



Exploring organic consumer preferences for dried pasta

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Abstract

Dried pasta is depicted as the most traditional and popular Italian food culture. Italy has the highest per capita pasta consumption worldwide, but lifestyle changes define new habits and trends in consuming this traditional Italian food. The present study aims to explore organic consumers' knowledge, attitudes and preferences for dried pasta and, specifically, the relevance of organic and "ancient" durum wheat varieties. Results show limited knowledge of consumers about dried pasta characteristics and the relevance of extrinsic cues, especially those related to expected taste and local origin. Therefore, the most relevant claims for improving the communication strategy of dried pasta are identified. Companies should meet consumers' preferences by increasing investments in the innovation of this staple food with a focus on improving production processes and packaging design with more effective front-of-pack communication. The findings provide insights into the pasta market, which may help organic companies to enter this new market and make their products more appealing to consumers.

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Introduction

The Mediterranean diet, with all its diversity, is the result of shared experiences that strictly belonged to “*a particular environment*” and to “*a geographical region of multiple facets and rich history*” (Altomare *et al.*, 2013; Renna *et al.*, 2015). This traditional diet is widely appreciated for the intake of several healthy nutrients such as fibres, antioxidants and high-quality fats (Renna *et al.*, 2015). Several health benefits are attributed to the Mediterranean diet, such as its ability to prevent specific pathologies like coronary heart disease (Keys, 1980; Renna *et al.*, 2015). For this reason, this diet is associated not only with a healthy eating pattern but also with a way of living that helped to shape the cultural basis of eating of the Mediterranean people.

Many foods play a relevant role in the Mediterranean diet; however, pasta is one of the most popular and appreciated, especially in Italy (Altamore *et al.*, 2017, 2018; Cacchiarelli & Sorrentino, 2016). Pasta plays a vital role in the Italian culinary tradition (Cacchiarelli & Sorrentino, 2016). Italy is the world’s leading pasta producer (Altamore *et al.*, 2020) and the first exporter, with global exports reaching 30% in 2020 (+18.2% compared to 2019) (ISMEA, 2021; World’s Top Exports, 2020). Also, pasta consumption in Italy is the highest, with 23.1 kg per capita per year (IPO International Pasta Organization, 2020). The recent Covid-19 pandemic has contributed to increased home cooking, especially during lockdowns, boosting pasta consumption in 2020 with a growth of +8,9% compared to 2019 (ISMEA, 2021). Specifically, Italian consumers increased the purchase of durum wheat pasta of Italian origin (e.g. pasta products with “100% Italiana” label) (ISMEA, 2020).

Despite this recent temporary boom, mostly related to the pandemic restrictions that have forced Italian consumers to eat at home, consumption in Italy has decreased annually since 2016 (Altamore *et al.*, 2018). New trends and other emerging drivers have transformed consumer behaviour, preferences and habits (Altamore *et al.*, 2020; Rabadán *et al.*, 2021; Ringquist *et al.*, 2016). The reduced pasta consumption may be associated with changes in Italians’ habits toward other diets perceived as “healthier” and based on a lower intake of carbohydrates (Altamore *et al.*, 2018). Also, mass media blackened dietary carbohydrates over the last decade, spreading consumers’ negative perceptions (Marinangeli *et al.*, 2019). Other factors, such as the globalisation of food production and consumption, the use of novel ingredients from different culinary cultures and the lack of time to eat and cook at home, have oriented consumers to reduce the quantity of pasta they consume every day (Foster *et al.*, 2020; Seidemann *et al.*, 2018).

At the same time, the reduced pasta consumption was partially balanced by a growing demand for high-quality foods that consumers recognise to

have a higher economic value (Altamore *et al.*, 2017, 2020; Contò *et al.*, 2016). Recently, food experts' guidelines and health policies contributed to the spread of food products with a higher intake of fibre and nutrients grains (e.g., whole grain pasta) (Škrobot *et al.*, 2022). Besides, the broader availability of high-quality foods and effective advertising messages has made pasta with “ancient” and local wheat varieties fashionable (e.g., Saragolla, Timilia, Graziella Ra and other turanicum types). In spite of this increase, wholemeal consumption, spelt, turanicum pasta and alike are still a niche (Altamore *et al.*, 2020; Defrancesco *et al.*, 2017).

Very few studies investigated consumers' preferences and attitudes towards the consumption of pasta (Aghaei & Bonyadi Naeni, 2018; Altamore *et al.*, 2017, 2020; Dean *et al.*, 2007; Defrancesco *et al.*, 2017; Di Monaco *et al.*, 2004; Foster *et al.*, 2020; Sajdakowska *et al.*, 2021; Shepherd *et al.*, 2012; Sogari *et al.*, 2019) as well as sensory liking (Altamore *et al.*, 2017, 2018; Di Monaco *et al.*, 2004; Magalis *et al.*, 2016).

Arvola *et al.* (2007) found that Italian consumers did not perceive whole grains differently from refined grains. According to the literature, sensory attributes drive consumers' hedonic appreciation and food choices, and pasta is no exception (De Pelsmaeker *et al.*, 2017; Grunert, 2003; Mascarello *et al.*, 2015). Sensory characteristics are highly related to Italian consumers' familiarity with this staple food (Altamore *et al.*, 2020). However, in some cases, the relevance of sensory liking in the food choice is reinforced by the fact that consumers are unaware of any specific knowledge about health benefits, contents and production methods of pasta, bread and others (Altamore *et al.*, 2017; Magalis *et al.*, 2016; Shepherd *et al.*, 2012; Sogari *et al.*, 2019). Shepherd *et al.* (2012) found that compared to Italian consumers, Finnish consumers were more conscious of the differences between the benefits of consuming refined grain and whole grain products. Nevertheless, the awareness of health benefits is insufficient for a radical behaviour change.

Previous studies showed that providing more precise information and claims centred on health benefits will increase the willingness to adopt and pay a price premium for high-quality products (Altamore *et al.*, 2017; Dolgoplova & Teuber, 2018; Mialon *et al.*, 2002). Sogari *et al.* (2019) who investigated the effect of different claims, found that promoting whole grain pasta with healthy messages increased the choice probability for this kind of good. Notably, the type of information to be used should specifically target the different types of consumers. For example, communicating health benefits “*in an effective and easy-to-read way*” is better in terms of efficacy compared to the more “*scientific*” forms (Sogari *et al.*, 2019).

Consumers' behaviour is also affected by packaging innovations because pasta, like other cereals, is a stable and mature product that consumers usually purchase using their favourite brands as a reference (Garber *et al.*,

2000). Contò *et al.* (2016) consistently found that brand name is considered the most relevant attribute. Also, Di Monaco *et al.* (2004) showed that, when tasting different pasta samples, providing information like the brand name affects the linking score of the pasta. Analysis of variance applied to blind conditions showed that consumers tend to assign similar sensory characteristics to each pasta sample. In contrast, during the informed liking, with the brand name, consumers were able to discern among the samples increasing differences among them. However, key elements such as colour and packaging can add value to this traditional product (Contò *et al.*, 2016). Previous studies stated consumers prefer ecological, recyclable and smart packaging (Altamore *et al.*, 2020; Contò *et al.*, 2016). Garber *et al.* (2020) found that, in the case of spaghetti, new packaging whose colour is perceived as dissimilar to the original package may attract the consumer's attention. However, only when the new package is consistent with the brand's equity and original positioning. Finally, consumers preferred transparent packages to assess the pasta's characteristics and colour (Di Monaco *et al.*, 2004).

