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Sustainable Food Consumption Practices

Insights into Consumer Experience

Edited by

Giuseppina Migliore

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Editor

Giuseppina Migliore

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Editor
Giuseppina Migliore
University of Palermo
Italy

Editorial Office
MDPI
St. Alban-Anlage 66
4052 Basel, Switzerland

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About the Editor

Giuseppina Migliore is an Associate Professor in Agricultural Economics and valuation at the Department of Agricultural, Food and Forest Sciences, University of Palermo (Italy, EU). She has achieved two Ph.Ds: one in Sociology and Rural Development, and the other in Agricultural Economics and Policy. Her main research interest deals with consumer perception and behavior towards food products. In particular, her studies are focused on consumers' demand for functional, local, natural, and organic food. In these studies, she also applies economic and behavioral experiments to analyze non-hypothetical food choices. She has been a speaker at several international conferences, has published more than 40 papers in prestigious scientific journals and is author of several scientific articles in top research journals.

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Editorial

Sustainable Food Consumption Practices: Insights into Consumers' Experiences

Giuseppina Migliore

Department of Agricultural, Food and Forest Sciences, University of Palermo, 90128 Palermo, Italy; giuseppina.migliore@unipa.it

In recent years, the increasing consumer concern towards food safety, environmental sustainability, and social justice issues have stimulated new consumption practices more oriented towards social, economic, and environmental sustainability [1–3].

This includes the growing consumers' preference towards organic food, local food, and other sustainable food and beverage consumption (Contribution 1) [4], as well as the spread of alternative distribution chains, which emphasize the importance of local food productions [5], the short-distance transportation of food, and the direct relationship between consumers and producers, although, as Kwil and colleagues (Contribution 2) highlighted in this Special Issue, "local" is still an ambiguous term in the food domain.

Relatively to organic consumption, which represents one of the main examples of sustainable consumption practices, Rizzo, and colleagues (Contribution 3) emphasized, in this Special Issue, how the growing consumers' interest in organic products is not only due to their desire to protect the environment or sustain rural areas, but the perceived positive impact on human health of organic food consumption has been shown as the main driver of consumer preferences for organic extra-virgin olive oil. The preference for health attribute has also been highlighted by Butcher and colleagues (Contribution 4), as well as by Butu and colleagues (Contribution 5), among Romanian urban consumers of ecological food products, and by Nagy-Pércsi and Fogarassy (Contribution 6) for organic consumers in the Hungarian market. In addition, Testa and colleagues (Contribution 7) showed that the trend towards the preference for the health attribute also involved the consumer's convenient orientation and is not linked only to green products. In particular, the authors also found that the category of ready-to-eat products, especially fresh-cut fruits, is affected by health-conscious consumers.

The importance of a product's health attribute as an important driver of sustainable consumption practices among consumers was also highlighted by Estell and colleagues (Contribution 1), who highlighted that consumers' interest in a plant-based diet is driven by the perception that these products promote good health, while also being environmentally friendly. Furthermore, in their study, they highlighted that the trend towards a plant-based diet is also sustained by ethical reasons, as declared by the growing number of vegan consumers in their sample. In line with this, Sanchez-Sabate et al (Contribution 8), in their review aimed at understanding consumers' attitudes towards reducing meat consumption, found that vegetarians and vegans perceive the environment as simply another reason, among others, to maintain a meatless diet. Furthermore, they found that consumer awareness is hampered by beliefs about food, meat, and personal behaviour. Nutrition, health, and taste were found to be both enablers and barriers with regard to consumers' willingness to buy a food product. This highlighted how the trend towards sustainable consumption practices is the result of an overlap of hedonistic and altruistic reasons, the latter supported by ethical values linked to the protection of the environment and society. Ethical reasons also seem to drive the trend towards sustainable consumption practices in Italy. In this regard, Tempesta and colleagues (Contribution 9) found that 74% of consumers in their sample were willing to pay a price premium for eggs produced

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by disadvantaged people in social farms, emphasizing that social protection is also an important driver of the trend towards sustainable consumption. However, this trend is not only powered by specific quality attributes of the products, such as products that are environmental-friendly, fair, and healthy. Consumers also pay attention to the channels in which they buy food products. Short supply chains have received much attention in many countries during the last few years. This is emphasized in this Special Issue by the study on the farmers' markets of Tsai (Contribution 10) in Taiwan, which highlighted how consumers interest in farmers' markets includes both economic and social aspects. The economic aspect deals with transaction issues, including purchase motives, quality, satisfaction, purchase behaviour, and post-purchase behaviour. Similarly, social aspects focus on the social relations between producers and consumers, as well as psychological feelings when consumers go to markets, created by the quality of these interactions.

In addition, these sustainable consumption practices also seem to involve tourist destination choice [6], rural tourism and gastronomy interest [7]. This was emphasized by Testa and colleagues (Contribution 11) in this Special Issue, who underlined how agri-tourism represents one of the most important places where culinary tourists can experience local food and beverages. The choice of these tourist destinations seems affected by different criteria, among which the healthiness of food productions and the cultural experience are linked to local food consumption. Furthermore, this study highlighted how the culinary tourism experience is also affected by the trend towards social and environmental sustainability, that is support for rural community and environmental protection. This highlights that sustainability could play a crucial role in the competitiveness of agri-tourism destinations.

This Special Issue aimed to contribute to the literature on sustainable consumption practices, by enriching discussions on consumer's experiences and by emphasizing the motivational and demographic factors, as well as the cultural and situational factors, that guide consumer behaviour towards these practices. The studies included in this Special Issue shed light on some aspects of sustainable consumption practices, however, further comparative research is obviously needed to overcome the limits to the external validity of the results published here, in many cases based on convenient samples of consumers, and to investigate the analytical effort proposed in this Special Issue. Finally, future research should incorporate different theories to better understand the complex issue of individual behaviour, in order to deepen the understanding of the complex world of the consumer and his/her effort to power the trend of sustainable consumption practices.

List of Contributions:

1. Estell, M.; Hughes, J.; Grafenauer, S. Plant protein and plant-based meat alternatives: Consumer and nutrition professional attitudes and perceptions. *Sustainability* **2021**, *13*, 1478.
2. Kwil, I.; Piwowar-Sulej, K.; Krzywonos, M. Local entrepreneurship in the context of food production: A review. *Sustainability* **2020**, *12*, 424.
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Conflicts of Interest: The authors declare no conflict of interest.

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Article

Plant Protein and Plant-Based Meat Alternatives: Consumer and Nutrition Professional Attitudes and Perceptions

Madeline Estell [1], Jaimee Hughes [2] and Sara Grafenauer [1,2,*]

[1] School of Medicine, University of Wollongong, Northfields Avenue, Wollongong 2522, Australia; me459@uowmail.edu.au
[2] Grains & Legumes Nutrition Council, 1 Rivett Road, North Ryde 2113, Australia; j.hughes@glnc.org.au
* Correspondence: sarag@glnc.org.au

Abstract: Plant-based and flexitarian eating patterns are increasingly popular, and the food supply system has responded with a wide range of convenience products despite a lack of understanding regarding consumer views. The aim of this study was to explore consumer and nutrition professional (NP) perceptions and attitudes to plant protein, including plant-based meat alternatives (PBMA) within an Australian context. Using an online survey promoted via social media, 679 responses (89% completion rate), achieved an even spread across key age groups. A total of sixty percent reported following a special diet, with 25% vegan and 19% flexitarian. 'Health' was a key driver for diet type among the NPs (53.3%) and they were less likely to follow a special diet, while "ethical" reasons were cited by consumers (69%). Plant-based eating was considered a vegan dietary pattern and the most frequently consumed plant-based proteins were whole grains. Most (74%) had tried PBMA, but they were more frequently chosen by consumers, with burger patties then sausages and mince selected as a 'trendy' choice; taste was very important across both groups. Products mimicking chicken and fish were of less interest. Plant-based claims were observed by 78% but these were also of greater interest to consumers. Participants reported looking for whole ingredients and iron content and expected that both iron and vitamin B12 would be comparable to red meat. Sodium was the nutrient of greatest interest to NPs and, together, these results help inform the direction for product innovation, while also highlighting the need to assess the adequacy of the dietary pattern when promoting sustainable plant-based eating.

