

Consumers perception of traditional sustainable food: an exploratory study on pasta made from native ancient durum wheat varieties

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Introduction¹

The importance of the production and sale of traditional food resides in its contribution to diversification of rural areas and to the prevention of their depopulation. Traditional food products (TFP) are an important element of the European cultural heritage and a decisive economic input to many regions (European Commission, 2007). Traditional and ancient native crop and varieties, abandoned over decades and recently recovered by farmers can be considered a special category of local and traditional foods whose importance is enhanced by social, economic and environmental meanings affecting both demand and supply in the food market. Native low-yields crops such as some durum wheat varieties cultivated traditional areas (i.e. Senatore Cappelli among others), were recently reintroduced and improved by farmers and breeders for their high-quality, pest resistance and their importance in the biodiversity conservation. As consequence of food scandals, globalization process and homogenization of products, consumers became more and more demanding for food quality, inducing the research, firms and government effort to understand and characterize and define consumer's concepts related to quality of food products. Specifically, European consumers demand for safe and tasteful traditional food products (Cayot, 2007), but also for higher quality, convenient, nutritive and healthier options that fit better with the present needs in modern societies (Guerrero et al., 2010). Among the changes and trends affecting food demand and consumer habits, the re-orientation towards traditional food plays a crucial role in sustaining sustainable agriculture. As stated in other studies, in order to better understand and predict the likelihood of success or failure of traditional foods it is crucial to know the meaning that the word "Traditional" has in consumers' beliefs. From the expert's perspective there are some definitions of traditional food (Bertozzi, 1998; EU, 2006; EuroFIR, 2007; Jordana, 2000; Ministero Agricoltura, 1999; Trichopoulou, Soukara, & Vasilopoulou, 2007; Truefood, 2006), but only Guerrero et al. (2009) published a definition of TFP from the consumers' point of view: "a product frequently consumed or associated with specific celebrations and/or seasons, normally transmitted from one generation to

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another, made accurately in a specific way according to the gastronomic heritage, with little or no processing/manipulation, distinguished and known because of its sensory properties and associated with a certain local area, region or country". We can therefore say that from a qualitative perspective the concept of "traditional" in a food context is made up of ten main dimensions: sensory, health, elaboration, heritage, variety, habit, origin, simplicity, special occasions and marketing (Guerrero et al., 2010). Moreover, consumers consciousness for biodiversity influenced their reorientation to natural and sustainable agriculture and food processing. Recovering and processing traditional and native crops varieties to produce higher quality products is recognized as a relevant opportunity by farmers and processors to grasp particular claims of consumers and differentiate their products. According to new demand requests, tastes and trends, local supply chains operators investing in products innovation reconsider the meaning of 'tradition', as perceived by consumers and employ innovative cultivation and processing systems to exploit potentials of native durum wheat varieties characterized by high contents in proteins that make them particularly suitable for industry processing. Governments and policy play an important role in prompting the public and private interest for local and traditional food, in order to increase the variety of food choice for consumers (Guerrero et al., 2012) and to foster local economies and rural regions development (Feldmann et al., 2015). Our study may provide useful indication to food companies and producers to invest in innovative products based on traditional regional raw materials tailoring marketing actions and investments.

But how consumers perceive the quality of products made from native crops varieties? Recent review on consumers perception and preferences for local and traditional food emphasizes that, unlike organic food, local ones are not perceived as expensive but consumers would be willing to pay a premium price to access them (Feldmann et al., 2015). Does this conclusion still hold in case of durum wheat pasta obtained from traditional wheat varieties? Answer to the latter question is one of the aims of the paper. Moreover in order to maintain and even increase the traditional food products' market share they need to be improved by introducing innovations that fulfil the European consumers' demand for better traditional food product from different perspectives, including for example health, safety, taste and convenience characteristics (Cayot, 2007). Indeed, other studies investigating how consumers perceive the meaning of terms such as 'traditional' and 'Innovation', found a noticeable incompatibility between the two concepts (Guerrero et al., 2012). However, assuming a positive feeling and attitude of consumers towards those products, the main aim of the article is to address consumers preferences towards different attributes of pasta. Conjoint analysis will be developed to assess consumer perception towards pasta made from native durum wheat varieties. On purpose more than 258 habitual consumers of pasta from Apulia region were interviewed using internet based tools.