While only a few studies have investigated consumers' preferences towards pasta consumption (Aghaei & Bonyadi Naeini, 2018; Altamore *et al.*, 2017, 2020; Dean *et al.*, 2007; Defrancesco *et al.*, 2017; Di Monaco *et al.*, 2004; Foster *et al.*, 2020; Sajdakowska *et al.*, 2021; Shepherd *et al.*, 2012; Sogari *et al.*, 2019), even fewer studies have focused on consumers' preferences towards pasta made of "ancient" durum wheat varieties (Contò *et al.*, 2016; Teuber *et al.*, 2016; Wendin *et al.*, 2020). Contò *et al.* (2016) revealed that consumers appeared interested in pasta made with "ancient" varieties. Another study on heritage cereals confirmed that the "ancient" claim would likely positively impact consumers' food choices (Wendin *et al.*, 2020). The positive perception towards "ancient" wheat varieties can be associated with consumers' belief that those varieties, similar to organic food products, are healthier and more environmentally sustainable than other conventional varieties (Teuber *et al.*, 2016). Despite clear positive attitudes towards "ancient" wheat varieties, which emerged from those studies (Contò *et al.*, 2016; Teuber *et al.*, 2016; Wendin *et al.*, 2020), none focussed on organic consumers. Therefore, this study will address the research gap regarding organic consumers' knowledge of pasta attributes and "ancient" grains and determine the most influential attributes to pasta purchases.

The aim of the present study is to investigate organic consumers' knowledge, attitudes and preferences for dried pasta. In order to answer the aim, four research questions were formulated:

RQ1. What are organic consumers' knowledge, attitudes and preferences towards dried pasta?

RQ2. What product attributes do organic consumers associate with "luxury" or "exclusive" dried pasta?

RQ3. Which are the most relevant pasta attributes for organic consumers' choice?

RQ4. How relevant is the attribute “ancient grains” for organic consumers' when choosing among different dried pasta products?

The focus on pasta made with organic and “ancient” durum wheat varieties will contribute to the current literature by adding new insights and knowledge of a niche market that has been so far neglected in the previous research at national and international levels. Moreover, the results of the study may help companies to enter this new market and how to select marketing claims to make this pasta type more appealing to consumers.

1. Materials and methods

The present study comprises two methodologies: focus groups (FGs) and a quantitative survey. The purpose of a focus group is to explore in depth the phenomenon of a research topic (Krueger, 1994; McQuarrie, 1989). FGs allow for revealing experiences and opinions of participants that would not be accessible without group interaction (Morgan, 1997). As with other qualitative research methods, focus groups are useful for exploratory research to gather in-depth insight into any research topic from a small group of participants (Krueger, 1998). A small number of participants is sufficient to analyse the research topic deeply. The literature shows that a good FG is between eight to twelve participants (Robson, 2002). Also, Krueger (1994) states that five to seven participants could be enough to explore the range of opinions on a topic. In this case, consumers' knowledge, attitudes, preferences (RQ1) and perception of organic dried pasta as a “luxury” or “exclusive” food product (RQ2) were explored by focus groups (McQuarrie, 1989).

The importance of conducting a preliminary qualitative study is that assessing a general understanding of the topic is necessary to set a more quantitative analysis. While FGs provide an in-depth view of a topic, their results are not quantifiable and can not be generalisable to wider groups of the population (Bryman, 2012). For this reason, the FGs were integrated with a quantitative study. Based on the results of the FGs and previous literature, a survey including a pairwise ranking task was developed. The aim was to identify the most relevant attributes in the consumer choice of organic dried pasta (RQ3). Both FGs and a survey were used to acknowledge if the attribute “ancient grains” can influence the purchase of dried pasta (RQ4).

Qualitative research: Focus Groups

Two FGs were conducted: the first focus group was led in January 2020 (FG1), while the second was in November 2020 (FG2). Each focus group was recorded. The first focus group (FG1) was conducted to identify relevant drivers influencing pasta consumption and to explore consumers' knowledge and perceptions of pasta made from "ancient grains" (RQ1). The moderator started presenting herself and introducing the purpose of the discussion and the principal customary rules. Then, the discussion continued exploring general purchasing and consumption habits and participants' experiences with the pasta product, e.g., frequency and circumstances of consumption, home cooking, and out-of-home consumption. Next, the moderator asked participants to describe which quality attributes define "high-quality" pasta. In the second part, the discussion shifted to the type of cereal used to produce pasta. Both preferences and experiences towards different types of pasta were explored. Several probing questions were also used to identify perceived differences between traditional pasta and pasta made from "ancient" grains like the "Senatore Cappelli" wheat variety, one of the most known. Then, the discussion continued exploring the other relevant attributes that may influence pasta purchase, like the brand name, type of production process, price, and packaging. FG1 ended by asking participants to imagine their "ideal" pasta to grasp their broad vision.

The second focus group (FG2) was conducted online due to the pandemic situation in 2020. The aim was to understand consumers' attitudes toward the idea of "luxury" and "exclusiveness" applied to the characteristics of dried pasta (RQ2). Like the first FG, FG2 started with an introductory section designed to create a pleasant and workable atmosphere among the participants. The discussion began by asking participants to make examples of luxury and exclusive foods. Then, the discussion continued exploring distinctive elements that can give foodstuffs the dimension of luxury and exclusiveness. The second part moved the attention to the pasta product. The moderator stimulated the discussion to understand whether participants can associate the idea of "luxury" with the pasta product, identifying the more critical distinguishing attributes. Then, participants' knowledge and preferences about cereals used to make pasta were explored to address whether the characteristics of the cereal (e.g., variety, origin, production, certification) are used as a proxy for quality and how they may influence consumer choices. Finally, packaging characteristics were discussed to determine which elements attract their attention most and define which packaging attribute can be associated with the idea of "exclusiveness".

Both FGs were conducted by trained moderators and lasted 60-90 minutes each. A total of 17 consumers participated in the focus group discussions. All

selected participants were responsible for food purchases in their household. Consumers were recruited in similar proportions according to organic food purchasing habits (regular and occasional). Consumers whose organic food shopping represents more than 50% of their household groceries were considered regular organic consumers (Mandolesi *et al.*, 2022). Occasional organic consumers were all the others, excluding those who never buy organic and neither are interested in it. For each focus group, both women and men were recruited. All of the participants were between 18 and 70 years old. Participants were recruited during grocery shopping at an organic food shop and via snowballing. The description of the participant sample of both FGs is reported in Table 1.

Table 1 - Focus group sample characteristics

	Date	N. of Participants	Gender		Age		Type of consumer	
			M	F	18-45	46-70	Occ.	Reg.
FG1	10.01.2020	11	3	8	1	10	5	6
FG2	12.11.2020	6	3	3	2	4	4	2

Quantitative research: Incomplete Ordinal Information Choice Model (PAPRIKA)

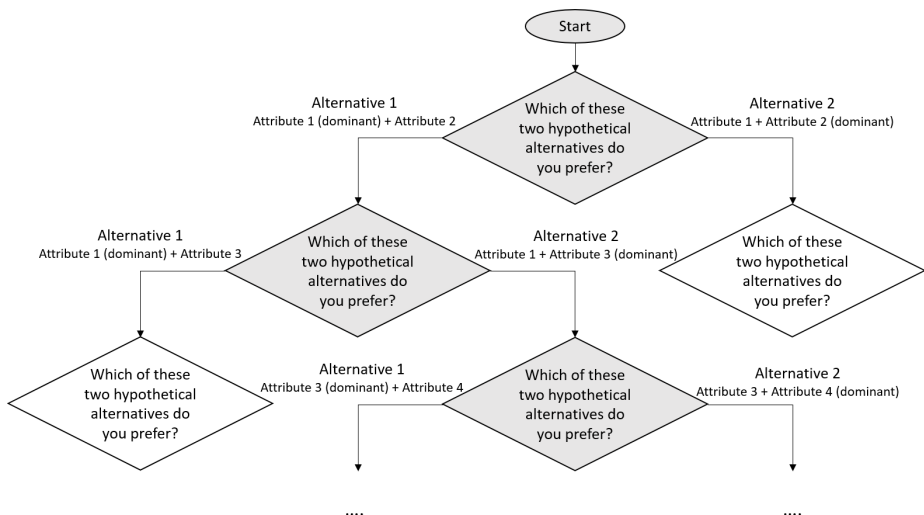
Conjoint analysis was used to identify the most relevant attributes in the consumer choice of organic dried pasta (RQ3). The theoretical foundations of the conjoint analysis, based on Lancaster's (1966) consumer theory and the theory of random utility (McFadden, 1974), suggest that the utilities of goods can be broken down into separate utilities by their attributes. Hence, as people are rational, they will choose the alternative that maximises their utility according to their point of view.