Keywords: plant-based; sustainable; meat alternatives; plant protein; flexitarian; vegan; vegetarian

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1. Introduction

'Plant-based' has placed within the top ten global food trends since 2014 according to New Nutrition Business and, as of 2020, is one of the top three trends [1]. The concept has also been recently highlighted via the Planetary Health Diet as part of the Eat Lancet Commission [2] and presents as a significant opportunity to review eating patterns. Plant-based diets are focused on fruit, vegetables, nuts, whole grains and legumes, in addition to unsaturated plant oils and modest amounts of meat and dairy. Current global dietary trends are having detrimental impacts on both the environment and human health, with traditional diets being replaced by those characterised by higher intakes of refined sugars, fats, highly processed foods and meats [3]. One of the possible solutions to address current health and environmental challenges is to obtain a greater proportion of protein from plant sources. It has been suggested that following a 'flexitarian' dietary pattern, with a reduction in consumption of animal-based foods and increased consumption of plant-based foods has been associated with a reduction in the risk of both disease [4,5], and impacts on the planet [2,6,7]; however, sustainability assessments of food and eating patterns are complex. As little as a 3% change in total energy from animal protein (meat, poultry, fish or dairy products) to plant proteins (like whole grains, legumes, beans and nuts) has been identified in reducing risk of premature death (between 5% and 10%) in two recently published

studies [5,8]. While the tendency is to focus on meat and other animal-based proteins within the diet, highly processed foods also have a higher environmental footprint. When Green House Gas emissions (GHGe) were examined, core foods contributed 68.4%, of which meat and meat alternatives contributed 33.9%. Diets with average to high amounts of discretionary foods increased emissions 121–307% compared with the recommended dietary pattern [9].

Predictions are that by 2050 we could see increases in global GHGe of 80% from food production and land erosion, as well as increasing rates of Type 2 diabetes mellitus, coronary heart disease and other chronic conditions [2,10]. Global burden of disease data points to diets high in sodium, low in whole grain, fruit, seeds, nuts, vegetables and low in omega 3 as the top six dietary concerns driving both morbidity and mortality [3]. In Australia, an unhealthy diet accounts for 27,500 preventable deaths annually, where 7400 are due to diets low in whole grain, 5500 due to low fruit, 4900 due to low nuts and seeds and 4400 due to low vegetables [11]. As a consequence, it has been suggested that " . . . a policy focus on the sugar and fat components of diets might have a comparatively smaller effect than that of promotion of increased uptake of vegetables, fruit, whole grains, nuts and seeds and seafood omega-3" [3]. The current Australian Dietary Guidelines only briefly address the environmental effects of food choices [12]. However, eating patterns using the Typical Australian Diet Basket (based on the 1995 National Nutrition Survey data) have been assessed against the dietary pattern proposed by the EAT Lancet Commission [13]. Researchers found that the Planetary Health Diet was more affordable than the Typical Australian Diet for metropolitan-dwelling Australians with savings of up to AUD 1800 per annum through the adoption of this dietary pattern [13]. The authors reported that further savings could be made by purchasing fresh seasonal produce, buying dry goods in bulk, utilising supermarket special buys and price mark-downs, and replacing some more expensive items (e.g., fresh salmon with less expensive tinned salmon). This research provides the basis for an economic motivator concerning changing dietary patterns, and in alignment with this is a greater emphasis on plant proteins.

To aid in the transition to a plant-based dietary pattern, alternative protein sources are being explored as possible substitutes to conventional animal-based proteins. Although vegetarian and vegan diets have been common for many years and plant-based food items such as tofu and textured soy protein have existed in the western world since at least the 1960s, more recently there has been a steadily increasing range of plant-based meat alternatives (PBMAs) [14]. Unlike tofu and textured soy protein products, it appears that the target has moved from a niche to a more mainstream trend, with a new generation of products designed specifically to appeal to meat-eaters without the need to elicit major dietary changes. PBMAs made from processed plant-based ingredients such as legume protein isolates, are formulated to imitate the taste, colour, texture and experience of eating meat. Since 2015, there has been a five-fold increase in the number of plant-based meat substitutes in Australia, where many mimic the sensory experience of consuming animal-based products [14], with launches exceeding 4400 products worldwide [15].

Modelling suggests the PBMA market in Australia alone may reach AUD 3 billion in sales by 2030 [16]; however, it is unknown if Australian consumers are truly viewing these as a direct substitute for meat, with little consumer research published to date [17]. As with plant-based milk, there may be a health halo surrounding plant-based meat products and nutritional issues may not be well understood by consumers. There is a possibility of some being led to believe that PBMAs are healthier than they are, or others missing the opportunity to enter the market, believing them to be for special diets. The lack of published research points to a significant knowledge gap regarding Australian consumer perceptions and attitudes towards these products. Research is needed to help cater to and meet consumer demand while considering the vastly different nutritional needs between groups within the population and provide educational awareness where appropriate. The aim of this study was to explore consumer and nutrition professional (NP) perceptions and attitudes to plant protein including PBMAs within an Australian context.

2. Materials and Methods

A cross-sectional self-administered online survey was conducted between June 2020 and October 2020. Ethics approval for this study was provided by the University of Wollongong HREC (2020/256). Consumer and NP perspectives on plant protein and PBMAs were sought from Australians over the age of 18 years. NPs were defined as those with a background in nutrition science or dietetics and we relied on participants to self-identify. The purpose of the study was to examine the alternative views of plant protein and PBMA by those with nutrition knowledge; however, the level or precise nature of nutrition qualification was not considered important. The survey was voluntary, anonymous, and tacit consent was provided after participants read the summarised. Participant Information Sheet on the first page of the survey. Participants were alerted to the study through a combination of convenience, snowballing and purposive recruitment, via word of mouth, as well as advertisement on social media platforms such as Facebook, Twitter and Instagram via a nation-wide promotion of the survey link. The study was also advertised in the Grains & Legumes Nutrition Council (GLNC) newsletter to over 5000 subscribers. As an incentive to encourage participation, participants were given the opportunity for inclusion in a prize draw to win a AUD 50 grain and legume food prize pack.

Survey questions including answer options for multiple choice questions were based on previous research exploring plant protein and PBMAs [17,18]. The survey (see Appendix A) comprised of 32 questions and used both open and closed questionnaire design to collect information on participant demographics, reported consumption of plant-based protein foods, perceptions of PBMAs including barriers and enablers to consumption and comparison of PBMAs to animal-based proteins. PBMAs were clearly defined as products formulated to mimic the taste, texture and appearance of animal-based products, as the absence of a definition had been noted as an issue in previous consumer research [19]. Closed multiple-choice questions were used to collect participant demographics including age, gender, highest level of education, residential area and to gather information on current eating practices and dietary preferences. Participants were asked to indicate whether they had a background in nutrition science or dietetics, which was used to define the two groups (NPs and general consumers). For diet type, participants were asked to indicate which term best describes their current dietary pattern ('no special diet', 'flexitarian', 'vegetarian', 'vegan', 'pescatarian', 'gluten free' or 'other'), with each diet described in a short sentence to reduce respondent confusion. A five-point Likert scale was used to obtain perceptions of plant-based eating and PBMAs with options ranging from 'strongly agree' to 'strongly disagree' and 'very important' to 'not at all important' Optional open-ended questions allowed participants to expand or elaborate on their responses. The survey was pilot tested by five dietitians and three non-dietitians to assist with construct and content validity, as well as the general understanding of questions and flow of the survey tool.

Data were exported from Survey Monkey® to Microsoft® Excel® (Version 16.22, 2019, Washington, DC, USA), where data collation and cleaning occurred. Descriptive statistics were used to provide frequency counts and percentages for demographic information, multiple-choice questions and Likert scale related questions. Content analysis of open-ended responses was used to explore topics and themes as they emerged in the data, representing a conventional approach to this analysis with no preconceived ideas as to the relevant themes derived from responses [20]. Chi-Square tests with post-hoc analysis using Bonferroni adjustments for column frequencies and by considering the adjusted standardised residuals for cell comparisons were performed in SPSS (IBM SPSS®, version 25.0, IBM Corp., Chicago, IL, USA) to compare responses between NPs and consumers. For demographic questions related to diet type and reasons for following the diet, multiple responses were accepted and were excluded from statistical analysis. The significance levels for all tests was $\alpha < 0.05$.

3. Results

3.1. Participant Demographics

A total of 679 eligible participants attempted the survey, corresponding to a completion rate of 89%. Partially complete questionnaires were included in the final analysis, as most responses were independent of one another. All participants resided in Australia, 37% of which were from New South Wales, 26% from Victoria, 12% from Queensland, 9% from South Australia, 7% from Western Australia, 4% from Australian Capital Territory and the remaining 5% from Tasmania and Northern Territory. As shown in Table 1, survey participants were mostly female (71.1%; n = 469), with a significantly higher ($p < 0.05$) proportion of females within the NPs group. In the total sample, the distribution across age groups was comparable to the Australian population [21], although the NPs tended to be younger. Three quarters of participants did not have a background in nutrition or dietetics (65.5%; n = 432); despite this, 71% (n = 468) held a bachelor or postgraduate degree. Most participants were primarily responsible for the household grocery shopping (81.4%; n = 537), with home cooking the most common method of food preparation (97.6%; n = 644).

