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*Article*

# Consumers' Sense of Farmers' Markets: Tasting Sustainability or Just Purchasing Food?

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**Abstract:** Sustainable food consumption has attracted a widespread attention during last decades by scholars, policy makers and consumers. In line with this, farmers' markets (FMs) have the potential to encourage sustainable agricultural production and consumption. By reducing the number of actors and distances along the food chain, these alternative food systems foster the reconnection between farmers and consumers and contribute to different social, economic and environmental sustainable goals. This paper provides insights on the role of consumers' sustainability concerns related to their motivation for shopping at FMs. By means of a choice experiment, we analyze the determinants of consumers' WTP for buying apples at FMs. We are particularly interested in understanding how attitudes towards the three sustainability dimensions are related to consumer preferences in this context. We find that consumer attitudes towards direct contact with producers, contributing to farmers' income, and environmental benefits can be directly related to product characteristics that are specific to FMs.

**Keywords:** sustainability; farmers' markets; choice experiment; consumers; willingness to pay

## 1. Introduction

Food purchases at Short Food Supply Chains (SFSCs) are increasing all around the world and in Italy as well, being considered a more sustainable alternative to highly specialized, resource intensive modern agri-food supply chains [1–3].The European Commission [4] declared that food crises, environmental pollution, the increasing awareness of social responsibility as well as the perception of the rising prevalence of malnutrition and the influence of foods on wellbeing have both shaken a large proportion of consumers' confidence and increased their interest in knowing how, where and by whom food is produced. Following consumer demand for more sustainable food products, the last years registered a rising proliferation of SFSCs, especially farm's direct sales and farmers' markets (FMs) [5]. As recently stated by Mundler and Laughrea [6], who gather the position of scholars and experts around the world, SFSCs have the potential to enhance the sustainability of conventional food system, in terms of socio-economic equity and environmental and local development. Drawing a comprehensive assessment of SFSCs' benefits in terms of sustainability is even more important nowadays[7], not only to help farmers to improve their marketing strategies but especially to spur and support policy makers to further develop SFSCs. Accordingly, the EU Common Agricultural Policy 2014-2020 has adopted the promotion of SFSCs and local food within the II Pillar to provide a publicly funded stimulus for sustainable development. However, lack of reliable market data prevents a clear identification of both the growing appeal of SFSCs and the role of sustainability concerns in consumers' preferences. We hypothesize that sustainability concerns are becoming more important in influencing consumer purchasing behavior. This paper aims at investigating how the three dimensions of sustainability (i.e. economic, social, environmental) are relevant for forming consumers' preferences when purchasing apples. Following this objective, this article aims at determining if consumers' preferences for some SFSCs' distinctive aspects (e.g. local food origin or direct interaction between farmers and consumers) are reflected in willingness-to-pay

(WTP). Purchasing preference and WTP are expected to vary according to the different aspects of sustainability. Since fresh fruits and vegetables account for most direct sales to consumers [8–10] we focused on a specific product, i.e. apples. In addition, we chose FMs to represent SFSCs, since they are a widely known major component of SFSCs in Italy [9]. Our paper contributes to the growing literature studying the alternative food chains movement in which the sustainability perception of consumers forms a key component. The article proceeds with a brief summary of the literature on SFSCs' sustainability impacts and consumer attitudes towards purchasing in these Alternative Agri-Food Networks (AAFNs). After this, we present the choice experiment and estimate the WTP for apples that are sold at FMs and we conclude with a discussion of our findings.

## 2. Background

Decreasing consumer confidence in industrialized agri-food systems and enhancing reflexivity of consumers known as "quality turn" [11,12] have led to the promotion of Alternative Agri-Food Networks (AAFNs) known as Short Food Supply Chains (SFSCs). The term short refers to both the reduced geographical distance (i.e. transportation distance between production and consumption known as food miles) and a small number of intermediaries between the producer and the consumer [13]. Alternative chains indeed contribute to preserve both economic activities in areas with climatic and geographical constraints (e.g. by maintaining food production and processing) and culture and identity of those places. In addition, the ethical (e.g. encouraging local food security, social responsibility) and health dimensions (e.g. attention to nutrition and traceability aspects, promoting food safety, seasonality of production) of sustainability are also considered as characteristics of SFSCs, even if they are more implicit rather than explicit [14]. In some cases (i.e. direct selling and farmers' market) SFSCs involve direct contact between the farmer and the end-user of products by means of face-to-face interactions [15].