In Italy, pasta products and their packaging incorporate many aspects which affect consumers' decisions (Altamore *et al.*, 2020; Defrancesco *et al.*, 2017). However, consumers at the time of purchase, given cognitive and time limitations, can only evaluate some of these characteristics (Ares *et al.*, 2013; Milosavljevic & Cerf, 2008). For this reason, methods based on incomplete ordinal information, such as Pairwise Trade-off Analysis (Johnson, 1976) or Adaptive Conjoint Analysis (Green *et al.*, 2001), can be instrumental in determining the relative importance of the factors involved in the consumers'

complex decisions. Identifying such factors is critical for more detailed future studies.

The present study used the Potentially All Pairwise Rankings of all possible Alternatives (PAPRIKA) method (Hansen & Ombler, 2008) to construct the incomplete ordinal information choice model through the 1000Minds online software platform (www.1000minds.com). For this method, respondents' preferences are defined by asking questions involving a series of trade-offs between undominated pairs of alternatives. During the survey, each participant was presented with pairs of hypothetical alternatives characterised by two of the attributes usually displayed on pasta packages. Each pair of the undominated alternatives showed the same attributes but different levels (Figure 1). One attribute is said to be dominant (higher level) on one alternative, while the second is said to be dominant on the second alternative. For example, the following two attributes were shown in one of the pairs: the “Bronze drawn” and the “Short supply chain: from the producer to the consumer”. Each of these attributes has two levels: present (yes) or absent (no). In the first alternative, the “Short supply chain: from the producer to the consumer ” was dominant (present), while the “Bronze drawn” attribute was dominant (present) only in the second alternative. Participants were asked to select from each pair their preferred alternative or express indifference between the two options.

Figure 1 - Process flow chart for the Potentially All Pairwise Rankings of all possible Alternatives (PAPRIKA) method



This process was repeated several times, presenting different combinations of attributes each time (Hansen & Ombler, 2008). The principle was that by repeatedly asking participants to select an alternative from each pair of options, enough information about their pasta preferences would be produced to accurately rank all the attributes (Lieberman *et al.*, 2019). By this “adaptive” ranking method, each time a choice is made, the algorithm “adapts” or “learns” by formulating a new question based on all the previous choices. Constraints were imposed a priori to exclude impossible combinations of attributes (for example, the local origin only appeared with local brands).

Whenever the participant made a choice, the PAPRIKA algorithm instantaneously identified all other hypothetical aspects that could be coupled based on the principles of transitivity among the available choices. For this reason, the number of questions presented to each subject varied according to previous choices. In this study, an average of sixty-three questions were presented to the participants.

As respondents’ rankings became consistent, a complete overall ranking of alternatives was defined through data obtained via linear programming (Hansen & Ombler, 2008). In other words, the PAPRIKA method simplified the decision-making process while giving each attribute a relative importance weight.

The attributes and respective levels were established based on existing literature (Altamore *et al.*, 2020; Contò *et al.*, 2016), experts’ judgement, an analysis of the labels available in the pasta products in the supermarket and the results of the focus groups. The selected attributes and their levels are presented in Table 2.

Respondents were informed that the pasta was always organic, so this attribute does not appear in the list. Those attributes related to product claims had two levels, in which the reference category was set as the absence of the specific attribute. For the attributes with more than two levels, the reference category was set to the attribute’s best-known or most familiar level. However, for the “Tagline” attribute, the reference category was the absence of any tagline.

Survey design

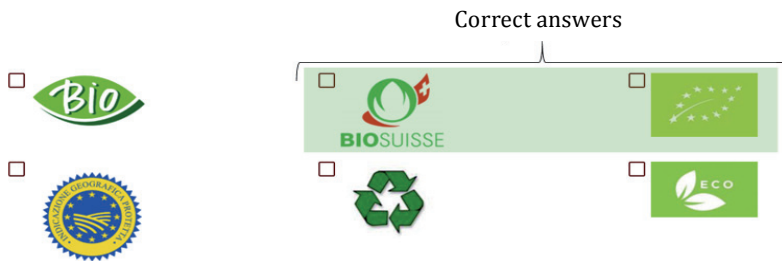
The survey was led in Italy between January and February 2021 using the Qualtrics and 1000minds platforms. The first part of the survey was designed in Qualtrics and included sociodemographic questions, organic products’ usage and organic certification recognition. The second part had the PAPRIKA rankings task developed on the 1000minds platform.

Table 2 - PAPRIKA attributes and levels

Attributes	Levels
Origin	“100% Italian grain” (reference) “100% grain from Le Marche region” “100% grain from the hills of Urbino”
Grain	“Durum Wheat” (reference) “Ancient Grains” “Senatore Cappelli” “Turanicum Graziella Ra”
Brand	“Alce Nero” (reference) “Girolomoni” “Montebello”
Tagline	– (reference) “Dignity for the Earth” “Rural Bio”
“Produced with Montebello spring water”	No (reference) Yes
Always “al dente”	No (reference) Yes
“From the field to the table: 100% from our supply chain”	No (reference) Yes
“Bronze drawn”	No (reference) Yes
“Excellent and unique flavour”	No (reference) Yes
“Fat-free”	No (reference) Yes
“Short supply chain: from the producer to the consumer”	No (reference) Yes
“Limited edition”	No (reference) Yes
“Slow Food”	No (reference) Yes
“Source of fibre”	No (reference) Yes
“Slow drying”	No (reference) Yes
“Low glutenin content”	No (reference) Yes

The sociodemographic questions included age, gender, occupation and province of residence. Uses of organic products, purchase frequency and place of purchase data were also collected. The recognition of organic certification was evaluated, simultaneously showing six logos (only two organic) in randomised order. The subjects were asked to select the logo or logos legally accepted in the EU for organic food products (Figure 2).

Figure 2 - Logos presented to participants



Survey sample

302 respondents (diverse from the participants in the FGs) were recruited through the Amazon “M-Turk” platform among those over 18 years old and registered in Italy. Eligible respondents, as for the FGs, were partially or fully responsible for the household’s food purchasing, regular or occasional organic consumers and bought certified organic pasta at least once a week. Respondents who worked or had a close family member working in agriculture, catering, market research or any other food-related industry were excluded as they might have more knowledge than an average consumer. In the end, after screening out uneligible respondents and those who did not recognise the organic logo, the data consisted of 73 responses.

2. Results

FG results

To preserve anonymity and privacy, FG participants will be identified by a code “FGNumber, ParticipantNumber, Gender, Type”, where “Type” assumes the value “Reg” when referring to regular organic pasta consumers and “Occ” when referring to occasional.

Consumer preferences and trends for dried pasta

Results suggest that consumption habits of pasta have changed recently. FG participants declared that frequencies of consumption and portions had increasingly declined over the last years. The majority confirmed remaining loyal to their favourite brand and consuming pasta for special occasions with family and friends during the weekend. They mainly addressed this choice to the reduced time for lunch, preferring “smart” alternatives during the week. For this reason, pasta is not the first choice for out-of-home consumption during the lunch break. One participant affirmed: “*with my schedule at work, it is not possible (to cook or eat pasta)... however at the weekend, (pasta) is the main ingredient for lunch at least*” (FG1, P5, F, Reg). However, pasta remains the first choice in the case of families with a high number of members and children. One stated: “*I do not usually eat pasta... but when I am at home with my son, I cook pasta*” (FG1, P11, M, Reg).