Table 1. Participant demographics and differences between Consumers and Nutrition Professionals.

Demographic Variable	All Participants Count (%)	Nutrition Professionals Count (%)	Consumers Count (%)	*p*-Value
Gender (n)	(n = 660)	(n = 228)	(n = 432)	
Male	184 (27.9)	16 (7.0)	168 (38.9) *	
Female	469 (71.1)	209 (91.7)	260 (60.2) *	<0.05
Prefer not to answer	4 (0.6)	3 (1.3)	1 (0.2)	
Prefer to self-describe	3 (0.5)	0 (0.0)	3 (0.7)	
Age in years (n)	(n = 660)	(n = 228)	(n = 432)	
18–24	62 (9.4)	29 (12.7)	33 (7.6) *	
25–34	145 (22.0)	82 (36.0)	63 (14.6) *	
35–44	116 (17.6)	45 (19.7)	71 (16.4)	<0.05
45–54	135 (20.5)	35 (15.4)	100 (23.2) *	
55–64	134 (20.3)	27 (11.8)	107 (24.8) *	
≥65	68 (10.3)	10 (4.4)	58 (13.4) *	
Education Status (n)	(n = 660)	(n = 228)	(n = 432)	
High school to year 10	17 (2.6)	0 (0.0)	17 (3.94) *	
High school to year 11 or 12	60 (9.1)	6 (2.6)	54 (12.5) *	
Trade qualification	13 (2.0)	1 (0.4)	12 (2.8) *	<0.05
Certificate or Diploma	98 (14.9)	5 (2.2)	93 (21.5) *	
Bachelor's Degree	238 (36.1)	87 (38.2)	151 (35.0)	
Post Graduate Degree	230 (34.9)	129 (56.6)	101 (23.4) *	
I'd prefer not to say	4 (0.6)	0 (0.0)	4 (0.9)	
Primary shopper (n)	(n = 660)	(n = 228)	(n = 432)	
Participant	537 (81.4)	188 (82.5)	349 (80.8)	0.601
Other	123 (18.6)	40 (17.5)	83 (19.2)	
Food Preparation Method (n)	(n = 660)	(n = 228)	(n = 432)	0.104
Home cooking	644 (97.6)	227 (99.6)	417 (96.5) *	
Takeway	8 (1.2)	0 (0.0)	8 (1.9) *	
Frozen Meals	7 (1.1)	1 (0.4)	6 (1.4)	
I'd prefer not to answer	1 (0.2)	0 (0.0)	1 (0.2)	

Chi-Square tests using Bonferroni adjustments p value < 0.05; * within group differences (z score ± 1.96).

As shown in Table 2, most participants did not follow a specific diet (37.7%; n = 249). Among the NPs, there was a higher proportion of individuals not following a specific diet (54.0%, n = 123) compared with consumers (28.7%, n = 124). A higher proportion of consumers followed a vegan diet (34.5%, n = 149). A flexitarian dietary pattern was

reported by ~19% of the sample and whereas health was the key driver for dietary pattern choices among NPs, ethical concerns were the main factors influencing consumers.

Table 2. Diet type and reasons for diet among participant groups.

Demographic Variable	All Participants Count (%)	Nutrition Professionals Count (%)	Consumers Count (%)
Diet (*n*)	(*n* = 660)	(*n* = 228)	(*n* = 432)
No specific diet	249 (37.7)	126 (54.8)	124 (28.7)
Vegan	165 (25.0)	16 (7.0)	149 (34.5)
Flexitarian	124 (18.9)	58 (25.9)	65 (15.1)
Vegetarian	67 (10.2)	13 (5.7)	54 (12.5)
Other	29 (4.4)	9 (3.9)	20 (4.6)
Gluten Free	33 (5.0)	14 (6.1)	19 (4.4)
Pescatarian	37 (5.6)	9 (3.9)	28 (6.5)
Reasons for diet (*n*)	(*n* = 418)	(*n* = 105)	(*n* = 313)
Health	276 (66.0)	80 (76.2)	196 (62.6)
Ethical	272 (65.1)	56 (53.3)	216 (69.0)
Personal	96 (23.0)	16 (15.2)	7 (2.2)
Other	81 (19.4)	21 (20.0)	60 (19.2)
Religious	11 (2.6)	4 (3.8)	7 (2.2)
Prefer not to answer	3 (0.7)	2 (1.9)	1 (0.32)

The majority of participants reported consuming two serves of fruit per day (42.7%; *n* = 281) and four serves of vegetables per day (24.7%; *n* = 163). More than half of NPs reported consuming two serves of fruit per day (53.7%, *n* = 122), while 29% of Consumers reported two or more serves of fruit per day. A greater proportion of NPs were also more likely to consume the suggested five serves of vegetables than Consumers (22.5% and 14.2%, respectively), with most Consumers (36.9%, *n* = 159) reporting only two serves of vegetables per day on average.

3.2. Definition of Plant-Based Eating and Sources of Plant Protein

A plant-based diet was defined as 'following a vegan diet' (55.3%, *n* = 352), 38% (*n* = 244) of participants defined a plant-based diet as 'following a flexitarian diet' and 27.8% (*n* = 177) defined it as 'a vegetarian diet'. Open-ended responses identified the most common sources of plant-based proteins as legumes, nuts, soy, tofu, whole grains, tempeh, vegetables and meat alternatives. This is depicted in a word cloud in Figure 1.

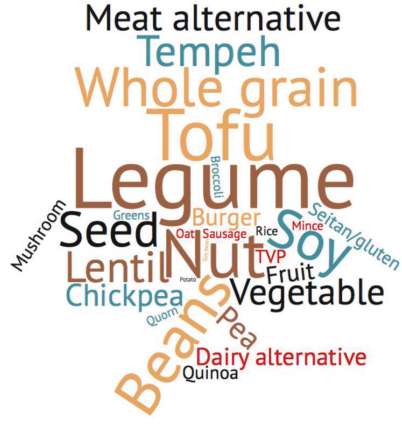

Figure 1. Word cloud based on responses to the question "When thinking of plant-based protein, what foods come to mind?" Larger fonts indicate a higher frequency of mentions by participants.

3.3. Reported Consumption of Plant Protein and Plant-Based Meat Alternatives (PBMA)

When reporting consumption, whole grains were the most frequently consumed source of plant protein, followed by nuts, seeds, legumes and tofu. As shown in Table A1 in Appendix B, there were significant differences in the consumption frequency of whole grains, nuts, tofu and tempeh between consumers and NPs but no difference in consumption for legumes or seeds. While 72.9% (n = 164) of NPs consumed whole grains daily, only 58.7% of consumers reportedly consumed whole grains daily. More than half of NPs consumed nuts daily, whereas consumers more frequently consumed tofu (27.7% 'more than once per week'). Tempeh was the least commonly consumed plant protein, with 50.2% of NPs and 39.8% of consumers reportedly 'never' consuming tempeh.

When questioned about PBMA that are formulated to mimic the taste, texture and colour of animal protein, 74.2% (n = 472) of participants reported having previously tried these products. Significant differences were observed between NPs and consumers ($p < 0.001$). Consumption of PBMA was higher among consumers, with 20.2% reporting consuming these products "at least once or more per week", whereas for NP, the highest frequency of consumption of PBMA was only "once per year" (20.9%, n = 47) (Table A1 in Appendix B). The most frequently consumed PBMA were burger patties (86.9%, n = 404), sausages (72.3%, n = 336), mince (67.3%, n = 313), and chicken (nuggets, strips, schnitzel) (59.1%, n = 275). Of those who had previously tried PBMAs, most had first purchased these products from the supermarket (76.9%, n = 363) as opposed to fast food chains (5.1%, n = 24) or other speciality stores (8.3%, n = 39).

3.4. Nutrition Professional and Consumer Perceptions of Following a Plant-Based Dietary Pattern

In general, most participants strongly agreed that following a plant-based dietary pattern promotes good nutrition (56.4%, n = 359) and is environmentally friendly, although 10% more consumers strongly agreed with the statement about environmental sustainability (Table 3). NPs were more likely to strongly agree that following a plant-based dietary pattern is high in dietary fibre (74.2%). In the case for protein, 42% of consumers strongly disagreed that consuming adequate protein would be difficult to obtain following a plant-based dietary pattern.

Table 3. Perceptions of following a plant-based dietary pattern and differences between Nutrition Professionals and Consumers.