The last years registered an increasing demand for better food quality and safety, organic agriculture, territorial valorization, environmentally friendly externalities and promotion of local production. Food production is therefore an interesting resource for the renewal of local economies [16]. In line with this, various authors [6,17–19] suggest that SFSCs have all the qualities to improve the sustainability of food systems, especially considering distribution and consumption.

A major component of SFSCs are collective initiatives known as Farmers' Markets (FMs). FMs refer to markets where agricultural products are directly sold by producers to consumers through a common marketing channel [20]. Bringing consumers closer to the origin of food and envisaging a seller who is directly involved in the production process, FMs are considered to have an increasing potential since their ability to respectively re-spatialise and re-socialise food [21,22]. Moreover, it is worth noting that FMs represent not only a potential for the revalorization of rural areas (e.g. by maintaining rural communities and employment in remote areas) [23] but also an engine for new opportunities to peri-urban agriculture, which is threatened by urban sprawl in many countries [24,25].

Farmers' markets contribute to social sustainability through several mechanisms. Ensuring the direct contact between the actors, FMs actively contribute to reconnect people sharing a set of common values and interests around food [26], such as the preservation of typical products and local knowledge, practices and traditions. A key characteristic of FMs is the capacity to encourage the dialogue exchange between farmers and consumers, giving the consumers the opportunity to re-discover food, agricultural production and the people involved. This embedded information, if successfully provided, could potentially convince consumers to assign a premium price to products that are sold at FMs [27]. Furthermore, enhanced information such as the increased traceability conveyed to consumers may contribute to reduce the information asymmetry and help to re-establish trust relations along the supply chain [28,29]. Trust itself becomes a major factor to create new loyalty toward purchasing at FMs, conditioning future purchasing choices and gaining and keeping a stable customer flow. With regard to environmental sustainability, FMs contribute by reducing the use of non-renewable fossil energy [30,31] or protecting traditional plant varieties and animal breeds through the valorization of typical traditional products. Therefore, environmental

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awareness serves as a motivating factor for consumers to purchase their food at FMs as it may provide them with a sense of co-responsibility towards sustainable agricultural management. Many authors [25,32,33] found that people are willing to pay a premium price for locally produced food. Therefore, while promoting local production, FMs sustain the local food system and contribute to many economic sustainability goals such as (1) supporting new employment and good standard of living for farmers and their families [34,35], (2) stimulating local economies, and (3) encouraging farm's economic diversification [36]. Consequently, these locally based systems let rural areas retain their autonomy and produce evenly distributed welfare, thus contributing to the economic sustainability of rural communities. Contrary to standard long food supply chains, where only a small proportion of total added value is captured by primary producers, FMs have the capacity to increase farmer income [37,38] if he identifies and serves market niches offering price premiums over the mass markets [39]. Thus, improving farmer remuneration depends on consumers' willingness to pay a premium for products purchased and sold in short chains [40]. Consumers have been found to recognize the added value of these niche products that have the capacity to convey multiple attributes and appealing symbols (e.g. origin, quality, tradition, history) related to the territory [41]. As a consequence, the ''iron law'' of price while purchasing at FMs is displaced by different considerations that make consumers feel embedded. Accordingly, consumers' contextual embeddedness (with all the above mentioned notions conveyed into the product) might evoke deep memories [42–44] and convince consumers to purchase at FMs and pay even more for these products. In addition to price considerations, consumers preferences for FMs can be driven also by fairness related aspects as the equal distribution of benefits in the supply chain and altruism toward small farmers [45]. If customer satisfaction is a necessary condition [46], on the other hand, farmers increase their efforts to establish and meet consumers' preferences [47]. Although price is clearly an important factor in order to sustain the farming livelihood, it doesn't represent the only consideration for farmers: they also recognize the significance of reciprocal connection and personal relations established by FMs. Examining consumer motivations for shopping at FMs, our study contributes to a growing literature with regard to the role of perceived sustainability dimensions of FMs in influencing consumer purchasing preferences for such alternative food circuits.

