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# Consumer behavior in choice of minimally processed vegetables and implications for marketing strategies



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## ABSTRACT

The purpose of this work is to stimulate the debate on the economic aspects of minimally processed fresh-cut production, assessing the purchase intentions of consumers of fresh-cut products. In order to gain this purpose and compare with the literature, results of previous on-field research, that involved consumers of fresh-cut lamb's lettuce (*Valerianella Locusta Laterr*), are presented and discussed. This work deals with the information collected as marketing and economic analysis on food products object of the research project "Novel strategies meeting the needs of the fresh-cut vegetable sector – STAY-FRESH". Intentions to purchase fresh-cut lamb's lettuce from environmental sustainable farms, simulating a fresh-cut product with an Eco-label, are investigated. Several studies referred to the approach that sets out different types of motives that affect attitude and willingness to pay for minimally processed products. The managerial implications make it possible to assess how much the different types of motives influence the attitude and affect the choices and the behavior of the consumers. To complete, a cost analysis of the fresh cut lamb's lettuce product is proposed. These results are proposed waiting for the Eco-labeling Board (European Union Eco-labeling Board) decisions on the feasibility of an Eco-label for food products.

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## 1. Introduction

The success of new food technologies is dependent on consumers' responses (Chen, Anders, & An, 2013). Literature on the acceptability of new food technologies has mainly focused on those that, in actual fact or in the imagination of consumers, substantially modify the characteristics of a particular food, such as GMOs, nanotechnologies etc. It has also shown that consumers: 1) are favorable to food innovations which enhance the quality and nutritional value of food; 2) are critical of technologies which, in their view, require an excessive modification of the original product and could be dangerous to human health and the environment; 3) can be influenced by information, and 4) there are differences between consumers of different countries (Coppola & Verneau, 2014; Cox & Evans, 2008; De Barcellos et al., 2010; Evans, Kermarrec, Sable, & Cox, 2010; Frewer et al., 2011; Matin et al., 2012; Nielsen et al., 2009; Siegrist, 2008; Stampfli, Siegrist, & Kastenholz, 2010; Verbeke, Pérez-Cueto, Barcellos, Krystallis, & Grunert, 2010).

This particular aspect and the progressive economic globalization requires firms to develop innovative solutions in order to remain competitive in the long term. For this reason today's companies are forced to differentiate themselves by creating extra value in the minds of the consumers by generating salient benefits, which extend beyond product attributes and functional benefits. Differentiation is a very common approach for presenting higher value-added to customers, and services are a strong differentiator. Starting with this consideration, every company is engaged in differentiation through innovation. In today's competitive and global business environment, marketers must work harder than ever before to achieve some degree of differentiation for their products. In order to secure competitiveness they need to know how to efficiently communicate their additional efforts to consumers. In any case, farmers need to take care about adjusting and communicating their production methods in line with customers' concerns, in order to remain credible in the market. Certification and labelling systems belong to the most effective instruments that can induce positive changes in consumer behavior. Empirical research findings, showing that consumers prefer information attached to products and labels, support this conclusion (Koszewska, 2011). Due to an increasing health consciousness and growing interest in

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the role of food for maintaining and improving human well-being and consumer health, that is now characterizing the consumer in actual society (Ballestrazzi, Mason, & Nassivera, 2011; Kher et al., 2013), vegetables are well recognized for their benefits towards healthy living (Bongoni, Steenbekkers, Verkerk, van Boekel, & Dekker, 2013; Cox et al., 1996; Wootton-Beard & Ryan, 2011), thanks to their protective function against diseases. Numerous studies have shown that consumer's needs for convenience are correlated with food choice (Hjelmar, 2011; Grunert, Brunsø, Bredahl, & Bech, 2001; Verlegh & Candel, 1999). Minimally processed vegetables has been developed to meet consumer's needs for "quick" products, and to benefit from vegetable and fruit's healthy image (Ahvenainen, 1996; Pula, Parks, & Ross, 2014; Vidal, Ares, & Giménez, 2013). The term "minimally processing" has been defined in various ways, for example very broadly as "the least possible treatment to achieve a purpose" (Manvell, 1997). An even more precise definition, which situates minimal processing methods within the context of more conventional technologies, describes them as techniques that preserve foods but also retain to a greater extent their nutritional quality and sensory characteristics by reducing the reliance on heat as the main preservative action (Olsen, Menichelli, Sørheim, & Næs, 2012; Raybaudi-Massilia, Calderón-Gabaldón, Mosqueda-Melgar, & Tapia, 2013). Minimal processing can, therefore, be seen in the context of the traditional concern of food processing to extend the shelf life of food (Nicoli, 2012). Consumers have also placed a greater premium on foods which retain their natural nutritional and sensory properties. Minimal processing techniques are fitted to meet this challenge of replacing traditional methods of preservation whilst retaining nutritional and sensory quality. This assortment of mainly vegetables and some fruits is becoming more and more popular (Nassivera & Sillani, 2015). In Italy, until the end of 2012, purchases of minimally processed vegetables showed a steady upward trend, with the complicity of the high service content and ease of use that have boosted consumption by 380% in ten years despite prices higher than the traditional fresh products. Most research about the food category of minimally processed vegetables and packaged fruits focuses on microbiological quality, safety, processing and packaging issues (Allende, McEvoy, Luo, Artés, & Wang, 2006; Alves de Azeredo et al., 2011).