	Count (%)						
	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**STRONGLY AGREE**	**I'm Not Sure**	***p*-Value**
Following a plant-based dietary pattern promotes good nutrition	21 (3.3)	22 (3.45)	51 (8.0)	180 (28.3)	359 (56.4)	4 (0.6)	
NP (n = 225)	3 (1.3) *	8 (3.6)	20 (8.9)	59 (26.2)	135 (60.0)	0 (0.0)	0.160
Consumer (n = 412)	18 (4.4)	14 (3.4)	31 (7.5)	121 (29.4)	224 (54.4)	4 (1.0)	
Following a plant-based dietary pattern is environmentally friendly	22 (3.5)	12 (1.9)	64 (10.1)	176 (27.6)	351 (55.1)	12 (1.9)	
NP (n = 225)	4 (1.8)	4 (1.8)	26 (11.6)	81 (36.0) *	109 (48.4) *	1 (0.4) *	0.002
Consumer (n = 412)	18 (4.4)	8 (1.9)	38 (9.2)	95 (23.1)	242 (58.7)	11 (2.7)	
Following a plant-based dietary pattern is high in dietary fibre	14 (2.2)	3 (0.5)	28 (4.4)	170 (26.7)	412 (64.7)	10 (1.6)	
NP (n = 225)	3 (1.3)	0 (0.0)	8 (3.6)	47 (20.9) *	167 (74.2) *	0 (0.0) *	0.003
Consumer (n = 412)	11 (2.7)	3 (0.7)	20 (4.9)	123 (29.9)	245 (59.5)	10 (2.4)	
It is hard to meet protein requirements following a plant-based dietary pattern	236 (37.1)	234 (36.7)	72 (11.3)	61 (9.6)	24 (3.8)	10 (1.6)	
NP (n = 225)	63 (28.0) *	104 (46.2) *	29 (12.9)	22 (9.8)	7 (3.1)	0 (0.0) *	<0.001
Consumer (n = 412)	173 (42.0)	130 (31.6)	43 (10.4)	39 (9.5)	17 (4.1)	10 (2.4)	

* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96).

3.5. Nutrition Professional and Consumer Perceptions of Plant-Based Meat Alternatives

Of those who had previously tried PBMA (n = 472), most were driven by curiosity with 49.3% of participants selecting 'new food trend' as a key factor influencing consumption. This was followed by ethical concerns such as animal welfare (44.5%, n = 207), environmental concerns (41.5%, n = 193) and health reasons (28.6%, n = 133). Only 22.1% of participants reported consuming PBMA to assist in transitioning to a more plant-based diet. Common reasons for not consuming PBMA included 'currently not interested' (39.6%, n = 65), 'does not suit my eating preferences' (28.7%, n = 65), 'I am interested but haven't had the chance' (18.9%, n = 31) and other (12.8%, n = 21) with 'processed' being the most common response (7.9%, n = 13).

Table 4 outlines the factors influencing the selection of PBMA and differences between NPs and consumers. When asked to rate the importance of certain factors, 'suits my diet', 'ingredients', 'taste', 'texture' and 'ethical concerns' were rated very important by both NPs and consumers. Significant differences were observed between the two groups for all factors influencing the selection of PBMA, except for 'taste' (p = 0.683) which was rated very important and convenience (p = 0.894) as important to both groups. More than half of NPs believed that ingredients and texture were very important (53.9 and 57.3%, respectively); however, environmental (41.6%) and ethical concerns (53.4%) were considered very important among consumers—more so than NPs. The product brand was not at all important within this sample.

Table 4. Factors influencing the selection of plant-based meat alternatives and differences between Nutrition Professionals and Consumers.

Factor Influencing Selection	Count (%)						p-Value
	Not at All Important	Slightly Important	Important	Fairly Important	Very Important	I'm Not Sure	
Suits my diet	28 (6.0)	28 (6.0)	99 (21.3)	66 (14.2)	230 (49.5)	14 (3.0)	
NP (n = 143)	11 (7.7)	7 (4.9)	44 (30.8) *	21 (14.7)	55 (38.5) *	5 (3.5)	0.009
Consumer (n = 322)	17 (5.3)	21 (6.5)	55 (17.1)	45 (14.0)	175 (54.4)	9 (2.8)	
Price	24 (5.2)	56 (12.0)	132 (28.4)	119 (25.6)	128 (27.5)	6 (1.3)	
NP (n = 143)	4 (2.8)	7 (4.9) *	40 (28.0)	42 (29.4)	48 (33.6)	2 (1.4)	0.011
2Consumer (n = 322)	20 (6.2)	49 (15.2)	92 (28.6)	77 (23.9)	80 (24.8)	4 (1.2)	
Ingredients	21 (4.5)	43 (9.3)	107 (23.0)	87 (18.7)	199 (42.8)	8 (1.7)	
NP (n = 143)	4 (2.8)	4 (2.8) *	35 (24.5)	21 (14.7)	77 (53.9) *	2 (1.4)	0.002
Consumer (n = 322)	17 (5.3)	39 (12.1)	72 (22.4)	66 (20.5)	122 (37.9)	6 (1.9)	
Taste	4 (0.9)	5 (1.1)	36 (7.7)	72 (15.5)	344 (74.0)	4 (0.9)	
NP (n = 143)	2 (1.4)	1 (0.7)	9 (6.3)	19 (13.3)	110 (76.9)	2 (1.4)	0.683
Consumer (n = 322)	2 (0.6)	4 (1.2)	27 (8.4)	53 (16.5)	234 (72.7)	2 (0.6)	
Texture	7 (1.5)	28 (6.0)	61 (13.1)	141 (30.3)	224 (48.2)	4 0.9)	
NP (n = 143)	2 (1.4)	7 (4.9)	10 (7.0) *	40 (28.0)	82 (57.3) *	2 (1.4)	0.051
Consumer (n = 322)	5 (1.6)	21 (6.5)	51 (15.8)	101 (31.4)	142 (44.1)	2 (0.6)	
Brand	227 (48.8)	134 (28.8)	50 (10.8)	26 (5.6)	17 (3.7)	11 (2.4)	
NP (n = 143)	55 (38.5) *	54 (37.8) *	20 (14.0)	7 (4.9)	5 (3.5)	2 (1.4)	0.021
Consumer (n = 322)	172 (53.4)	80 (24.8)	30 (9.3)	19 (5.9)	12 (3.7)	9 (2.8)	
Environmental concern	29 (6.2)	66 (14.2)	93 (20.0)	99 (21.3)	171 (36.8)	7 (1.5)	
NP (n = 143)	10 (7.0)	31 (21.7) *	38 (26.6) *	25 (17.5)	37 (25.9) *	2 (1.4)	0.001
Consumer (n = 322)	19 (5.9)	35 (10.9)	55 (17.1)	74 (23.0)	134 (41.6)	5 (1.6)	
Ethical Concern	36 (7.7)	65 (14.0)	69 (14.8)	77 (16.6)	209 (45.0)	9 (1.9)	
NP (n = 143)	15 (10.5)	37 (25.9) *	27 (18.9)	25 (17.5)	37 (25.9) *	2 (1.4)	<0.001
Consumer (n = 322)	21 (6.5)	28 (8.7)	42 (13.0)	52 (16.2)	172 (53.4)	7 (2.2)	
Convenience	36 (7.7)	86 (18.5)	132 (28.4)	137 (29.5)	67 (14.4)	7 (1.5)	
NP (n = 143)	8 (5.6)	29 (20.3)	41 (28.7)	43 (30.1)	20 (14.0)	2 (1.4)	0.894
Consumer (n = 322)	28 (8.7)	57 (17.7)	91 (28.3)	94 (29.3)	47 (14.6)	5 (1.6)	

* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96).

When asked about willingness to pay, participants were prepared to pay on average AUD 2.00–3.00/100 g for PBMA (Table A2 in Appendix C). For plant-based burgers and minced meat products, all participants were willing to pay slightly higher than the average cost (AUD 1.38) per 100 g with the majority selecting AUD 2.00–3.00/100 g. For plant-based sausages, consumers were willing to pay AUD 2.00–3.00/100 g, which is slightly above the average cost of meat-based products (AUD 1.42); whereas, NPs selected "I would not buy this product". For all participants, the least favourable options were plant-based chicken and fish varieties, with 36.9 and 43.2% unwilling to purchase these.

When selecting PBMA, most participants stated they looked for whole or familiar foods (57.5%, n = 268); however, 31.4% (n = 146) stated they do not look for specific ingredients. Twenty-seven percent reported looking for products with added vitamins and minerals and 22.6% (n = 105) looked for added vegetables. This trend was consistent among Consumers; however, NPs were more likely to look for products with added vitamins or minerals.