## 3. Data and Methods

By means of an online survey that was sent to 503 Italian consumers, this experimental study investigated consumers' preferences and their WTP [48] for buying apples at FMs. The survey contained a choice experiment (CE) in which consumers made choices between Golden Delicious apples with varying levels of price and damage (e.g. blemishes on the surface) and differing in the point of sale, the local origin and the production method. The choice of a reference product for the study fell on apples mainly because they appear to be a very common fruit, available all year long in all markets and are often sold as locally and organic apples [49,50]. Apple consumption in Italy is about 20 kilos per capita per year, indeed [51]. In addition, apples are found to be a component of an overall healthy diet. In particular, we used apples (Golden Delicious cultivar) because they are recognizable to most consumers and widely produced in Italy. With 2.2 million tons produced in 2013, indeed, Italy represents the fifth producer worldwide after China (39.7 million tons), USA (4 million tons), Turkey (3.1 million tons) and Poland (3 million tons), being the second major producer in EU-28 (FAO, 2016).

CEs have been used in many disciplines, such as environmental economics and valuation[52], health economics [53], food choice [54,55], public goods valuation [56], and transportation to elicit preferences of respondents [57]. The root of CE design and analysis lies in Lancaster's [58] exposition on consumer theory, who states that consumer utility is not derived directly from the goods consumed, but from their attributes. In a CE, a questionnaire is designed in which consumers are asked to make choices between alternative products. These alternatives are characterized by their specific attributes, each of which can take a varying range of levels. The central assumption then is that consumers choose the product they prefer the most, given the product attributes. These attributes also include the product price, and the respondent is asked consider he also has to pay the

price in order to get the product. In market good evaluations such as the present study, adding a "would not buy any" option adds realism to the purchasing scenario, as consumer can always opt out of buying the offered products in real life.

The experimental design is the heart of CEs. It assures that all the available alternatives in the CE are orthogonal and can therefore be estimated efficiently [57]. We generated an orthogonal design in R and used the mix-and-match method to generate alternatives [59,60]. We used 2 alternatives in each choice set, and added "would not buy any" as a third option to each choice set. That way, respondents can easily opt out of the purchase in case they prefer the status quo of not buying any apples. The smallest orthogonal design for our given attributes and levels (

**Table 3**) was 18; then we used the blocking algorithm provided by Aizaki [59] to split the choice sets into three groups of six each. The analytical tool used to estimate preference from CE data is the random utility function [61], which describes utility $U$ as a sum of an observable part $V$ and an i.i.d. random error term ε. $V$ is assumed to be a linear-additive function of estimable utility weights and product attributes, combined with individual specific characteristics of respondents. The respondent is expected to maximize this utility function when making his choices by incorporating all the offered attributes into his decision. The multinomial logit model (MNL) assumes the error is distributed according to an extreme value type 1 distribution [62]. The probability of choosing product $i$ out of a range of products 1 to $J$ is then described by as follows:

$$P(y_i = 1) = \frac{\exp(V_i)}{\sum_{j=1}^{J} \exp(V_j)}$$

Model selection is conducted by using likelihood-ratio (LR) tests to compare nested models. We started with a model that contained all interactions of attributes and sustainability characteristics and then successively removed interactions that were not significant according to a Wald test. Then, we ran a LR test of the new, restricted model and the original model that contained all interactions. We chose the model required the least parameters to be estimated, while still maintaining an insignificant LR test. An extension of MNL is Random Parameters Logit (RPL) model, which comes with the assumption that parameters follow a pre-defined distribution, instead of being fixed [63]. This allows to account for unobserved preference-heterogeneity within the sample. We included results from the RPL model for comparison. All estimations were done in R using the package mlogit [64].

In this study, data were generated through a computer assisted web interviewing (CAWI) procedure in a sample of 503 Italian respondents from Norstat online panel database (http://www.norstatgroup.com). The questionnaire was developed on the basis of insights from the academic literature on consumers' attitudes towards purchasing in SFSCs [65] and pre-tested on a sample of 20 respondents. It also incorporated statements regarding consumers' perception of different sustainability dimensions (i.e. social, economic and environmental), as stated in the Brundtland Report [66]. In particular, the questionnaire consisted of the following 4 sections: the first investigating consumer purchasing behavior and awareness about SFSCs, the second comprising the choice experiment, the third enclosed up to 3 questions investigating consumer awareness of the three pillars of sustainable development related to FMs and finally the last section picturing the socio demographic profile of interviewees. In relation to the third section, we represented the three dimensions of sustainability (economic, social, and ecological) by three distinct questions (