Participants also declared consuming less pasta for health motivations. For example, a few participants affirmed not to consume pasta every day “*to control the glycaemic issue*” (FG1, P11, M, Reg) and “*to control weight*” (FG1, P9, F, Occ). Participants generally perceived that non-conventional pasta typologies (e.g., whole grain pasta) are healthier than the traditional durum wheat pasta. For this reason, they declared to consume less traditional pasta (e.g., durum wheat pasta), preferring other typologies like fresh pasta, legume pasta, spelt pasta and whole grain pasta.

Quality indicators for a “good” pasta

Participants indicated taste, origin, production methods (e.g., type of drying, quality of water) and health aspects as quality indicators. Most participants declared to prefer tasty, healthy and locally-produced pasta. Taste and sensory appeal are essential for many participants, representing the main drivers for pasta selection. The taste was also related to high-quality pasta that, after cooking, always remains “*al dente*” (FG1, P2, F, Reg; FG1, P7, M, Occ; FG1, P8, F, Reg).

Most participants declared to look to the origin of the grain and the processing place, preferring the “Italian” and “local” origin. They also preferred small local producers, as they perceived them to use local and Italian wheat compared to big conventional companies. They also believe that high nutritional quality and health benefits characterise local pasta. Despite some participants highlighting the importance of the organic certification as an indicator of a high-quality product, others believe that the origin of the grain and production methods are more relevant than the presence of the organic

certification: “... maybe for pasta, being organic is not so relevant. It is more the manufacturing industry, the origin of raw material” (FG1, P7, M, Occ).

Attitudes towards “ancient grains”

All participants showed a positive attitude towards “ancient” wheat varieties, which evoke the idea of a “*non-artificial*” and sometimes “*healthier*” option to standard durum wheat varieties.

Generally, most respondents showed limited knowledge of the term “ancient grains” (“grani antichi”, in Italian). However, some of them declared they had already consumed and tasted pasta made with “ancient” varieties like the “Senatore Cappelli” durum wheat (FG1, P3, F, Reg; FG1, P10, F, Occ; FG1, P11, M, Reg).

For all participants, a tasty experience is important, and they declared to be unwilling to sacrifice the pleasantness of taste. However, those who have tried alternative pasta used the term “*different*” to describe “ancient” wheat pasta taste, which was not necessarily associated with a tastier experience than traditional durum wheat pasta.

For participants, the main motive to consume pasta using “ancient grains” is linked to the perception of eating healthy food (FG1, P4, F, Reg; FG1, P10, F, Occ). However, the frequency of purchase and consumption is not high, mainly related to the curiosity to try something different.

Regarding price, for participants, “ancient” grain pasta is perceived as too expensive for the family budget (FG1, P1, F, Occ; FG1, P10, F, Occ).

Attitudes towards labels and packaging features

On the shelves, participants confirmed looking first at specific information reported on the pasta pack: origin, production methods (e.g., drying process) and organic certification. Only some participants claimed more precise indications about the supply chain for traceability and controls.

Regarding the packaging, participants agreed to prefer recyclable and compostable materials, generally those packs with less plastic (FG1, P4, F, Reg; FG1, P5, F Reg). Results confirmed that being more sustainable has an impact even on the food choice of participants.

Consumer perceptions of “exclusiveness” of a food product

Participants did not associate dried pasta with “luxury” and “exclusiveness”. Some of them affirmed: “*I do not associate pasta with a luxury concept*” (FG2, P1, M, Occ) and “*I think that pasta is for everyone*” (FG2, P4, M, Reg).

According to the participants' experience, very few food products can be considered "exclusive", like white truffles, certain wines (e.g., Sassicaia), and champagnes and oysters. For participants, "exclusive" foods are rarely consumed because they are scarce, costly, and sometimes unaffordable for many. Only the "artisanal" and "handmade" pasta could be associated with the concept of "exclusiveness". However, it is essential to note that for many, handmade pasta is linked with personal experiences and homemade fresh egg pasta (e.g., "tagliatelle", a handmade egg pasta typical of Italian cuisine), which is different from the dried type. Participants believed grain type is important when referring to "high-quality" pasta. For this reason, participants underlined that high-quality pasta must be "organic", "local", and produced with a "special type of grain".

Price also is another crucial factor. A high price reminds them of high quality. For example, most participants recognised the high value of the Kamut grain type in terms of nutritional content, and one participant stated: "the Kamut is excellent but also very expensive" (FG2, P5, M, Reg). Some participants also confirmed to be more willing to pay a price premium for purchasing pasta made locally by artisanal and trusted producers because they address a higher economic value to those products.

Generally, most participants related the idea of "luxury" mostly with objective features such as high price and scarcity of the product. However, for other participants, this concept can also be related to a personal dimension of pleasure: "(something) that you give to yourself for pleasure" (FG2, P3, F, Occ), "to be kind with yourself" (FG2, P1, M, Occ). Another participant highlighted the independence of food satisfaction from the product's price or uniqueness. She explained: "(the consumption of a product) must always be related to satisfaction... otherwise, it is not a luxury, it is just expensive... if I do not like red wines, I don't care drinking the Amarone (wine)" (FG2, P3, F, Occ).

Participants suggested using unique and more visible labels to communicate the idea of high-quality pasta, to provide information about quality, healthiness, sustainability and controls of raw materials and production processes. Good communication needs to be combined with "pleasant" and "special" packaging that could attract more consumers' eyes (FG2, P1, M, Occ).

Survey results

The average respondents were 34 years old, with a standard deviation of 11.2 years. Details are presented in Table 3.

Table 3 - Sociodemographic characteristics of the survey sample

	%		%
Gender		Regions (areas)	
Male	66%	Nord	50%
Female	34%	Center	20%
Age		South	17%
18-24	22%	Islands	13%
25-34	41%		
35-44	19%		
45-54	12%		
Over 55	5%		
Employment			
Employed	67%		
Unemployed	7%		
Student	25%		
Retired	1%		

Although most respondents declared themselves occasional organic consumers (89%), their frequency of consumption of organic foods varied according to the product type. Fruit and vegetables were almost always bought organic, while dairy products and bread were sometimes non-organic. Respondents purchase organic products mainly in supermarkets, specialised stores and online. Moreover, 82% of the participants recognised Europe's legally accepted organic logo for packaged food products.

Of the 73 participants, only 58 could correctly finalise the PAPRIKA ranking task. The remaining 15 subjects were excluded as their inconsistent responses indicated possible random choices and not taking the task seriously.

On average, each participant faced 63 (SD = 11.4) trade-offs in a range of 37 to 76 trade-offs. The most important attribute was the tagline (Table 4). Within the "Tagline" attribute, respondents preferred "Dignity of the Earth", to "Rural Bio", or no tagline at all. "Dignity of the Earth" contributed 57% of the tagline's 8.2% (i.e. 4.7%), and "Rural Bio" accounted for only 43% (i.e. 3.5% of the total for the "Tagline" attribute). Both taglines were preferred over the alternative of having no tagline at all.