Table A3 in Appendix D outlines the importance of nutritional factors of PBMA and differences between consumers and NPs. Significant differences were observed between NPs and consumers for all nutritional factors, except for "high in protein" (p = 0.087), and "high in dietary fibre" (p = 0.081). The salt/sodium content of PBMA was considered "very important" for 44.8% of NPs (see Figure 2). Significant differences were observed in ratings for both iron and vitamin B12, with 72.8 and 73% of NPs regarded iron and B12 content as important, fairly important or very important, while far fewer consumers believed iron was very important and proportionally more felt it was not important at all, as shown in Figure 3. Surprisingly, 39.9% of NPs rated the HSR as not at all important, whereas 23.3% of consumers rated the HSR as fairly important, with a further 15.5% rating it as very important for the selection of PBMA (see Figure 4).

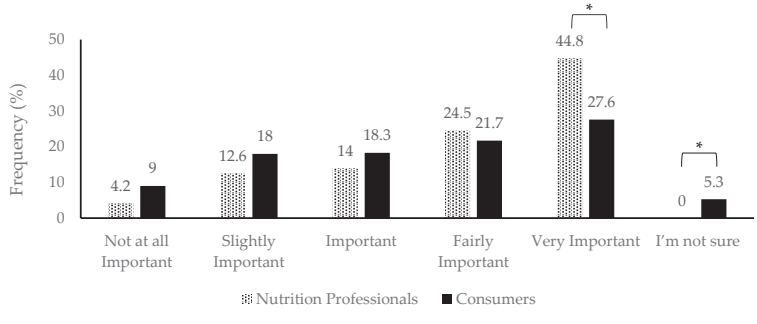

Figure 2. Importance of the salt (sodium) content of PBMAs between nutrition professionals and consumers (* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96)).

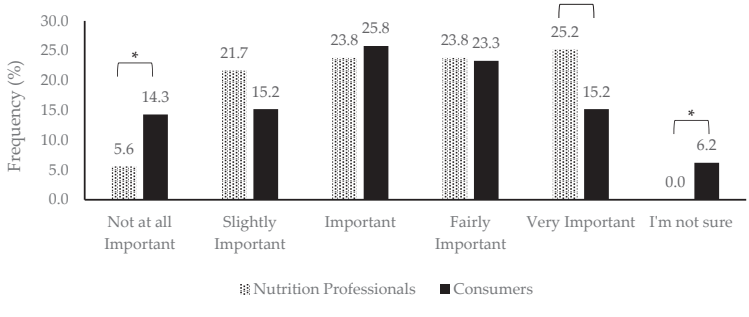

Figure 3. Importance of the iron content of PBMAs between nutrition professionals and consumers (* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96)).

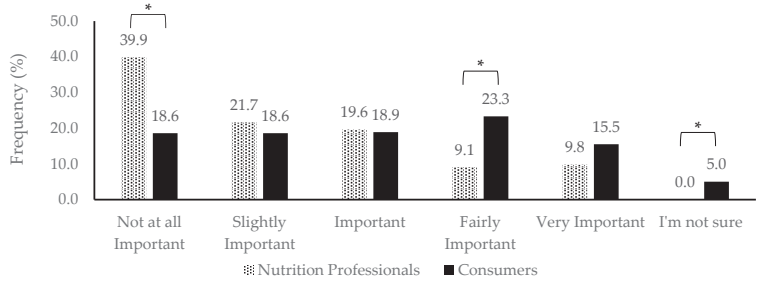

Figure 4. Importance of the Health Star Rating of PBMAs between nutrition professionals and consumers (* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96)).

3.6. Comparison between Plant-Based Meat Alternatives and Animal Protein

There were significant differences in the responses provided by NPs and Consumers across all questions comparing PBMA to traditional meat (Table 5). Most participants neither agreed nor disagreed that PBMA were more nutritious than traditional meat (40.6%, n = 252), contained less energy than traditional meat (36.6%, n = 227) and contained more protein than traditional meat (45.9%, n = 285). Both NPs and consumers predominately agreed that PBMA should contain iron and B12 to match animal-based protein; however, NPs had a higher frequency in the "agreement" categories.

Table 5. Participant perceptions of plant-based meat alternatives and differences between nutrition professionals and consumers.

PBMA Claim	Count (%)						
	Strongly Disagree	**Disagree**	**Neither Agree Nor Disagree**	**Agree**	**Strongly Agree**	**I'm Not Sure**	***p*-Value**
PBMA are more environmentally friendly than traditional meat	24 (3.9)	44 (7.1)	128 (20.6)	196 (31.6)	176 (28.3)	53 (8.5)	<0.001
NP (n = 217)	5 (2.3)	27 (12.4) *	69 (31.8) *	74 (34.1)	26 (12.0) *	16 (7.4)	
Consumer (n = 404)	19 (4.7)	17 (4.2)	59 (14.6)	122 (30.2)	150 (37.1)	37 (9.2)	
PBMA are more nutritious than traditional meat	29 (4.7)	133 (21.4)	252 (40.6)	93 (15.0)	55 (8.9)	59 (9.5)	<0.001
NP (n = 217)	14 (6.5)	82 (37.8) *	98 (45.2)	18 (8.3) *	1 (0.5) *	4 (1.8) *	
Consumer (n = 404)	15 (3.7)	51 (12.6)	154 (38.1)	75 (18.6)	54 (13.4)	55 (13.6)	
PBMA contain less energy than traditional meat	39 (6.3)	137 (22.1)	227 (36.6)	83 (13.4)	20 (3.25)	115 (18.5)	<0.001
NP (n = 217)	4 (1.8) *	55 (25.4)	92 (42.4) *	42 (19.4) *	4 (1.8)	20 (9.2) *	
Consumer (n = 404)	35 (8.7)	82 (20.3)	135 (33.4)	41 (10.2)	16 (4.0)	95 (23.5)	
PBMA contain more protein than traditional meat	22 (3.5)	144 (23.2)	285 (45.9)	42 (6.8)	17 (2.7)	111 (17.9)	<0.001
NP (n = 217)	9 (4.2)	84 (38.7) *	94 (43.3)	4 (1.8) *	2 (0.9)	24 (11.1) *	
Consumer (n = 404)	13 (3.2)	60 (14.9)	191 (47.3)	38 (9.4)	15 (3.7)	87 (21.5)	
PBMA contains more salt than traditional meat	5 (0.8)	41 (6.6)	176 (28.3)	223 (35.9)	74 (11.9)	102 (17.9)	<0.001
NP (n = 217)	1 (0.5)	13 (6.0)	45 (20.7) *	105 (48.4) *	34 (15.7)	19 (8.8) *	
Consumer (n = 404)	4 (1.0)	28 (6.9)	131 (32.4)	118 (29.2)	40 (9.9)	83 (20.5)	
PBMA should contain iron to match traditional meat	17 (2.7)	55 (8.9)	150 (24.2)	239 (38.5)	123 (19.8)	37 (6.0)	<0.001
NP (n = 217)	5 (2.3)	20 (9.2)	37 (17.1) *	89 (41.0)	62 (28.6) *	4 (1.8)	
Consumer (n = 404)	12 (2.5)	35 (8.7)	113 (28.0)	150 (37.1)	61 (15.1)	33 (8.2)	
PBMA should contain vitamin B12 to match traditional meat	13 (2.1)	48 (7.7)	125 (20.1)	265 (42.7)	138 (22.2)	32 (5.2)	<0.001
NP (n = 217)	3 (1.4)	21 (9.7)	28 (12.9) *	99 (45.6)	62 (28.6) *	4 (1.8)	
Consumer (n = 404)	10 (2.5)	27 (6.7)	97 (24.0)	166 (41.1)	76 (18.8)	28 (6.9)	

* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96).

A total of thirty-seven percent of consumers "strongly agreed" that "PBMA are more environmentally friendly than traditional meat"; whereas NPs had the highest proportion neither agreeing nor disagreeing (34.1%, n = 74) (see Table 5). Similarly, a greater proportion of NPs "agreed" that PBMA contain more salt than traditional meat (48.4%, n = 105); whereas consumers 'neither agreed nor disagreed' (32.4%, n = 131). For each statement on PBMA the "I am not sure" selection always had a higher proportion from the consumer than NP participants (Table 5).