**Table 1**). The economic sustainability was represented by the 7-point Likert scale question *"By shopping at farmers' markets, I can contribute to support farmers' income"* where 1 meant "entirely disagree" and 7 meant "entirely agree". Similarly, social sustainability was indicated by the following question: *"The direct contact with farmers is important to me when purchasing food"*. Finally, we framed the question about ecological-environmental sustainability in the context of the major reason for buying organic food. Using a single choice question, respondents had the opportunity to respond: *"it is safer than conventional food"* (private good aspect) or *"it is more environmentally sustainable than*

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*conventional food"* (public good aspect) or *"I don't buy organic food"*. The interactions between the replies to those statements and consumers' preferences for CE attributes have been investigated in order to explain the role of sustainability concerns on FMs' growing success and appeal among consumers.

**Table 1.** Interaction variables.

| Variable | Description | Measure |
|---|---|---|
| farminc | By shopping at farmers' markets, I can contribute to support farmers' income. | 7-point likert scales (1=entirely disagree, 7=entirely agree) |
| directcontact | The direct contact with farmers is important to me when purchasing food. | 7-point likert scales (1=entirely disagree, 7=entirely agree) |
| personal health (PH) | What is your major reason for buying organic food? | This is a unique question with 3 possible answers, as shown in Figure 3 (c) |
| environmental sustainability (ES) | | |
| "I don't buy organic food" (DBO) | | |

In the CE, consumers were asked to imagine to buy one kilo (i.e. four pieces) of Golden Delicious apples. As mentioned above, each respondent had to work through six choice sets. In each choice set (

**Table 2**) consumers had to choose between two different kilos of apples described by a set of attributes. There was also a no-choice option (status quo; option C) in order to reproduce a more realistic purchase situation without forcing decision makers to select among the two available alternatives [63].

**Table 2.** Example of a choice set eliciting Italian consumers' preferences for apples purchased at FMs.

| Product attribute | Option A | Option B | Option C |
|---|---|---|---|
| Point of sale | from the farmer | from the shelf | Neither A or B is preferred |
| Locally grown | unknown | locally grown | |
| Damage | 2 damaged apples | 1 damaged apple | |
| Production method | organic | conventional | |
| Price (euros/kilo) | 1.59 | 1.29 | |

Option A and B represent two different descriptions for 1 kg of Golden Delicious apples. Please choose the option (A, B or C) that you would prefer to purchase.

We used CE to examine the impact that five attributes have upon consumers' preference when buying apples, in order to better understand what's behind their preference for purchasing at FMs. We chose attributes based on scientific literature about SFSCs. In particular, the chosen five attributes (

**Table 2**) were focused on investigating if the choice to purchase at FMs was a matter of proximity with the producer (POS), a matter of origin (LO), a matter of food authenticity (DAM), a matter of production method (PM) or a matter of price (PRI). POS is related to the purchasing place and refers to FMs' "spatial proximity" definition [15,27]. LO describes where the product was grown [67–69]: if the product was grown in the same region where it was sold, we defined it as locally grown. Even if there are other measures of quality (e.g. taste, color, size), we chose the damage level (DAM) [2]. DAM describes how many apples, among the four pieces representing 1 kilo, have some minor damage (i.e. blemishes) on the surface. Accordingly, we assumed that the presence of the damage is a common feature for local production, related to products' authenticity and naturalness. In conclusion, PM describes whether the product is produced organically or conventionally and finally PRI represents the price of the product in €/piece.

**Table 3.** Attribute list used in a choice experiment on sustainability and willingness to pay for apples with Italian consumers.

| Apples attributes | Attribute levels | Description | Dummy Variable |
|---|---|---|---|
| Point of sale (POS) | Farmer | The farmer hands you the lettuce directly | |
| | Seller | A seller who is not necessarily involved in the production hands you the lettuce directly | seller |
| | Shelf | You pick the salad up from a shelf (e.g. In a supermarket) | shelf |
| Local origin (LO) | Yes | Product is locally grown | |
| | No | Product is grown outside the selling region | localno |
| | Unknown | Origin not known to the consumer | localdk |
| Damage (DAM) | 0 | All apples are perfect (= no damage) | |
| | 1 slightly damaged apple | 1 damaged apple (= light damage) | light |
| | 2 slightly damaged apples | 2 damaged apples (= moderate damage) | moderate |
| Production method (PM) | Organic | Product was produced according to EU standards on organic farming (no synthetic chemical inputs allowed in production and postharvest treatment) | |
| | Conventional | Product was produced in a conventional manner (only legally binding restrictions on production methods apply) | |
| Price (euros/kilo) | 1.29 | | |
| | 1.59 | | |
| | 1.99 | | |