Consumer research related to consumer perception or purchasing determinants towards minimally processed vegetables and packaged fruits has not analyzed strongly some strategic aspects regarding the possibility to apply an Eco-label for this kind of products, to differentiate the production for environmental sustainability. This aspect of insight in consumer decision-making towards this rapidly growing assortment of minimally processed vegetables and fruits forms the rationale of a previous research (Nassivera & Sillani, 2015) and the economic analysis proposed in this work. It is evident that consumers are constantly being subjected to a multiplicity of messages, that often seem contradictory, especially when they relate to the quality of food and to issues linked to its safety. Most of the studies, aimed at exploring this topic of the sources of information that affect the purchase choices of consumers, are focused primarily on nutritional and health information (Frewer & Miles, 2003; Kher et al., 2013), the origin of the product, its method of processing and the environmental impact of the production. The demand for eco-sustainable food products and related services is continually growing (Ballestrazzi et al., 2011; Panzone, Wossink, & Southerton, 2013; Vassallo & Saba, 2015). In relation to these changes that affect modern society, it is evident that, for example, if is possible to communicate that a production is also "environmentally sustainable" via Eco-label, the final consumer may be more informed about this product attribute. Labelling is an efficient approach for aggregating information, reducing

the time required for information search and hence for reducing the complexity of consumer choices. Some authors have pointed out that environmental sustainability labels are not currently playing a central role in consumers' food choices, and the future of these labels will depend on the extent by which consumers' environmental awareness will translate into buying choices (Grunert, Hieke, & Wills, 2014). In this way the European Union Eco-labelling Board commissioned a feasibility study for establishing reliable criteria covering environmental performance during the whole life cycle of food products (Couturier & Thaimai, 2013; DG environment EU, 2011). This will support the opportunity for adopting an EU Eco-label for food and feed products. The fact that environmental issues and concerns are constantly changing (Sartzetakis, 2013; Zepeda, Sirieix, Pizarro, Corderre, & Rodier, 2013) implies that ongoing research into their influence on consumer behavior is essential. In such a context, those companies that adopt strategies based mainly on sustainability, on the environmental value of goods (green marketing) and on the safety value of food products (care of prevention) earn a competitive position in the market. Starting from these premises, the determinants of consumer behavior towards minimally processed vegetables could be specifically separated into "health" and "green" consciousness, gathering in this last group the motivations behind the purchase of environmentally sustainable minimally processed vegetables, underlined and communicated via the potential adoption of an Eco-label. A label that summarize this kind and a wide range of information could alter consumers' purchasing decision (Hansmann, Koellner, & Scholz, 2004; Hoek, Roling, & Holdsworth, 2013). The aim to gather for minimally processed vegetables the links between the determinants, the attitude towards the Eco-labelled product, the intrinsic attributes of perceived quality, the extrinsic attributes of perceived quality and the willingness to pay for minimally processed product with an Eco-label, forms the starting point for marketers of this kind of products.

## 2. Health and green consciousness as determinants in consumer choice

Health consciousness expresses the readiness to undertake health actions (Becker, Maiman, Kirscht, Haefner, & Drachman, 1977). Health-conscious consumers are motivated to improve and/or maintain their health and quality of life (Hartmann, Siegrist, & van der Horst, 2013). Previous research has identified interest in health as a primary motive for the purchase of organic food (Grankvist & Biel, 2001; Lockie, Lyons, Lawrence, & Mummery, 2002). In addition, health consciousness has been found to predict attitude, intention and purchase of organic foods (Magnusson, Avrola, Hursti Koivisto, Aberg, & Sjoden, 2001, 2003). Although the relationship between health consciousness and attitude has not been uniformly supported in all studies (Tobler, Visschers, & Siegrist, 2011), the effects of the construct, as antecedent of attitude towards a minimally processed Eco-labelled vegetable product, in a sample of consumers in Italy revealed that this "new demand" for healthy products can be satisfied by the minimally processed vegetable products (Nassivera & Sillani, 2015). This kind of information depicts a consumer who accepts new technology applied in food production in order to gain peculiarities of healthy food. Other studies have shown that, for American consumers, health comes before the environment and solidarity (Allen, 2010).

There are different fields of investigation of green motivations and consequent "green attitude". Some authors examine the interface between the natural environment and consumer behavior (Diamantopoulos, Schlegelmilch, Sinkovics, & Bohlen, 2003), others focus on marketing strategies (Menon & Menon, 1997), public initiatives and macro marketing (Kilbourne & Carlson, 2008). Green

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