The "Tagline" attribute was followed in importance by these five claims: "Short supply chain: from the producer to the consumer", "Bronze-drawn", "From the field to the table: 100% from our supply chain", "Excellent and unique flavour" and "Source of fibre". Although the claims provide different

Table 4 - Average part-worth utilities estimates and standard deviation

Attributes	Part-worth utilities	SD
Origin*	5.19	3.65
“100% wheat from Le Marche region”	2.36	2.30
“100% wheat from the hills of Urbino”	2.83	2.31
Grain**	6.30	4.18
“Ancient Grains”	3.29	2.78
“Senatore Cappelli”	1.69	2.15
“Turanicum Graziella Ra”	1.33	1.30
Brand***	4.24	2.93
“Girolomoni”	1.82	1.86
“Montebello”	2.41	1.95
Tagline****	8.21	3.04
“Dignity of the Earth”	4.64	2.24
“Rural Bio”	3.57	2.24
“Produced with Montebello spring water”	5.30	2.80
Always “ <i>al dente</i> ”	6.16	3.67
“From the field to the table: 100% from our supply chain”	7.50	2.23
“Bronze drawn”	7.59	2.99
“Excellent and unique flavour”	7.17	3.08
“Fat-free”	6.19	3.71
“Short supply chain: from the producer to the consumer”	7.86	2.91
“Limited edition”	3.56	2.54
“Slow Food”	6.55	3.40
“Source of fibre”	7.16	3.19
“Slow drying”	5.74	2.88
“Low glutenin content”	5.26	3.35

The reference categories are * 100% Italian wheat, ** Durum wheat, *** Alce Nero, **** No tagline.

information, it is worth noting that most of them are related to the production process. This result highlights organic consumers’ interest in the production processes and short supply chains directly managed by the producer company.

Looking at the variability (st. dev) of the claims, “Excellent and unique flavour” and “Source of fibre” are considered likewise relevant. Together with the “Bronze drawn” claim, all of these claims are associated with healthiness and good sensory experiences during pasta consumption. In general, results show that consumers’ preferences for organic pasta in Italy are highly diverse. Significant differences were found between genders. Males, more than females ($t(56) = 2.070$, $p = 0.043$), prefer the claim “Bronze drawn”. A 100% controlled supply chain is also significantly valued by consumers who correctly identified the EU organic certification logo than respondents who did not recognise the certification scheme ($t(56) = -2.252$, $p = 0.028$).

The grain type attribute, ranking eighth in importance, weighs 6.3%. Within this attribute, the “Ancient Grains” is favoured over other types of wheat (the “Senatore Cappelli” and the “Turanicum Graziella Ra”). Moreover, “Ancient Grains” ($F(3,54) = 3.0$, $p = 0.038$) were also significantly more preferred by the southern regions than by the northern ones ($p = 0.035$). All three grains were preferred over the generic “Durum wheat”.

The “Fat-free” claim also showed significant differences in terms of age ($F(3,54) = 3.9$, $p = 0.014$). Respondents under 25 perceive more utility from this attribute than respondents between 25 and 34 ($p = 0.016$) or over 45 ($p = 0.41$). Significant differences exist among regions concerning using the Montebello spring water ($F(3,54) = 6.2$, $p = 0.001$). The centre ($p = 0.001$) and the islands ($p = 0.017$) regions significantly appreciate more this water source than the southern regions. Nevertheless, this was among the less important attributes.

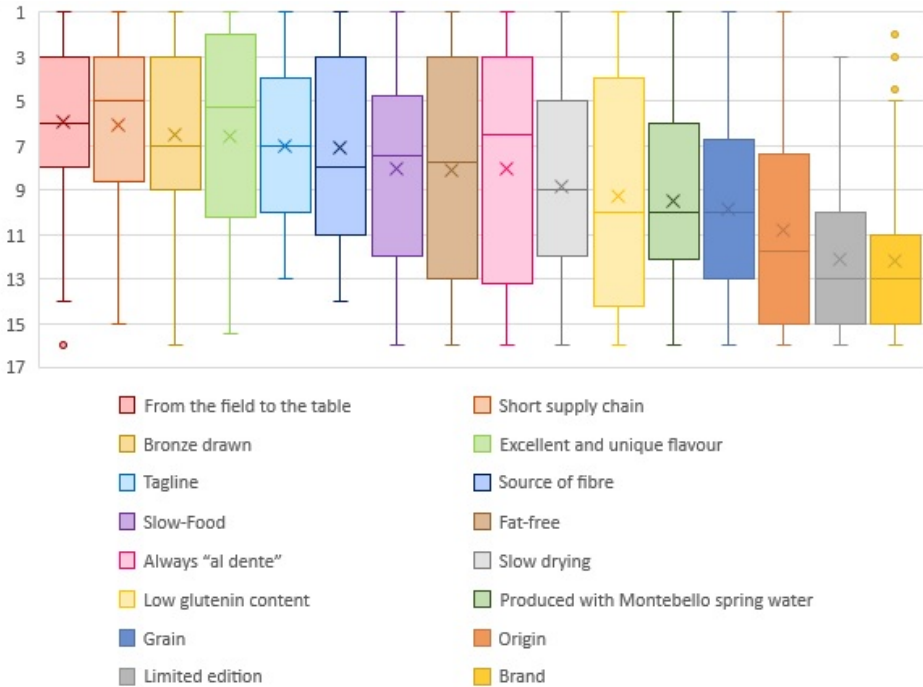
The “100% grain from hills of Urbino”, within the origin attributes, is the preferred wheat type, followed by “100% grain from Marche region”. Thus, wheat sourced from the Urbino hills is preferred over grain from the Marche region or Italy.

The “Montebello” brand is preferred, followed by the “Girolomoni” brand. Both brands are preferred over the “Alce Nero” brand, considered the reference category. Nevertheless, the high variability of preferences for the “Girolomoni” brand makes the difference from the “Alce Nero” brand not significant.

A mean of the individual rankings for each attribute – from the preferred attribute (ranking = 1) to the least preferred (ranking = 16) – was computed (as we did for the utilities). Detailed results are presented in the box plot in Figure 3. The attribute with the smallest average range has the largest range of average utilities. Consequently, the highest ranking corresponds to 5.9 (“From the field to the table: 100% from our supply chain”, closely followed by “Short supply chain: from the producer to the consumer”). Being the mean rank so far from 1 (most preferred attribute) means a wide variability among the most preferred attributes among consumers. These

findings match the previous results as these attributes are among the top five parts-worth utilities.

Figure 3 - Box-plot for the ranking of each attribute



The “x” indicates the mean of the ranking of each attribute.

Furthermore, the brand name and the “Limited edition” claim are the less important attributes in ranking and part-worth utilities. Such results indicate that if a product is of quality, it is rewarded with a purchase beyond the brand’s fame. Moreover, the concept of “Limited edition” was less chosen, implying that it is difficult for consumers to associate the idea of exclusivity with the pasta product.

3. Discussion

The FG results provide evidence that there is still limited knowledge about dried pasta ingredients and types of cereals. Although FG participants show a positive attitude towards “ancient grains”, similar to the previous study,

the majority have a vague idea of what the term “ancient” refers to (Contò *et al.*, 2016; Teuber *et al.*, 2016; Wendin *et al.*, 2020). The FG findings show that pasta, no longer considered the primary option for an Italian lunch, is consumed less than in the past and even less if made with “ancient” wheat varieties. Pasta is a meal for special occasions, during the weekend, with family and friends (Altamore *et al.*, 2018, 2020).

Both FGs and PAPRIKA results indicate that taste significantly weighs on the final decision to buy a pasta product, which aligns with a previous study (Altamore *et al.*, 2020a). More specifically, the survey results show that among the most relevant attributes are those connected with the sensory experience (“Bronze drawn”, “Excellent and unique flavour”). Given that the sensory dimension is essential and is the determining driver for repurchase (Grunert, 2003), a small taste change in staple food like pasta could hurdle the increase in consumption (Altamore *et al.*, 2020; De Pelsmaeker *et al.*, 2017; Defrancesco *et al.*, 2017; Grunert, 2003). Therefore, wholemeal pasta or pasta made with “ancient grains” may not be for all.