## 4. Results

### *4.1 Descriptive Statistics*

In early January 2016, we collected a sample of 503 Italian consumers older than 18 years. Sampling quotas were set based on age group, gender, and four NUTS1 regions (i.e. North East, North West, Center, South and Islands). Overall, our sampling frequencies match the population of Italy very well, as can be seen in Figure 1, with a slight overrepresentation of the South and Islands region at the cost of some underrepresentation of the other three regions.

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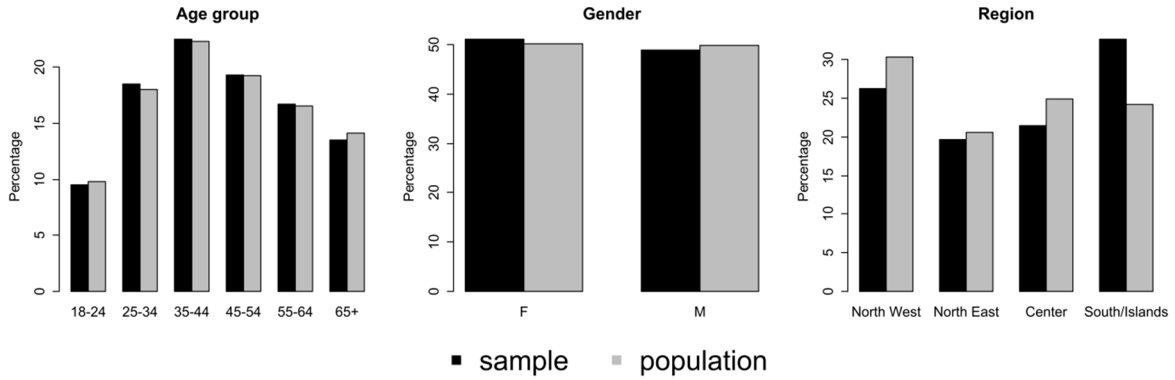


**Figure 1**. Population and sampling distribution of age, gender, and region.

Respondents, described in Table 4, were screened out if they (1) had not purchased food at a FM within the last year, and (2) if they were not responsible for food purchases within their household. In addition, we also asked to respondents to elicit which product they mainly purchased at FMs, as shown in Figure 2.

**Table 4**. Descriptive statistics of the sample.

| Categories | Items | N. Obs | Frequency |
|---|---|---|---|
| Education level | Compulsory school | 50 | 10% |
| | A-levels/Apprenticeship | 258 | 51% |
| | University degree | 195 | 39% |
| Residence | Rural area | 121 | 24% |
| | Urban area | 382 | 76% |
| Household net income (per month, after taxes) | < 1000 € | 64 | 13% |
| | 1000-3000 € | 316 | 63% |
| | 3000-4000 € | 84 | 17% |
| | 4000-5000 € | 22 | 4% |
| | > 5000 € | 17 | 3% |
| Golden Delicious apples' annual purchasing frequency | Never | 17 | 3% |
| | Less than once a month | 97 | 19% |
| | Once a month | 115 | 23% |
| | Twice a month | 113 | 23% |
| | Once a week | 134 | 27% |
| | More than once a week | 27 | 5% |

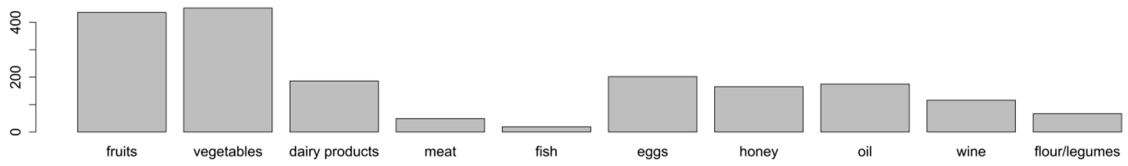


**Figure 2.** Products mainly bought at FMs.

A second line of results regards our questions about sustainability. As Figure 3 (panels a and b) shows, both Likert-scale questions are heavily skewed to the right, suggesting that consumers, on average, agree with the statements being presented. Consumers mostly agree that by shopping at FMs they can contribute to support farmers' income. In addition, to most consumers who have

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shopped at FMs within the last year the direct contact with farmers is important. Interestingly, as panel (c) in Figure 3 shows, the major reason for buying organic food is the environmental sustainability concern, not necessarily the health aspect.

