the purchasing process of young people while the origin of the raw materials is a relatively more important factor for middle age people (Krystallis, Maglaras, & Mamalis, 2008).

These studies highlighted that consuming functional foods may depend on specific values that are important to consumers when they decide to buy these products. When dealing with the issue of food values, the identification of consumer preferences may be insufficient. In this regard, past research on WTP primarily focuses on preferences but has not generally explored the role played by subjective beliefs in the purchasing process of food – that is, the probabilities of attaining certain outcomes like the aforementioned values (taste, naturalness, health and so on). Failing to distinguish subjective beliefs from preferences may lead to incorrect interpretations of research results (Lusk et al., 2014). This might be true even for functional foods for which, to the authors’ knowledge, there is no clear distinction between subjective beliefs and preferences in the analyses of the mechanisms underlying consumer purchasing process of these foods. Distinguishing subjective beliefs from preferences in the purchasing process of functional foods may yield useful insights that can be used to better understand which factors affect the consumption of functional foods, with important implications for the agri-food companies.

3. Procedures

In June and July 2015, an experiment was conducted in the city of Catania (Sicily-Italy). A sample of 156 consumers participated in a non-hypothetical experimental auction (Lusk & Shogren, 2007). This type of experiment offers the advantage of providing an incentive for participants to truly reveal their preferences. Few previous studies (e.g. McAdams, Palma, Ishdorj, & Hall, 2011) have applied non-hypothetical methods to assess consumers’ WTP for functional foods. The novelty of this paper is combining a non-hypothetical valuation method with an evaluation of food values to identify consumer’s WTP for and subjective beliefs about functional foods. A second price experimental auction mechanism was designed to elicit WTP for a new snack enriched with functional ingredients, and we couple these data with answers from a set of Best-Worst Scaling questions that provide a score of the relative importance of various food values. By combining the two approaches, we are able to provide an estimate of consumers’ beliefs about functional foods (Lusk, 2011).

In the first step of the study, we recruited people for the experimental auction and, at the same time, people were asked questions on knowledge of functional foods and demographic information. People were recruited at shopping areas, universities and public places. Respondents were selected through a screening question in which they were asked if they knew and bought some functional products commonly found at normal retail outlets. If

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