Therefore, the results indicate that to incentivise the purchase, choosing the most relevant pre-consumption attributes would be essential. The survey results show that the marketing attributes of a pasta product that have the largest relevance are: the “Tagline”, the “Short supply chain: from the producer to the consumer” and “From the field to the table: 100% from our supply chain” claims).

The survey confirms that information about the origin of ingredients (water and wheat) is relevant for the purchase (Altamore *et al.*, 2018; Cappelli & Cini, 2021). The origin should be Italian, and better if it is local. In line with the results of previous studies, the local provenance of the grain should refer to a specific and circumscribed area of origin (e.g., grain from the hills of Urbino), not just to the term “local products” generically proposed (Hu *et al.*, 2012; Meyerding *et al.*, 2019). Consumers associate craftsmanship and the “local” production with high quality, essential characteristics for an “exclusive” pasta.

Although consumers prefer to buy “high-quality” pasta brands (among the most mentioned: i.e., Mancini, Gragnano, la Cooperativa Terra e il Cielo, Ecor di Natura Sì, Girolomoni), they do not link dried pasta with the idea of “luxury” and “exclusiveness”. According to the FG results, for participants, a “luxury” food product should be “artisanal” and “handmade” but also very expensive and difficult to find, which is far from how pasta is usually perceived. Consequently, the “Limited edition” claim, tested with the survey, also has a low weight in the PAPRIKA analysis.

Purchase local food products is relevant (Contò *et al.*, 2016). The results show how consumers would like to purchase and consume local, traditionally produced and high-quality pasta made from “ancient” grain varieties, either

spelt or “ancient” wheat varieties. Although consumers perceive the price of “ancient” grain pasta as too high (Arvola *et al.*, 2007), most of them declare to be willing to pay a price premium for high-quality products with the required attributes (Altamore *et al.*, 2017; Dolgoplova & Teuber, 2018; Hartmann *et al.*, 2018; Mialon *et al.*, 2002). However, the fact that respondents assign a “different” taste to pasta made with “ancient” grains may explain why there is resistance to buying it, making “ancient” grain pasta a niche segment (Altamore *et al.*, 2020). As discussed during the FGs, pasta made with “ancient” varieties is consumed for curiosity, to try something new, or as an unusual alternative (Altamore *et al.*, 2020; Contò *et al.*, 2016; Defrancesco *et al.*, 2017).

Generally, FG participants perceive “ancient” grains as healthier than traditional ones (Teuber *et al.*, 2016). The control of “*the glycaemic issue*” and “*weight*” are among the crucial aspects that emerge from FGs results, confirming the close attention that consumers pay to diets with a low intake of carbohydrates (Altamore *et al.*, 2018; Foster *et al.*, 2020). Indeed, the PAPRIKA analysis highlights that consumers under 25 value the “Fat-free” claim in pasta more than those between 35 and 45 years old. Similar to previous studies, the “ancient” adjective is perceived as something tied to tradition, “*artisanal*”, “*non-artificial*”, and “*less industrialised*” than conventional pasta (Contò *et al.*, 2016; Wendin *et al.*, 2020). The PAPRIKA analysis also confirms consumers’ preferences for alternative pasta typologies, showing that consumers prefer the “Ancient Grains” attribute over the generic “Durum Wheat” attribute. However, the part-worth and rank of this attribute are not very high. For these reasons, we can conclude that the attribute “ancient grain” may significantly influence the purchase of dried pasta.

Despite environmental aspects being less mentioned and less important than taste, origin and health aspects, the results indicate that organic pasta packs should be more sustainable, avoiding plastic use while being “recyclable” and “compostable” (Altamore *et al.*, 2020; Contò *et al.*, 2016). Organic consumers would prefer more information regarding the production process and short supply chain (Scalvedi & Saba, 2018; Wägeli & Hamm, 2016).

Although the brand name is still relevant in consumers’ food choices (Di Monaco *et al.*, 2004), the propensity is to choose organic pasta considering intrinsic and extrinsic characteristics (e.g., tagline, taste, origin and price). Among the credence attributes, the brand name is not very relevant for organic consumers and is surpassed by the tagline. In general, such results highlight the low brand equity of organic pasta producers.

Conclusions

The agri-food sector represents a strategic industry of the Italian economy, and dried pasta is of the most exported and appreciated products worldwide. Recently, the increased awareness of high-quality foods and health-consciousness significantly impacted consumers' preferences towards pasta. This aspect changed the pasta market, favouring the comparison of broader availability of organically grown wheat and grains. Despite the positive perception of organic pasta types, obtained with limited use of pesticides or chemicals compared to conventional ones, the study highlighted the general decrease in pasta consumption.

For organic consumers, pasta is no longer an everyday meal and is increasingly considered a weekend or special occasion food. This most likely depends on the change in work habits and health issues, mainly associated with the need to limit calorie intake for controlling weight or glycemic. Although pasta can be considered a medium-low glycemic index food compared to other cereal-based products (Bresciani *et al.*, 2022; Di Pede *et al.*, 2021). Such changes in health issues and the development of preferences for diets with a lower intake of carbohydrates are trends not only in the Italian market but also worldwide (Rabadán *et al.*, 2021; Ringquist *et al.*, 2016). The high amount of carbohydrates and sugar represents a global consumption barrier, which specific advancement of technological processes may limit to influence glycemic content.

Despite culinary traditions, innovation in pasta products is an important driver since if consumers cannot find the characteristics they want; they will shift their purchase to other foods or brands. This is true for consumers all around the world. As a result, pasta producers and manufacturing companies should meet changes in consumer preferences over time by increasing investments in the innovation of this staple food. Specifically, the pasta industry should focus on improving packaging design and online, in-store and front-of-pack communication for organic dried pasta. Aspects such as the naturalness of simple ingredients, sustainable packaging, origin and production processes of the product should be highlighted with transparent labels that can help consumers to respond to their current preferences (Astill *et al.*, 2019; Bresciani *et al.*, 2022).

Implementing claims in the pack that evoke good taste, good quality and, potentially, the healthiness of organic dried pasta could benefit the producer. For example, “Bronze drawn” evokes sensorial expectations related to the rough aspect of the pasta surface. The rough drawing results in a porous, opaque pasta, reminiscent of homemade pasta. The porosity and roughness of the surface make it the perfect pasta for retaining sauces, such as classic

tomato sauce. All claims related to taste authenticity appear relevant for marketing organic pasta and should be exploited to differentiate it from other quality pasta products. In this study, the focus was only on organic pasta. While it is well known that the consumer highly values the “organic” claim, the role of other attributes and claims is often underrated.

Overall, the results show that organic consumers have limited knowledge of their pasta purchases. They tend to give more importance to extrinsic cues (tagline, origin, and other label or pack information, especially those linked with expected taste) than ingredients and wheat varieties. Organic pasta brands are still relatively unknown and do not weigh much in driving organic consumer choice. This is a key opportunity for new and current organic pasta producers, who can differentiate their products through the abovementioned claims. Companies interested in entering this niche market might want to propose pasta produced through short supply chains to the consumer, with processes highlighting sensorial aspects and in sustainable packages.

On the other hand, policymakers have a two-fold role. First, from the consumer point of view, informative campaigns could be implemented to provide additional knowledge to consumers about the role of the diverse characteristics of pasta and their link to specific health and sustainability benefits. An informed consumer is more willing to accept a higher price for pasta products with desired characteristics, creating new opportunities for all organic companies along the supply chain and possibly increasing profits. Second, from the industry point of view, policymakers could potentially provide incentives (e.g., tax releases, simplified business procedures) to pasta companies (not only) that produce sustainably and transparently, while providing consumers with healthy and nutritious food products.