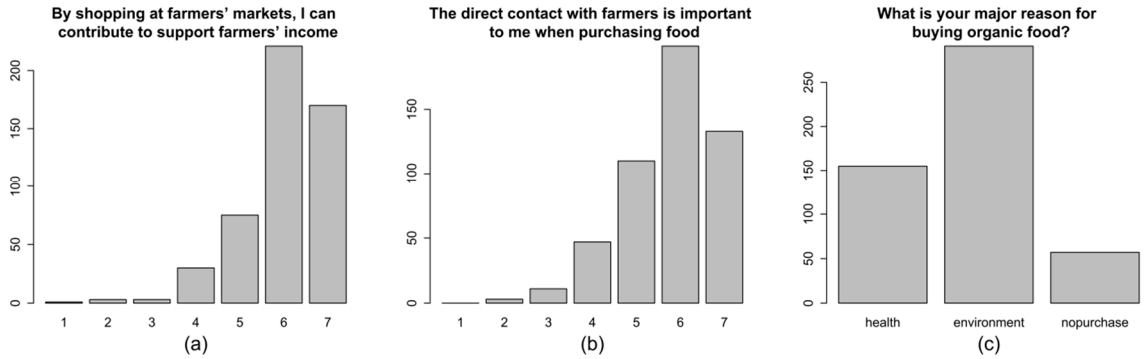


**Figure 3.** Responses to two 7-point Likert-scale (1 = entirely disagree, 7 = entirely agree; panels a and b) and (panel c) a 3 category question about the three dimensions of sustainability.

*4.2 Choice Experiment Analysis*

Finally, we present the results of the CE. We estimated a multinomial logit (MNL) and a random parameters logit (RPL) model for comparison (

**Table 5**). Both models show similar results both in significances and signs. Furthermore, we present the marginal willingness-to-pay estimates for the main effects (Table 6).

**Table 5.** Multinomial logit and random parameters logit models for apples (Golden Delicious) in Italy estimated from choice experiment data (see

**Table 1** and Table **3** for variable descriptions).

| | **Dependent variable: CHOICE** | | |
|---|---|---|---|
| | **Model** | | |
| **Variables** | **Multinomial Logit** | **Random Parameters Logit** | |
| | | *Random parameters* | |
| | | Mean | Std. Dev. |
| purchase (Base: No-Purchase) | 4.472*** | 4.661*** | |
| | (0.249) | (0.318) | |
| localno | 0.642 | 0.667 | 0.090 |
| | (0.397) | (0.424) | (0.362) |
| localdk | 0.361 | 0.413 | -0.079 |
| | (0.463) | (0.489) | (0.341) |
| seller | -0.699* | -0.773* | 0.423 |
| | (0.400) | (0.416) | (0.293) |
| shelf | -0.780* | -0.820* | 0.096 |
| | (0.421) | (0.453) | (0.367) |
| light | -0.412*** | -0.426*** | 0.275 |
| | (0.070) | (0.074) | (0.326) |
| moderate | -0.899*** | -0.907*** | 0.540* |