Literature review

A growing consumer interest in more differentiated food products has been observed in the recent years, also in traditional local foods (Stolzenbach et al., 2013). Although food product development essential for producers survival in a competitive global market (Stewart-Knox &

Mitchell, 2003), recent studies suggest incongruence between new product development and traditional local foods since more than 90% of all new developed products in the food and beverage market fail (Business Insight, 2004). This is often explained by the use of inappropriate and inadequate criteria for evaluating the likelihood of a future market success and by the undervaluation of the importance of better understanding consumer behaviour towards new product development. Literature on consumers perception of TFP appears quite scarce. Many of the contributions address the issue of how quality and safety are perceived by consumers and how those perception influence decision making process and shopping behaviour (Brunsnø et al., 2003; Grunert, 2005; Frewer et al., 2005). The majority of the studies focuses on particular categories of food products such as organic and local (Zanoli et al., 2002; Jensen et al., 2013; Feldmann et al., 2015) or functional food (Bech-Larsen et al., 2003; Bornkessel et al., 2014, Kraus, 2015).

Some authors (i.e. Sautron et al., 2015) study food choice motives during purchasing especially focusing on consumers concerns about sustainability. Consumers are in facts, influenced by several categories of complex but not exhaustive aspects when dealing with food choices². Recent researches explore consumers' perceptions of specific product attributes of TFP covering a selection of sensory, health, ethics, purchasing and convenience factors. Ophuis and van Trijp (1995) split intrinsic and extrinsic attributes into three categories sharing common concepts:

Sensory, composed of intrinsic attributes (taste, appearance) and experience attributes (taste specialty, quality, quality consistency);

Health & Ethics, including intrinsic product attributes (nutritional value, safety), and credence attributes related to health (healthy) and ethics (environmental friendliness, support of local economy);

Purchase & Convenience, consisting of extrinsic experience attributes characterising commercial (availability, assortment, price) and convenience aspects (ease of preparation, preparation time) (Almli, Verbeke et al., 2011).

Focusing back to TFPs the relationship between consumers and this particular category of food, starting from published definitions of traditional foods, must be enriched of temporal, cultural and territorial dimensions (Bertozzi, 1998; EU, 2006; Jordana, 2000), of ideas of inheritance between generations (EU, 2006; Trichopoulou et al., 2007) and of elaborative statements about traditional ingredients, traditional composition and traditional production and/or processing (Weichselbaum et al., 2009). However, as highlighted by Mattiacci and Vignali (2004), unique food products can be perceived by consumers as distinctive and superior quality food. The statement implies that producers take advantage of a great opportunity to position products in the premium price range. After all, as in Deliza and MacFie (1996), it is necessary that consumers' expectations are met upon product consumption to yield satisfaction and ensure re-purchase of the product. If consumers' expectations fail to be met, a negative disconfirmation occurs and the product might never

² Six classes of factors affect food choices with different weights of importance, as stated by European Food Information Council. Those categories of factors consist of: 1) biological aspect such as hunger, taste and sensorial perception; 2) economic aspects related to costs and income, availability and economic access; 3) physical aspects such as access, time; 4) social context and social habits (meal patterns); 5) Psychological: mood, stress; and 6) attitudinal such as beliefs and knowledge (EFIC, 04/2005).

be purchased again (Verbeke et al., 2011). Consequently, a product or product category, including TFP needs to benefit from a positive general image and offer quality products that match or exceed consumers' expectations, to be successful on the market.

Methodology

The Conjoint Analysis approach have been widely applied by researchers in the food industry. Cicia and Pearl (2000), for example, have carried out an experiment in conjoint analysis applied to extra-virgin olive oil; still on olive oil, De Vita et al. 2013, studied attributes influencing consumption of PDO Italian olive oil; Several authors Applied CA to address consumers demand for organic foods (Zanolli et al., 2002; Makatouni, 2002; Shafie et al., 2012; Van Loo et al., 2011;). Others addressed consumers preferences to study demand for new food product as functional foods (Bornkessel et al., 2014; Annunziata et al., 2013). The CA approach has psychometric origins and is particularly useful to determine the ideal mix of attribute characterizing a product in order to make it more marketable and attractive to consumers. In the field of CA, Choice Based Conjoint Analysis (CBCA) can be used to decompose more holistic judgments into components, based on qualitative attributes of the products, with the aim to reveal consumers multi dimensional perceptions and preference about products on hypothetical markets. Each product or service is presented to consumers as a combination of attributes and characteristics and each attribute can be provided with different levels or options (Louviere & Woodworth, 1983). A numerical partial utility (part-worth) value is computed for each level of each attribute contributing to the total utility of the product (Cicia et al., 2000). The CBCA approach allows to measure the utility associated by consumers to each level and attribute of the product and determine attribute weights on the purchasing decision process. The CBCA technique is consistent with the Theory of Demand by Lancaster (1966) and with the Random Utility Model (RUM) proposed by McFadden (1974). It is based on theoretical assumption that individuals in their actual behaviour as buyers, are able to choose between alternative options, each one characterized by a finite number of attributes articulated in different levels (Burton et al., 2001). The theoretical models implies that each individual i chooses the alternative j within the group of choices only when the utility associated to the alternative j is the highest possible. The utility that the consumer gains from the consumption of goods must be considered as a weighted sum of the utilities attributable to each attribute. These choices are converted to utilities or part-worths for each of the levels of the individual attributes using Multinomial Logit (Louviere et al., 2000; Louviere & Woodworth, 1983). Through repetition of choices by consumers, it is possible to analyze the influence of attributes on choices with the opportunity to obtain detailed information on purchasing processes.