Further research is necessary to understand consumers’ preferences in the organic pasta market regarding price, promotion strategies and hedonic attributes through sensorial analysis and experiments, possibly developed in supermarkets or the purchasing place of the consumer.

Among the study’s limitations, the small participant sample for qualitative and quantitative analysis should be mentioned. However, the study’s exploratory nature did not aim to generalise the findings to a broader sample. Due to financial limitations, the study used MTurk to recruit Italian organic customers, which eventually are not so common on that platform. We conclude that MTurk is not a relevant platform to run extensive surveys when European, and specifically Italian, respondents are requested.

References

- Aghaei, S., & Bonyadi Naeini, A. (2018). Consumer attitudes toward new pasta products in Iran market: a qualitative and quantitative study. *Management Science Letters*, 8(2), 109-120. Doi: 10.5267/j.msl.2017.11.005.
- Altamore, L., Bacarella, S., Columba, P., Chironi, S., & Ingrassia, M. (2017). The Italian consumers' preferences for pasta: Does environment matter? *Chemical Engineering Transactions*, 58, 859-864. Doi: 10.3303/CET1758144.
- Altamore, L., Ingrassia, M., Chironi, S., Columba, P., Sortino, G., Vukadin, A., & Bacarella, S. (2018). Pasta experience: eating with the five senses-A pilot study. *AIMS Agriculture and Food*, 3(4), 493-520. Doi: 10.3934/agrfood.2018.4.493.
- Altamore, L., Ingrassia, M., Columba, P., Chironi, S., & Bacarella, S. (2020). Italian consumers' preferences for pasta and consumption trends: tradition or innovation? *Journal of International Food & Agribusiness Marketing*, 32(4), 337-360. Doi: 10.1080/08974438.2019.1650865.
- Altomare, R., Cacciabaudo, F., Damiano, G., Palumbo, V.D., Gioviale, M.C., Bellavia, M., Tomasello, G., & Lo Monte, A.I. (2013). The mediterranean diet: A history of health. *Iranian Journal of Public Health*, 42(5), 449-457.
- Ares, G., Giménez, A., Bruzzone, F., Vidal, L., Antúnez, L., & Maiche, A. (2013). Consumer Visual Processing of Food Labels: Results from an Eye-Tracking Study. *Journal of Sensory Studies*, 28(2), 138-153. Doi: 10.1111/joss.12031.
- Arvola, A., Lähteenmäki, L., Dean, M., Vassallo, M., Winkelmann, M., Claupein, E., Saba, A., & Shepherd, R. (2007). Consumers' beliefs about whole and refined grain products in the UK, Italy and Finland. *Journal of Cereal Science*, 46(3), 197-206. Doi: 10.1016/j.jcs.2007.06.001.
- Astill, J., Dara, R.A., Campbell, M., Farber, J.M., Fraser, E.D.G., Sharif, S., & Yada, R.Y. (2019). Transparency in food supply chains: A review of enabling technology solutions. *Trends in Food Science and Technology*, 91(December 2018), 240-247. Doi: 10.1016/j.tifs.2019.07.024.
- Bresciani, A., Pagani, M.A., & Marti, A. (2022). Pasta-making process: A narrative review on the relation between process variables and pasta quality. *Foods*, 11(3). Doi: 10.3390/foods11030256.
- Bryman, A. (2012). *Social research methods* (Fourth edi). Oxford University Press.
- Cacchiarelli, L., & Sorrentino, A. (2016). The positioning of the national and private label brands in the different segments of the Italian pasta market. *Rivista di Economia Agraria*, LXXI(1). Doi: 10.13128/REA-18625.
- Cappelli, A., & Cini, E. (2021). Challenges and opportunities in wheat flour, pasta, bread, and bakery product production chains: a systematic review of innovations and improvement strategies to increase sustainability, productivity, and product quality. *Sustainability (Switzerland)*, 13(5), 1-16. Doi: 10.3390/su13052608.
- Contò, F., Antonazzo, A. P., Conte, A., & Cafarelli, B. (2016). Consumers perception of traditional sustainable food: an exploratory study on pasta made from native ancient durum wheat varieties. *Italian Review of Agricultural Economics*, 71(1), 325-337. Doi: 10.13128/REA-18651.
- De Pelsmaeker, S., Schouteten, J.J., Lagast, S., Dewettinck, K., & Gellynck, X. (2017). Is taste the key driver for consumer preference? A conjoint analysis study. *Food Quality and Preference*, 62, 323-331. Doi: 10.1016/j.foodqual.2017.02.018.

- Dean, M., Shepherd, R., Arvola, A., Vassallo, M., Winkelmann, M., Claupein, E., Lähdenmäki, L., Raats, M.M., & Saba, A. (2007). Consumer perceptions of healthy cereal products and production methods. *Journal of Cereal Science*, 46(3), 188-196. Doi: 10.1016/j.jcs.2007.06.007.
- Defrancesco, E., Perito, M.A., Bozzolan, I., Cei, L., & Stefani, G. (2017). Testing consumers' preferences for environmental attributes of pasta. Insights from an ABR approach. *Sustainability (Switzerland)*, 9(10), 1-13. Doi: 10.3390/su9101701.
- Di Monaco, R., Cavella, S., Di Marzo, S., & Masi, P. (2004). The effect of expectations generated by brand name on the acceptability of dried semolina pasta. *Food Quality and Preference*, 15(5), 429-437. Doi: 10.1016/j.foodqual.2003.07.003.
- Di Pede, G., Dodi, R., Scarpa, C., Brighenti, F., Dall'asta, M., & Scazzina, F. (2021). Glycemic index values of pasta products: An overview. *Foods*, 10(11). Doi: 10.3390/foods10112541.
- Dolgoplova, I., & Teuber, R. (2018). Consumers' willingness to pay for health benefits in food products: a meta-analysis. *Applied Economic Perspectives and Policy*, 40(2), 333-352. Doi: 10.1093/aep/ppx036.
- Foster, S., Beck, E., Hughes, J., & Grafenauer, S. (2020). Whole grains and consumer understanding: Investigating consumers' identification, knowledge and attitudes to whole grains. *Nutrients*, 12(8), 1-20. Doi: 10.3390/nu12082170.
- Garber, L.L., Burke, R.R., & Morgan Jones, J. (2000). *The role of package color in consumer purchase consideration and choice*. Marketing Science Institute, April.
- Green, P.E., Krieger, A.M., & Wind, Y. (2001). Thirty Years of Conjoint Analysis: Reflections and Prospects. *Interfaces*, 31(3_supplement), S56-S73. -- https://econpapers.repec.org/RePEc:inm:orinte:v:31:y:2001:i:3_supplement:p:s56-s73.
- Grunert, K.G. (2003). Purchase and consumption: the interdisciplinary nature of analysing food choice. *Food Quality and Preference*, 14(1), 39-40. Doi: 10.1016/S0950-3293(02)00033-2.
- Hansen, P., & Ombler, F. (2008). A new method for scoring additive multi-attribute value models using pairwise rankings of alternatives. *Journal of Multi-Criteria Decision Analysis*, 15(3-4), 87-107. Doi: 10.1002/mcda.428.
- Hartmann, C., Hieke, S., Taper, C., & Siegrist, M. (2018). European consumer healthiness evaluation of 'Free-from' labelled food products. *Food Quality and Preference*, 68, 377-388. Doi: 10.1016/j.foodqual.2017.12.009.
- Hu, W., Batte, M.T., Woods, T., & Ernst, S. (2012). Consumer preferences for local production and other value-added label claims for a processed food product. *European Review of Agricultural Economics*, 39(3), 489-510. Doi: 10.1093/erae/jbr039.
- IPO International Pasta Organization (2020). *Annual report*. -- <https://internationalpasta.org/annual-report>.
- ISMEA (2020). *Tendenze Frumento duro – pasta di semola*.
- ISMEA (2021). *Emergenza Covid-19. IV Rapporto sulla domanda e l'offerta dei prodotti alimentari nell'emergenza Covid-19*.
- Johnson, R.M. (1976). Beyond conjoint measurement: a method of pairwise trade-off analysis. In B.B. Anderson (Ed.), *Advances in Consumer Reserach* (Vol. 3, pp. 353-358). Association for Consumer Research.