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| | | | |
|---|---|---|---|
| | (0.091) | (0.096) | (0.292) |
| conventional | 0.515 | 0.540 | 0.090 |
| | (0.435) | (0.451) | (0.350) |
| | | *Nonrandom Parameters* | |
| price | -1.713*** | -1.818*** | |
| | (0.365) | (0.380) | |
| localno:directcontact | -0.251*** | -0.262*** | |
| | (0.068) | (0.072) | |
| localdk:directcontact | -0.404*** | -0.423*** | |
| | (0.078) | (0.083) | |
| localdk:farminc | 0.203*** | 0.210*** | |
| | (0.074) | (0.078) | |
| seller:directcontact | -0.170** | -0.171** | |
| | (0.069) | (0.071) | |
| shelf:directcontact | -0.198*** | -0.201*** | |
| | (0.072) | (0.077) | |
| conventional:farminc | -0.186*** | -0.192*** | |
| | (0.069) | (0.072) | |
| conventional:ES | 0.064 | 0.067 | |
| | (0.140) | (0.144) | |
| conventional: DBO | 1.246*** | 1.283*** | |
| | (0.231) | (0.231) | |
| price:directcontact | 0.333*** | 0.344*** | |
| | (0.054) | (0.055) | |
| price:farminc | -0.139*** | -0.144*** | |
| | (0.048) | (0.044) | |
| price:ES | -0.196** | -0.198** | |
| | (0.083) | (0.082) | |
| price:DBO | -0.616*** | -0.630*** | |
| | (0.134) | (0.135) | |
| Observations | 3,018 | 3,018 | |
| Log Likelihood | -2,588.411 | -2,587.282 | |

Note: *p<0.1; **p<0.05; ***p<0.01

Table **5** shows the parameter estimates of our models. In the RPL model, all main effects, except for price, were modeled as random, normally distributed, parameters. Interestingly, no significant influence was found regarding the local production of the product. However, the point of sale was considered important by respondents. Compared to having the apples handed by the farmer directly, both having it handed by a seller and picking them from a shelf were associated with negative part-worth utilities. As expected, apples with "no damage" were significantly preferred to packages holding one or two damaged apples. The ordering of part-worth utilities in the logit model (1 apple: -0.412 > 2 apples: -0.899) is intuitive, and identical in the RPL model. Conventional production (as opposed to organic production) had no significant influence on choice probability on average, and the price parameter is negative and significant as expected. In addition to the standard procedure of analyzing CEs based on random utility theory, we examined how certain consumer

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characteristics related to sustainability would affect purchase decisions. Furthermore, we included the answers to these three questions (

Table 1) in the choice models by interacting them with certain main attributes. The Likert-scale questions were coded continuously, while the question about ecological sustainability was coded as a dummy. Consumers who found that the direct contact with farmers is important also preferred local food compared to non-locally produced food, or food where the origin of production is not known. Interestingly, consumers who felt more strongly that they could contribute to the farmers' income were more likely to pick a product where the origin was unknown compared to when the product was locally or not locally produced. As expected, respondents who found direct contact important would prefer to get the product directly handed by the farmer, as opposed to a seller or picking it from the shelf. While organic farming was not significant at the average level, respondents who had an interest in supporting farmers' income were less likely to choose apples from conventional production. Those respondents who answered that they would not buy organic food were also more likely in the choice experiment to choose conventionally produced products.

Both the MNL and the RPL model showed similar results. In addition, only the estimated standard deviation of the "2 apples damaged" attribute was significant at the 10% level. A LR test confirmed that there was no significant difference between the two models (p-value = 0.9442). We therefore continue our analysis using the more parsimonious MNL model.

**Table 6.** Marginal willingness to pay for apple attributes estimated from a choice experiment (MNL results only shown).

| Attribute | marginal WTP | Std. Error | Percentiles | |
|---|---|---|---|---|
| | | | 5% | 95% |
| localno | 0.3745 | 0.2317 | -0.0042 | 0.7394 |
| localdk | 0.2109 | 0.2938 | -0.2837 | 0.5975 |
| seller | -0.4083 | 0.3840 | -1.0329 | -0.0222 |
| shelf | -0.4556 | 0.3920 | -1.1067 | -0.0464 |
| light | -0.2406 | 0.0908 | -0.3969 | -0.1523 |
| moderate | -0.5247 | 0.1742 | -0.8161 | -0.3750 |
| conventional | 0.3006 | 0.2608 | -0.1256 | 0.7215 |

In Table 6 we present the marginal willingness to pay (mWTP) for the attributes under investigation, including the 90% two-sided Krinsky and Robb confidence bounds. Compared to having the apples handed from the farmer, having them handed by a seller or picking them from the shelf leads to decrease of € 0.408 per kg. If a single apple shows slight damage, the WTP decreases € 0.241, while two damaged apples lead to a decrease in WTP of € 0.525.

## 5. Discussion and Conclusions

This study analyzes consumer preferences towards purchasing in alternative chains such as farmers' markets that, on the backcloth of this research, represent a solution to current sustainability issues of the dominant food system indeed [70]. However, shopping at FMs can be assumed to be desirable but not preferred a priori to consumers so that studying what is behind buying preferences represents a key issue in order to draw a new consumer profile to improve and support FMs' marketing and policy strategies.