Experimental design

We used Discrete Choice Experiments to measure attribute importance of durum wheat pasta. Respondents were forced to make trade offs when choosing the different product concepts on a hypothetical market. We carried out a preliminary pilot survey consisting of a

focus group survey with 25 habitual consumers of pasta. The pilot study was a pre-investigation tool to identify appropriate attributes characterizing pasta profiles used in the choice experiments. Attribute levels were settled according to available information provided by packaging on shelves of supermarkets. To measure the impact of the origin of wheat on consumers choices, we considered the following extrinsic and intrinsic attributes (table 1): a) Origin of the wheat; b) Colour; Packaging; c) Cooking Time; d) Brand; e) Price (Euro/pack (500 gr.)).

According to the method of full profile, overall the possible combinations of attributes and levels that compose the factorial design, efficient sets are created. A fractional orthogonal design has been extracted using the SPSS software obtaining 30 product profiles. The respondents were provided with ten choice tasks, each one consisting of three alternative concepts, as they could make ten purchase decisions. Each choice set was characterized by all factors with different combinations of attributes levels (e.g. label of the first profile: autochthonous/regional wheat flour, local brand (handicraft production), pale yellow, ecologic packaging, and so on for all the other 7 profiles).

Table 1 Attributes and attribute levels

Attribute	Levels
Origin of the wheat	International; Italian; Autochthonous/regional
Colour	Yellow; Pale yellow; white
Packaging	Ecologic; Attractive; Smart
Cooking Time	Low; Medium; high
Brand	Local Brand (artisan); Industrial brand; Any brand
Price	0.90 €/500 gr.; 1.40 €/500 gr.; 2.90 €/500 gr.;

The Questionnaire

The survey involved randomly selected Italian consumers of pasta. The semi-structured interviews have been submitted by internet based tools (social networks and email). The survey involved 354 consumers of durum wheat pasta randomly selected, and returned 287 completed questionnaires. The questionnaire is composed by several sections. The first part of the questionnaire contains socio demographic characteristics of respondents. The second section of the questionnaire contains questions on habits of consumption of pasta, such as frequency of consumptions and the most favourite purchasing channels. The latter part also was designed to grasp consumers loyalty towards the most favourite brand, personal tastes and preferences. Specifically, participants were asked to give a score from 1 to 7 to the different attributes of pasta being based on their potential influence on personal purchasing decisions. The second part of the questionnaire investigates attitudes and beliefs towards aspects related to traditional processed and raw materials. The respondents were asked to indicate a concept or term evoked from the following expression: "Autochthonous /regional wheat". On purpose some key elements were identified, picking up from the current literature on preference of traditional and local food. (Favalli et al., 2013; Vanhonacker et al., 2008). According to the literature, we tried to grasp a cognitive link with several concepts

such as: genuineness, tradition, respect for the environment, healthiness and innovation. The option “none of them” was also provided. The same section of the questionnaire also contains questions on shopping habits about pasta made from native ancient durum wheat. Participants were asked if they purchased the product at least once, if they would be willing to buy it and what kind of product would buy, choosing among the most common wheat varieties cultivated in the south of Italy (i.e. Senatore Cappelli, Saragolla Lucana, Svevo, Aureo and Core). On purpose, autochthonous and ancient varieties such as Senatore Cappelli and Saragolla Lucana have been mixed with other varieties commonly used by industry processing in order to grasp the level of knowledge and the capability to distinguish between traditional high-quality varieties and most commercial ones. The last part of the questionnaire was structured to develop the conjoint analysis.