3.7. Food Labelling

Of all participants, 77.7% (n = 495) had seen a plant-based protein claim on food labels. Those who had observed this claim had seen it most commonly on 'meat alternative' products (87.9%, n = 435) and ready meals (62.3%, n = 311). Interestingly, NPs generally had noticed more claims on products such as bread, breakfast cereal, muesli bars, spreads, legumes and soups. In contrast, consumers had noted other food categories such as meat and dairy alternatives and crackers, chips and savoury snacks. One-third of consumers stated that they "sometimes" actively choose foods that have a plant-based protein claim on the food label (32.3%, n = 160); whereas NP stated they "rarely" look for a plant-based claim on the food label (45.6%, n = 82), closely followed by "never" (30.0%, n = 54).

4. Discussion

This study provides some insights into Australian views, beliefs, knowledge and factors influencing the choice of plant-based proteins and PBMAs from both NPs and Consumers. Importantly, those responding to the survey reported a high frequency of cooking at home (>97% for the sample) and greater than 40% consumed the recommended two serves of fruit per day while almost 25% consumed five serves of vegetables. This result was far higher than national averages for fruit (~26%) and vegetable consumption (~5%) and combined, they indicate a high level of planned eating [22], and suggest the survey attracted a healthy and well-informed consumer. Although age groups were well represented across the sample, the group of NPs were younger and predominantly female, which is typical of the professional membership with only 6% of Dietitians Australia members identifying as male [23].

In Australia, the prevalence of vegetarian and flexitarian diets has increased from 9 to 11% between 2012 and 2016 [24], and alongside this shift, there has been a five-fold increase in the number of PBMAs on Australian supermarket shelves since 2015 [14]. With plant-based dietary patterns increasing in popularity, understanding consumers' dietary patterns is the first step for addressing potential health-related concerns and addressing these within public health measures and health promotion activities. The survey results indicated that approximately 25% of all participants followed a vegan diet and almost 20% followed a flexitarian diet. A recent nationally representative survey of Australians indicated that almost 20% of the population were meat reducers with 4.3% vegetarian and 1.6% vegan [25]. Despite the higher representation of vegan and vegetarian participants within our study population, this research was appropriate to determine consumer perceptions and attitudes of plant-based eating including PBMAs, as some studies have found a high level of unfamiliarity with the product category as they are not well established or considered the "social norm" [19]. The proportion of adoption of a specific diet was higher among consumers than NPs which may in part be due to the increasing popularity to trial diets. Additionally, consumers may attempt to balance their beliefs of both nutrition and the environment, whereas the training provided within a nutrition degree is focused on the scientific evaluation of nutrition. Therefore, the adoption of specific diets would be based on evidence for this group, as evidenced by fewer NPs following special diets.

All participants identified legumes, tofu, whole grains, nuts and beans as the most common sources of plant protein, and whole grains were reported as the most commonly consumed source of plant protein, which is the case in Western countries [26]. These results may be an indication that participants may be more likely to base dietary choices on

whole core foods such as whole grains and legumes as protein sources, and PBMA such as textured vegetable protein, Quorn, sausages and burger patties as secondary sources. The consumer population in our survey indicated that 46% of participants were eating PBMAs at least once per week, this consumption frequency was lower among NPs, indicating they may be more inclined to trial a product rather than consume PBMAs regularly Flexitarians in a German study were consuming slightly less than four portions of PBMA per week which was double that of Omnivores. Still, it is unclear how these portions were defined or accounted for within the study [19]. In a study of four countries (the United Kingdom, Spain, Brazil and the Dominican Republic), higher economic groups demonstrated a higher degree of readiness to adopt PBMAs in place of meat [18]. This may be a factor worth considering as there was no difference between consumers and NPs in holding a Bachelor degree in this sample, an indicator of socioeconomic status.

Results indicated that burgers and sausages were the most commonly consumed PBMA and is in agreement with the variety and range of products on offer within Australian supermarkets, where a recent audit found 50 burger, 29 sausage, 24 mince and 10 chicken products [14]. Additionally, research of PBMA companies indicates the Australian market may reach $3 billion in sales by 2030 [16], and internationally, chicken (22%), beef (19%) and pork (15%) are the primary product focus areas [27]. This information alludes to the fact that there is an opportunity for beef and chicken alternates. However, from our results, seafood alternates do not appear to be of interest, with 43.2% of participants not willing to purchase plant-based fish alternatives. This may be due to the flexitarian and pescatarian population still choosing to include fish products, therefore not requiring an alternative PBMA may be best suited as red meat alternatives potentially due to the awareness that red meat, particularly processed meat, has established links with cardiovascular and colon cancer disease [28,29]. Both our data and information gathered internationally indicate that public health education efforts should be targeted to improve consumer understanding of plant-based products and provide guidance for better health.

Regarding nutrients, consumers and NPs were aligned in their assessment of the importance of protein and dietary fibre. As suggested by Weinrich, we assessed consumer concerns about protein deficiency through the use of PBMA [17], however it was NPs who indicated concerns when asked about the overall nutrition and protein content in comparison to meat, with nearly 40% in both instances disagreeing with the statement posed. Most survey participants, especially NPs, considered sodium content to be very important when choosing PBMAs. An audit of Australian supermarkets indicated that the mean sodium content of PBMAs was 372–568 mg/100 g, and up to 1200 mg/100 g, which suggests the need for industry reformulation targets in Australia, as in England [14]. Consumers considering sodium content as very important may indicate the success of campaigns to highlight this ingredient as a key health issue [30].

As found in our study, a higher proportion of NPs considered fortification with iron and B12 as of greater importance than consumers. Meat provides an efficient source of nutrients such as iron, zinc, polyunsaturated fatty acids, vitamin A, B12 and D and it has been suggested that a suitable PBMA should provide similar quantities of essential nutrients [14]. However, in Australia, only one fifth of PBMAs are fortified with iron and less than a quarter are fortified with vitamin B12 [14]. As the popularity of plant-based diets continue to grow, a greater proportion of the population may be at risk of nutrient deficiencies [31], particularly younger women who are more likely to choose vegan or vegetarian dietary patterns, coupled with increased nutrient requirements. As found in a study of Australian University females, 33.9% of participants had hypoferritinemia and 11.3% had low B12, which may be attributed to the exclusion of whole food groups such as red meat [32]. Similarly, in a large cross-sectional study of more than 20,000 individuals, where red and processed meat was partially replaced by plant-based alternatives (legumes, seeds and nuts), diet quality improved, however there were adverse impacts on micronutrients, particularly zinc and vitamin B12 [33]. As such, there is value in fortifying PBMAs with micronutrients to supplement intakes and reduce the risk of deficiencies if

they are to be consumed in place of animal-based proteins. However, in saying this, it is important to consider an individual's habitual diet when assessing nutrient risk [34]. As concluded by van Vliet et al., if consumers were to follow a flexitarian diet, it is unlikely that unfortified PBMA would negatively impact overall nutrient status [35]. Therefore, fortification of PBMAs with iron and vitamin B12 may assist with insufficient intakes and potential nutrient deficiencies within a population; however, on an individual level, nutritional adequacy of the entire diet must be considered.

Our survey results indicated that 23.3% of consumers considered the health star rating (HSR) "fairly important" when selecting a PBMA (Figure 4). Previous research of the HSR found that consumers have a positive experience of the HSR and that its existence on-pack can sway the consumer to see the product in a positive nutritional light [36]. The audit of PBMA in Australian supermarkets indicated that 46% of products displayed a HSR, with the average HSR being above the "healthy pass" mark of 3.5 stars [14]. Interestingly, 39.9% of NPs considered the HSR not important at all when selecting PBMA. The reluctance to utilise the system when selecting products may be influenced by the access NPs have to literature critiquing the front of pack labelling system and its limitations [37]. The limited use of the HSR system as a tool by well-informed consumers may also be due to distrust in the system or their ability to make a judgement on the healthfulness of the product without the need to use the labelling tool. In the United States, consumers were asked to identify the healthier product when presented with two burger products, one being plant-based and the other being meat-based. Nearly half of the participants selected the plant-based product since it provided a breakdown of nutrients in the nutrition information panel that the meat product did not display. This is a further indication of the "health halo" that is potentially associated with these foods [38].

The recent Eat Lancet Commission have highlighted the health and planetary benefits of consuming more plant-based foods, with flexitarian dietary patterns as an example of this style of eating [2]. Among all participants in the survey, more than half (56.4%) strongly agreed that following a plant-based diet promotes good nutrition and is environmentally friendly. In the case of environmental sustainability, it appeared that consumer perceptions of plant-based eating were reflected in their opinions of PBMA; where most strongly agreed that both plant-based diets and PBMAs were environmentally friendly. Despite the perception, PBMA life cycle analysis has produced mixed results when it comes to the environmental impact of these products. One study applying an integrated conceptual framework found that *"their potential sustainability benefits may turn out to be disappointing, due to the extensive processing that is required which takes energy and leads to losses during the transformation"* [39]. In comparison, an industry commissioned life cycle analysis found that PBMAs generate 90% less GHGe and use 46% less energy and 93% less land compared to their beef counterpart [40]. Therefore, further life cycle analysis from an Australian perspective considering inputs and outputs is required to understand the environmental impact, particularly where products are imported or made from imported ingredients. Furthermore, consideration of products with whole food ingredients (rather than isolates), may reveal greater health and sustainability advantages while acknowledging the synergistic effects of the whole food [34].