In particular, we focused on examining the role of sustainability dimensions (i.e. economic, environmental, social) in influencing food purchasing preferences, investigating whether consumers who hold the view that supporting farmers' income and the direct contact with producer are important as well as contributing to environmental sustainability by means of purchasing organic food were more likely to purchase apples at FMs.

In this respect, the investigated sample of 503 Italian consumers, on average, revealed a great concern around sustainability issues. Firstly, they assigned great importance to direct contact with

producers on average. In addition, they stated that the major reason to buy organic food, that is commonly related to SFSCs [5], is the environmental sustainability impact of this production instead of health related benefits. Moreover, our results show a noteworthy consumer awareness about the positive influence of buying at FMs in supporting farmers' income, being consistent with similar studies [71,72]. However, our results denied a blind adherence to fairness as confirmed by consumers' lower WTP, indeed; in addition, the same respondents stated that they were more likely to choose organic food as to get back some benefit for contributing to farmers' economic situation.

Somewhat surprisingly, among the attributes we considered, production method and local origin were not significant in explaining consumers' choice probability to purchase apples at FMs on average, as opposite to point of sale, product damage and price. Relating to local food origin that means geographical proximity of production and retailing places, our evidence is in line with avoiding the local trap (i.e. the assumption that the local is desirable), as stated by Born and Purcell [73]. However, local origin proved to be significant to consumers who considered direct contact as an important factor. Our findings let us speculate that local origin, that generally represents a key characteristic for consumer preferences [69,71], may play a subordinate role for consumers after they established direct interactions with producers, that represent a kind of guarantee even for food origin (e.g. traceability) [22].

Respondents who thought that direct contact with the producer was important when buying apples at FMs also preferred to shop from the producer [74] instead of a common seller, showing a higher WTP for this. This evidence strengthens the strategic role of direct interactions in designing an overall shopping atmosphere that is proper for FMs [15,27,75]. Therefore, being part of social sustainability of these alternative food systems, our results demonstrate that this aspect not only is important to consumers but it also drives their preferences. As stated by some other studies [76,77], consumers derive some cultural and social benefits from direct contact with farmers. For instance, FMs enable consumers to get closer to producers or to gain new knowledge about products since producers can also describe food characteristics. Furthermore, Hinrichs et al. [43] in their study found that consumers at FMs particularly enjoyed the pleasant atmosphere of such colorful open-air markets, considered as trendy arenas for consumption and entertainment. Moreover, according to other similar studies [78] our findings suggest that consumers prefer to buy apples with no damage and, accordingly, the more apples were damaged, the less respondents were willing to pay for these products when purchasing at FMs.

In conclusion, exploring the sustainability dimensions relevant for consumer choice [79], our results suggest that there may be a big potential for supporting FMs. Accordingly, this paper indicates some interesting considerations to complement more generic marketing and promotion of FMs. For instance, given the increasing overall trend towards considering the social dimensions of sustainable consumption [26,80,81], the role of FMs' face-to-face interactions can be turned into a marketing tool to both influence consumers' lifestyle and achieve farmers' market competitiveness. However, as in all scientific research, some limitations of our study must be kept in mind: (1) findings must be interpreted given the assumptions of utility theory; (2) the experiment was hypothetical in nature. Therefore, an extension of this study could be conducted using different methods such as experimental auctions or revealed preference methods. Finally, we argue that more efforts in incentivizing FMs' buying campaigns should be made by policy makers in order to augment the potential sustainable benefits on society and to incentivize territorial economic growth and sustainable development.

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**Abbreviations**

The following abbreviations are used in this manuscript:

| | |
|---|---|
| FMs | Farmers' markets |
| SFSCs | Short food supply chains |
| CE | Choice experiment |
| WTP | Willingness to Pay |
| mWTP | marginal Willingness to Pay |
| PH | Personal health |
| ES | Environmental sustainability |
| DBO | I don't buy organic food |
| POS | Point of sale |
| LO | Local origin |
| DAM | Damage |
| PM | Production method |
| LR | Likelihood-ratio |
| CAWI | Computer assisted web interviewing |
| MNL | Multinomial Logit |
| RPL | Random Parameters Logit |

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