Descriptive statistics of the sample

Table 2 contains social, economic and attitudinal characteristics of respondents.

Table 2. Social, economic and attitudinal characteristic of the sample

Characteristic	Sample parameter (size N=284)
Gender (% of female)	53.9%
Age (average)	36.9
Household size (average number of members)	3.70
Education	
junior high school	2.5%
senior high school	31.7%
college degree	65.1%
Income	
<12,000 €	14.8%
12,000 – 20,000 €	28.5%
20,000 – 40,000 €	37.3%
40,000 – 75,000 €	13%
75,000 – 100,000 €	4.2%
> 100,000 €	2.1%
Frequency of consumption	
More then once per day	5.6%
Every day	60.2%
More than once per week	28.2%
Once per week	4.9%
Do not consume	0.4%
Purchase Channels	
Grocery stores	5.6%
Supermarkets	75%
Big GDO chains	11.6%
Discount supermarkets	4.9%
Small and specialized food stores	2.1%
Brand loyalty (towards one brand)	56%

The sample is composed on average by a majority of females (56.8%), of 36 years old, predominantly non-single and employed in the public or private sector. Education is an important aspect of the sample, since the 65.1% of respondents have a college degree. Income of respondents mostly ranges between less than 12.000 €/year and 40.000 €/year (almost 80% of the sample), while 37.3% declare to earn between 20.000 and 40.000 €/year. High level of education is also a dominant characteristic in the sample (65.1% of respondents have bachelor degree). About frequency of durum wheat pasta consumptions, more than half of respondents (60.1%) declare to consume it every day. Only a trivial percentage of the sample (0.3%) do not consume pasta at all. About the most favourite shopping habits, consumers buy durum wheat pasta (8 times over 10) predominantly at supermarkets (75% of respondents), GDO chains (11.6%), discount markets (4.9%). Only 2.1% percent of the sample prefer to buy pasta in small specialized stores.

Consumers stated preference for pasta

Hypothetical choices in market simulations were preceded by interviews of real consumers about their perception of quality of pasta. On purpose, respondents were asked to give a score on a scale going from 1 to 7 to indicate how of each attribute affects their decision to buy a pasta product. As showed in table 3, participants declared to be affected by both extrinsic and intrinsic attributes of pasta when buying pasta products. Specifically, brand and resistance to overcooking are considered the most important attributes with respectively 78.5% and 75.6% of the total score. Origin of the raw materials, colour of pasta and proteins content follow in the rank of attributes with respectively 58.4%, 58.4% and 57.9%. Packaging and price are considered as important as other extrinsic attributes such as brand (55.4% and 53.0% of the total score).

Table 3. Attributes importance as declared by respondents

Attribute	Importance (score % out of the total score)
Brand	78.5
Overcooking resistance	75.6
Origin of raw materials	58.4
Colour	58.4
Proteins content	57.9
Traditional varieties	56.6
Packaging	55.4
Price	53.0
Bronze drawing	49.5
Drying process (low temperature)	44.6

Traditional varieties of grains is settled only sixth in the ranking with 56% of the score. Less importance is given to attributes and characteristic of the industry production process. With regards to attitude towards traditional food, 49% of the sample associated autochthons/regional varieties of durum wheat to the term "tradition", 30.3% declare to

recall concept of authenticity and genuineness; only 6.4% link autochthons/regional varieties with environment; almost 3% with innovation and health; and 9% associate it with others. 43% of the sample declare that raw materials origin is considered a key element when choosing a pack pasta on the shelf and 50% of them consider themselves loyal to some specific brand. When analysing the respondents intention to buy specific grain varieties, the Svevo durum wheat appears the most popular one (39%), followed by Senatore Cappelli (25%), Aureo (23%), Core (7%) and Saragolla Lucana (4%).

Consumers preferences after choice experiments

Using choice-based conjoint (CBC), we could analyze the data by counting the number of times an attribute level was chosen relative to the number of times it was available for choice. The comparison between weights of different factors is expressed as a percentage. The results of the CBCA are expressed in terms of utility values (table 4). The utility values are expressed as numerical positive or negative values, indicating levels of utility or disutility for the consumers.