Environmental and ethical themes were top of mind for consumers in this study compared to research a decade ago [19]; however, repeat purchase is known to be driven by taste and sensory appeal while environmental arguments are thought to be less critical in the decision stage [17]. As found in our study, the consumption of PBMAs was driven more so by curiosity, than for ethical, environmental or health reasons. This is in line with previous research investigating enablers of PBMA intake including a recent online survey involving 1000 US adults [41]. Authors found that the curiosity to try new foods was the top reason for trying PBMAs [41], and while 39.6% (n = 65) of participants in our survey had no interest in trying PBMAs, only a small number (18.9% n = 31) had not yet had the chance to try the products, with seemingly no objections to the products. Cost is another factor influencing purchasing decisions, with a unique suggestion to make animal

proteins more expensive than PBMAs rather than trying to make meat alternatives less expensive [19]. The same authors, through their analysis of preferences, suggested focusing efforts on processed meat alternatives rather than on replicating particular cuts of meat [19].

There were some strengths associated with this study, one being the sample size of individuals who had tried PBMA, which allowed comparison between Consumers and NPs. The inclusion of NPs enabled comparison of trained professionals' views with that of the general population, providing insight into misinformation and potential for further education and public health efforts. We did not formally confirm NPs qualifications, as our interest was primarily in their advanced knowledge of diet–disease relationships and understanding of food supply system issues pertaining to sustainability and food processing, such as fortification. We correctly anticipated divergent views regarding nutrient content between consumers and NPs. The advertising for the study was approved by the University of Wollongong HREC and did not seek to attract any particular group or dietary preference however, a high proportion of vegans and vegetarians participated in the study. This facilitated the collection of in-depth information surrounding their views and consumption habits of plant proteins and PBMA, although this may have resulted in an under-representation of unrestricted meat-eaters, which is a limitation of the study. Furthermore, as the study population are not representative of the Australian population, results are not generalisable and findings cannot be extrapolated beyond the study group. Additionally, there was potential for social desirability where participants may exaggerate their intake of PBMAs in the belief these products are of high nutritional quality. To account for this systematic bias, the survey was designed to limit social desirability by allowing participants to select responses on a scale including "I'm not sure" and the ability to skip questions. Additionally, the survey commenced prior to COVID-19 and any awareness of the impacts of the pandemic on lifestyle, the food supply and cooking habits. This needs to be considered; however, as we now are aware, the situation in Australia has been far less impacted than other countries around the world.

5. Conclusions

Interest in a plant-based diet and consumption of PBMAs is rapidly growing with consumers believing these products promote good health while also being environmentally friendly. The results of this survey indicate the importance of further research into the life cycle of PBMA products to evaluate and substantiate their environmental impact, to reassure consumers. Additionally, there is potential for product innovation to ensure adequate attention to micronutrients, particularly if these products are to be exchanged for meat, which is especially relevant for vegan and vegetarian consumers who are at greater risk of deficiency. Plant-based and plant proteins undeniably reflect a substantial trend that will play out over the next decade at the very least, in research, impacting policy and food systems. Nutrition professionals must consider the nutritional adequacy of the entire dietary pattern, with the opportunity to highlight whole foods, whole grains and legumes and their use in tasty products to tempt a range of consumers so there is a "new normal" aimed at sustainable, plant-based diets.

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Institutional Review Board Statement: This study was conducted according to the guidelines of the Declaration of Helsinki, and approved by the University of Wollongong Human Research Ethics Committee (2020/256).

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: All data for this study is contained within the article.

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Appendix A

Survey Questions

1. What is your age group?
2. What is your gender?
3. Where do you currently live?
4. What is your highest level of education that you have completed?
5. Do you have a background in nutrition science or dietetics?
6. Which of the following categories best describes your annual combined household income?
7. Who does the majority of the food shopping in your household?
8. How do you mostly prepare your food?
9. Do you follow a specific diet? Please select all that apply to you
10. Why do you have these dietary requirements? Please select all that apply.
11. How many serves of fruit do you eat per day?
12. How many serves of vegetables do you eat per day?
13. Which of the following best defines plant-based eating? Please select all that apply.
14. When thinking of plant-based protein, what foods come to mind?
15. How frequently do you eat the following foods containing plant-based protein? This includes whole grains (e.g., whole meal bread, cereal, brown rice or pasta), legumes (e.g., lentils, baked beans, kidney beans, cannellini beans, broad beans, chickpeas, hummus, edamame), nuts, seeds, tofu and tempeh.
16. Please indicate how much you agree with the following statements about the benefits of following a plant-based dietary pattern.
17. Have you seen "plant-based protein" claims on food labels?
18. What types of products have you seen feature a "plant-based protein" claim? Please select all that apply.
19. Do you actively choose foods that have the "plant-based protein" claim on food labels?
20. Have you ever tried plant-based meat alternatives formulated to look like meat or seafood?
21. Select **all** the plant-based meat alternative products you have previously tried from the list below.
22. How **frequently** do you consume plant-based meat alternatives?
23. Where did you first purchase plant-based meat alternatives?
24. What are the reasons for choosing these foods? Please select all that apply.
25. When shopping for plant-based meat alternatives, what ingredients do you look for? Please select all that apply.
26. Thinking specifically about the nutrient content of plant-based meat alternatives, how important are the following factors when choosing a product?
27. When selecting plant-based meat alternatives, how important are the following factors?
28. Have you ever heard of the following plant-based meat alternative brands? Please select all that apply.
29. Can you tell us the reason why you have not tried plant-based meat alternatives?
30. How much do you agree with the following statements about plant-based meat alternatives?

Considering the average cost per 100 g of meat mince is $1.38, meat sausage is $1.42, chicken breast is $1.47, fish fillets are $2.03 and canned fish is $2.62, how much are you willing to pay per 100 g for the following plant-based meat alternatives? (Average prices correct as of 3 June 2020 sourced from Woolworths website)

Appendix B

Table A1. Frequency of consumption for plant-based protein and PBMA and differences between consumers and nutrition professionals.

Plant-Based Protein or Meat Alternative	Count (%)								
	Never	Once Per Year	Few Times Per Year	Once Per Month	2–3 Times Per Month	Once Per Week	More than Once Per Week	Daily	*p*-Value
Whole grains	9 (1.4)	1 (0.2)	10 (1.6)	8 (1.3)	10 (1.6)	33 (5.2)	160 (25.1)	406 (63.7)	0.005
NP (*n* = 225)	3 (1.3)	0 (0.0)	1 (0.4)	2 (0.9)	2 (0.9)	3 (1.3) *	50 (22.2)	164 (72.9) *	
Consumer (*n* = 412)	6 (1.5)	1 (0.2)	9 (2.2)	6 (1.5)	8 (1.9)	30 (7.3)	110 (26.7)	242 (58.7)	
Legumes	6 (0.9)	2 (0.3)	5 (0.8)	18 (2.8)	45 (7.1)	88 (13.8)	315 (49.5)	158 (24.8)	0.306
NP (*n* = 225)	3 (1.3)	0 (0.0)	1 (0.4)	5 (2.2)	21 (9.3)	33 (14.7)	116 (51.6)	46 (20.4)	
Consumer (*n* = 412)	3 (0.7)	2 (0.5)	4 (1.0)	13 (3.2)	24 (5.8)	55 (13.4)	199 (48.3)	122 27.2)	
Nuts	7 (1.1)	0 (0.0)	20 (3.1)	16 (2.5)	34 (5.3)	72 (11.3)	199 (31.2)	289 (45.4)	0.004
NP (*n* = 225)	5 (2.2) *	0 (0.0)	2 (0.9) *	3 (1.3)	7 (3.1)	20 (8.9)	75 (33.3)	113 (50.2)	
Consumer (*n* = 412)	2 (0.5)	0 (0.0)	18 (4.4)	13 (3.2)	27 (6.6)	52 (12.6)	124 (30.1)	176 (42.7)	
Seeds	9 (1.4)	3 (0.5)	29 (4.6)	28 (4.4)	61 (9.6)	93 (14.6)	201 (31.6)	213 (33.4)	0.711
NP (*n* = 225)	2 (0.9)	0 (0.0)	8 (3.6)	10 (4.4)	19 (8.4)	31 (13.8)	74 (32.9)	81 (36.0)	
Consumer (*n* = 412)	7 (1.7)	3 (0.7)	21 (5.1)	18 (4.4)	42 (10.2)	62 (15.1)	127 (30.8)	132 (32.0)	
Tofu	73 (11.5)	27 (4.2)	84 (13.2)	62 (9.7)	96 (15.0)	127 (19.9)	153 (24.0)	15 (2.4)	0.004
NP (*n* = 225)	18 (8.0) *	13 (5.8)	34 (15.1)	28 (12.4)	43 (19.1) *	47 (20.9)	39 (17.3) *	3 (1.3)	
Consumer (*n* = 412)	55 (39.8)	30 (3.4)	50 (12.1)	34 (8.3)	53 (12.9)	80 (19.4)	114 (27.7)	12 (2.9)	
Tempeh	277 (43.5)	57 (9.0)	84 (13.2)	62 (9.7)	63 (9.9)	32 (5.0)	24 (3.8)	1 (0.2)	0.016
NP (*n* = 225)	113 (50.2) *	27 (12.0) *	39 (17.3)	15 (6.7) *	18 (8.0)	8 (3.6)	5 (2.2)	0 (0.0)	
Consumer (*n* = 412)	164 (39.8)	30 (7.3)	79 (19.2)	50 (12.1)	45 (10.9)	24 (5.8)	19 (4.6)	1 (0.2)	
PBMA	164 (25.8)	95 (14.9)	102 (16.0)	55 (8.6)	41 (6.5)	69 (10%)	93 (14.6)	10 (1.6)	<0.001
NP (*n* = 225)	78 (34.7) *	47 (20.9) *	40 (17.8)	21 (9.3)	11 (4.9)	13 (5.8) *	10 (4.4) *	1 (0.4)	
Consumer (*n* = 411)	86 (20.9)	48 (11.7)	62 (15.1)	34 (8.3)	30 (7.3)	56 (13.6)	83 (20.2)	9 (2.2)	