- Keys, A. (1980). *Seven Countries: A Multivariate Analysis of Death and Coronary Heart Disease* (Harvard University Press, Ed.).
- Krueger, R. (1994). *Focus groups: A practical guide for applied research*. Thousand Oaks, CA: Sage.
- Krueger, R. (1998). *Analysing and reporting focus group results* (D. Morgan & R.A. Krueger, Eds.; The Focus). Sage Publications: Thousand Oaks, CA. Doi: 10.4135/9781483328157.
- Lancaster, K.J. (1966). A New Approach to Consumer Theory. *Journal of Political Economy*, 74(2), 132-157. Doi: 10.1086/259131.
- Liberman, A.L., Pinto, D., Rostanski, S.K., Labovitz, D.L., Naidech, A.M., & Prabhakaran, S. (2019). Clinical Decision-Making for Thrombolysis of Acute Minor Stroke Using Adaptive Conjoint Analysis. *The Neurohospitalist*, 9(1), 9-14. Doi: 10.1177/1941874418799563.
- Magalis, R.M., Giovanni, M., & Silliman, K. (2016). Whole grain foods: is sensory liking related to knowledge, attitude, or intake?. *Nutrition and Food Science*, 46(4), 488-503. Doi: 10.1108/NFS-09-2015-0101.
- Mandolesi, S., Cubero Dudinskaya, E., Naspetti, S., Solfanelli, F., & Zanolì, R. (2022). Freedom of choice - Organic consumers' discourses on New Plant Breeding Techniques. *Sustainability*, 14(14), 8718. Doi: 10.3390/SU14148718.
- Marinangeli, C.P.F., Castellano, J., Torrance, P., Lewis, J., Casey, C.G., Tanuta, J., Curran, J., Harding, S.V., Jenkins, D.J.A., & Sievenpiper, J.L. (2019). Positioning the value of dietary carbohydrate, carbohydrate quality, glycemic index, and GI labelling to the canadian consumer for improving dietary patterns. *Nutrients*, 11(2). Doi: 10.3390/nu11020457.
- Mascarello, G., Pinto, A., Parise, N., Crovato, S., & Ravarotto, L. (2015). The perception of food quality. Profiling Italian consumers. *Appetite*, 89, 175-182. Doi: 10.1016/j.appet.2015.02.014.
- Mcfadden, D. (1974). Conditional logit analysis of qualitative choice behavior. In P. Zarembka (Ed.), *Frontiers in Econometrics* (pp. 105-142). Academic Press.
- McQuarrie, E.F. (1989). Review: Focus Groups: a practical guide for applied research by Richard A. Krueger. *Journal of Marketing Research*, 26(3), 371-372. Doi: 10.2307/3172912.
- Meyerding, S.G.H., Trajer, N., & Lehberger, M. (2019). What is local food? The case of consumer preferences for local food labeling of tomatoes in Germany. *Journal of Cleaner Production*, 207, 30-43. Doi: 10.1016/j.jclepro.2018.09.224.
- Mialon, V.S., Clark, M.R., Leppard, P.I., & Cox, D.N. (2002). The effect of dietary fibre information on consumer responses to breads and "English" muffins: a cross-cultural study. *Food Quality and Preference*, 13(1), 1-12. Doi: 10.1016/S0950-3293(01)00051-9.
- Milosavljevic, M., & Cerf, M. (2008). First attention then intention. *International Journal of Advertising*, 27(3), 381-398. Doi: 10.2501/S0265048708080037.
- Morgan, D.L. (1997). *Focus groups as qualitative research*. Thousand Oaks, CA, US: Sage.
- Rabadán, A., Nieto, R., & Bernabéu, R. (2021). Food innovation as a means of developing healthier and more sustainable foods. *Foods*, 10(9), 8-11. Doi: 10.3390/foods10092069.

- Renna, M., Rinaldi, V.A., & Gonnella, M. (2015). The Mediterranean Diet between traditional foods and human health: the culinary example of Puglia (Southern Italy). *International Journal of Gastronomy and Food Science*, 2(2), 63-71. Doi: 10.1016/j.ijgfs.2014.12.001.
- Ringquist, J., Phillips, T., Renner, B., Sides, R., Stuart, K., Baum, M., & Flannery, J. (2016). *Capitalising on the shifting consumer food value equation*. -- www2.deloitte.com/content/dam/Deloitte/us/Documents/consumer-business/us-fmi-gma-report.pdf.
- Robson, C. (2002). *Real world research: a resource for social scientists and practitioner-researchers (2nd ed.)* (Blackwell).
- Sajdakowska, M., Gębski, J., Jeżewska-Zychowicz, M., Jeznach, M., & Kosicka-Gębska, M. (2021). Consumer choices in the pasta market: The importance of fiber in consumer decisions. *Nutrients*, 13(9). Doi: 10.3390/nu13092931.
- Scalvedi, M.L., & Saba, A. (2018). Exploring local and organic food consumption in a holistic sustainability view. *British Food Journal*, 120(4), 749-762. Doi: 10.1108/BFJ-03-2017-0141/FULL/PDF.
- Seidemann, S.B., Claggett, B., Cheng, S., Henglin, M., Shah, A., Steffen, L.M., Folsom, A.R., Rimm, E.B., Willett, W.C., & Solomon, S.D. (2018). Dietary carbohydrate intake and mortality: a prospective cohort study and meta-analysis. *The Lancet Public Health*, 3(9), e419-e428. Doi: 10.1016/S2468-2667(18)30135-X.
- Shepherd, R., Dean, M., Lampila, P., Arvola, A., Saba, A., Vassallo, M., Claupein, E., Winkelmann, M., & Lähteenmäki, L. (2012). Communicating the benefits of wholegrain and functional grain products to European consumers. *Trends in Food Science and Technology*, 25(2), 63-69. Doi: 10.1016/j.tifs.2012.01.002.
- Škrobot, D., Pezo, L., Tomić, J., Pestorić, M., Sakač, M., & Mandić, A. (2022). Insights into sensory and hedonic perception of wholegrain buckwheat enriched pasta. *Lwt*, 153(September 2021). Doi: 10.1016/j.lwt.2021.112528.
- Sogari, G., Li, J., Lefebvre, M., Menozzi, D., Pellegrini, N., Cirelli, M., Gómez, M.I., & Mora, C. (2019). The influence of health messages in nudging consumption of whole grain pasta. *Nutrients*, 11(12), 1-14. Doi: 10.3390/nu11122993.
- Teuber, R., Dolgoplova, I., & Nordström, J. (2016). Some like it organic, some like it purple and some like it ancient: consumer preferences and WTP for value-added attributes in whole grain bread. *Food Quality and Preference*, 52, 244-254. Doi: 10.1016/j.foodqual.2016.05.002.
- Wägeli, S., & Hamm, U. (2016). Consumers' perception and expectations of local organic food supply chains. *Organic Agriculture*, 6(3), 215-224. Doi: 10.1007/S13165-015-0130-6/TABLES/1.
- Wendin, K., Mustafa, A., Ortman, T., & Gerhardt, K. (2020). Consumer awareness, attitudes and preferences towards heritage cereals. *Foods*, 9(6). Doi: 10.3390/foods9060742.
- World's Top Exports (2020). *Top Pasta Exporters by Country*. -- www.worldstopexports.com/top

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