Table 4 - Attribute importance and utility part-worths

Attribute	Importance	Level	UTILITY VALUE (-)	UTILITY VALUE (+)
Origin of the wheat	32%	International	-0.77	
		Italian		0.52
		Authoctonous/ Regional		0.24
Color	21%	Yellow		0.16
		Pale yellow		0.18
		White	-0.34	
Packaging	10%	Ecologic		0.10
		Attractive	-0.15	
		Smart		0.05
Cooking Time	10%	Low	-0.13	
		Medium		0.12
		High		0.00
		Local Brand		0.10
Brand	7%	Industrial brand	-0.02	
		Any brand	-0.08	
Price	22%	0.90 €/500 gr.		0.36
		1.40 €/500 gr.	-0.11	
		2.90 €/500 gr.	-0.25	

As indicated in table 4, the experiment revealed unexpected results about utility part-worths when compared with consumers perceptions previously declared. Conjoint utilities or part-worths are scaled to an arbitrary additive constant within each attribute and are interval

data. The methodological technique is a limit in the outcomes interpretations, since a negative partial utility does not necessarily mean that a particular level is not accepted by consumers, but only that consumers are better off choosing other alternatives.

Going to results, nevertheless pasta is a traditional food of the Italian diet and experience attributes were expected to be more significant respect to others (Cavallo et al., 2013), when simulating a purchasing process through Choice Experiments, consumers likely seem to choose products characterized by credence attributes such as the origin of the wheat, even willing to pay a premium price. In terms of trade offs between attributes the origin of the raw materials is the first attribute strongly affecting the choice (32%), followed by price (22%) and colour (21%). About the core attribute of the analysis (origin of raw materials), when facing with real choices, consumers behaviour suggest an increasing of utility associated to alternatives characterized by national origin of grains, compared to regional one. International origin of grains more then others disregard consumers quality expectations.

Results on price suggest that although pasta is a product characterized by maturity stage in its life cycle, it its market does not highlight evident characteristic of product differentiation and price differentiation, consumers perceive price as a key attribute in the choice and small variation in price suggest moderate changes in utility. Packaging and time of cooking set at (10%) in terms of importance, followed by brand (7%). Utility decreases with price increasing, with decreasing of yellow index of pasta. Moreover, consumers reveal positive utility in case of medium time of cooking (high time of cooking reveal neutral level of utility), ecologic and smart packaging and local brand.

Conclusive considerations

The aim of the study was to reveal whether and how particular attributes of pasta may influence consumers in their choice decision making. Mainly focusing on consumers perception of quality of the raw materials, we attempted to measure the utility associated by consumers to autochthonous/ancient varieties of grain recently reintroduced by local growers and particularly suitable to production of high quality durum wheat pasta for their high protein content. Given the environmental and social value associated to the spread of ancient varieties of durum wheat, pasta producers perceived the economic value attached by consumers to local traditional food and opportunity to develop companies' differentiation strategies on highly competitive and demanding markets. The study highlighted some interesting information about Italian pasta consumers. The market of durum wheat pasta seems to be very receptive respect to new product. Comparing information obtained from stated preferences of consumers to revealed preference of choice experiments, it was possible to disclose interesting findings. The study revealed that consumers associate tradition to native varieties of durum wheat and recognize traditional pasta made from native varieties worth of higher economic value. Nevertheless, the environmental and healthy aspect are still not completely recognized. Moreover, aspects related to presentation of the products, such as (i.e. colour, packaging) still having great influence on consumers' choices, bear lower level of utility if compared to aspect related to quality control (i.e. origin if the

semolina, protein content). Although the market of pasta is strongly affected by promotional aggressive strategies, low level of product innovation and low level of loyalty towards specific brands, consumers demonstrate greater attention to price attribute both in stated preferences and choice experiments. Moreover, conversely to expectations, the survey revealed how consumers still remain loyal to their favourite brand but are willing to try new brand and are more and more interested to local traditional product. Experience attributes still play a key role in the choice of pasta as confirmed by the survey. The study reveals that consumers appears informed about qualitative characteristics of pasta, associating intrinsic features such as yellow index or higher time of cooking with increasing level of personal utility. Convenience attributes such as ecologic or smart packaging as well are mostly appreciated by consumers. The origin of the raw materials and the use of grain quality selected by the local tradition of production areas particularly suited, experience overall general consensus of consumers. According to these considerations, companies communication strategies, and actions of product differentiation from a strictly quality perspective, are strongly recommended to compete in terms of alternatives to price/quality on the market. Following research steps could try to reveal if different clusters of consumers show different willingness to pay for a pack of pasta made from ancient durum wheat varieties, in such way to justify companies' substantial investment in product/process innovation and advertising.

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