* within group differences (z score ± 1.96).

Appendix C

Table A2. Participants willingness to pay for PBMA products per 100 g compared to the average cost of traditional animal protein per 100 g.

Product (Average Meat Product Cost/100 g)	Count (%)						
	AUD 1.00–2.00/100 g	AUD 2.00–3.00/100 g	AUD 3.00–4.00/100 g	AUD 4.00–5.00/100 g	>AUD 5.00/100 g	I Would Not Buy This	*p*-Value
Plant-based burger ($1.38)	184 (29.6)	213 (34.3)	82 (13.2)	22 (3.5)	17 (2.7)	103 (16.6)	0.061
NP (*n* = 217)	65 (30.0)	71 (32.7)	27 (12.4)	4 (1.8)	3 (1.4)	47 (21.7) *	
Consumer (*n* = 404)	119 (29.5)	142 (35.2)	55 (13.6)	18 (4.5)	14 (3.5)	56 (13.9)	
Plant based minced meat ($1.38)	186 (30.0)	188 (30.3)	60 (9.7)	18 (2.9)	20 (3.2)	149 (24.0)	0.313
NP (*n* = 217)	64 (29.5)	67 (30.9)	17 (7.8)	3 (1.4)	6 (2.8)	60 (27.7)	
Consumer (*n* = 404)	122 (30.2)	121 (30.0)	43 (10.6)	15 (3.7)	14 (3.5)	89 (22.0)	

Table A2. *Cont.*

Product (Average Meat Product Cost/100 g)	Count (%)						
	AUD 1.00–2.00/100 g	**AUD 2.00–3.00/100 g**	**AUD 3.00–4.00/100 g**	**AUD 4.00–5.00/100 g**	**>AUD 5.00/100 g**	**I Would Not Buy This**	***p*-Value**
Plant based sausages ($1.42)	173 (27.9)	194 (31.2)	51 (8.2)	25 (4.0)	16 (2.6)	162 (26.1)	0.004
NP (*n* = 217)	64 (29.5)	60 (27.8)	11 (5.1) *	7 (3.2)	2 (0.9)	73 (33.6) *	
Consumer (*n* = 404)	109 (27.0)	134 (33.2)	40 (9.9)	18 (4.5)	14 (3.5)	89 (22.0%	
Plant based chicken alternatives ($1.47)	132 (21.3)	186 (30.0)	66 (10.6)	31 (5.0)	16 (2.6)	190 (30.6)	0.044
NP (*n* = 217)	44 (30.3)	63 (29.0)	20 (9.2)	9 (4.2)	1 (0.5) *	80 (36.9) *	
Consumer (*n* = 404)	88 (21.8)	123 (30.5)	46 (11.4)	22 (5.5)	15 (3.7)	110 (27.2)	
Plant based fish alternatives ($2.03 fillet, $2.62 canned)	71 (11.4)	164 (26.4)	75 (12.1)	29 (4.7)	14 (2.3)	268 (43.2)	0.653
NP (*n* = 217)	23 (10.6)	59 (27.2)	25 (11.5)	10 (4.6)	2 (0.9)	98 (45.2)	
Consumer (*n* = 404)	48 (11.9)	105 (26.0)	50 (12.4)	19 (4.7)	12 (3.0)	170 (42.1)	

* within group differences (z score ± 1.96).

Appendix D

Table A3. Importance of the nutrient content of plant-based meat alternatives and difference between Nutrition Professionals (*n* = 143) and Consumers (*n* = 322).

PBMA Nutrient Content	Count (%)						
	Not at All Important	**Slightly Important**	**Important**	**Fairly Important**	**Very Important**	**I'm Not Sure**	***p*-Value**
High in protein	40 (8.6)	54 (11.6)	102 (21.9)	107 (23.0)	151 (32.5)	11 (2.4)	0.087
NP (*n* = 143)	9 (6.3)	16 (11.2)	28 (19.6)	34 (23.8)	56 (39.2)	0 (0.0) *	
Consumer (*n* = 322)	31 (9.6)	38 (11.8)	74 (23.0)	73 (22.7)	95 (29.5)	11 (3.4)	
High in dietary fibre	49 (10.5)	75 (16.1)	107 (23.0)	114 (24.5)	106 (22.8)	14 (3.0)	0.081
NP (*n* = 143)	16 (11.2)	26 (18.2)	29 (20.3)	42 (29.4)	30 (21.0)	0 (0.0) *	
Consumer (*n* = 322)	33 (10.3)	49 (15.2)	78 (24.2)	72 (22.4)	76 (23.6)	14 (4.4)	
Fat content	30 (6.5)	84 (18.1)	106 (22.8)	121 (26.0)	105 (22.6)	19 (4.1)	0.040
NP (*n* = 143)	6 (4.2)	26 (18.2)	35 (24.5)	43 (30.1)	33 (23.1)	0 (0.0) *	
Consumer (*n* = 322)	24 (7.5)	58 (18.0)	71 (24.2)	78 (24.2)	72 (22.4)	19 (5.9)	
Salt content	35 (7.5)	76 (16.3)	79 (17.0)	105 (22.6)	153 (32.9)	17 (3.7)	<0.001
NP (*n* = 143)	6 (4.2)	18 (12.6)	20 (14.0)	35 (24.5)	64 (44.8) *	0 (0.0) *	
Consumer (*n* = 322)	29 (9.0)	58 (18.0)	59 (18.3)	70 (21.7)	89 (27.6)	17 (5.3)	
Contains iron	54 (11.6)	80 (18.1)	117 (25.2)	109 (23.4)	85 (18.3)	20 (4.3)	<0.001
NP (*n* = 143)	8 (5.6) *	31 (21.7)	34 (23.8)	34 (23.8)	36 (25.2) *	0 (0.0) *	
Consumer (*n* = 322)	46 (14.3)	49 (15.2)	83 (25.8)	75 (23.3)	49 (15.2)	20 (6.2)	
Contains B12	59 (12.7)	84 (18.1)	106 (22.8)	107 (23.0)	87 (18.7)	22 (4.7)	0.018
NP (*n* = 143)	16 (11.2)	22 (15.4)	37 (25.9)	39 (27.3)	29 (20.3)	0 (0.0) *	
Consumer (*n* = 322)	43 (13.4)	62 (19.3)	69 (21.4)	68 (21.1)	58 (18.0)	22 (6.8)	
Contains organic ingredients	143 (30.8)	91 (19.6)	89 (19.1)	88 (19.1)	64 (13.8)	16 (3.4)	<0.001
NP (*n* = 143)	67 (46.9)	40 (28.0)	18 (12.6)	8 (5.6) *	8 (5.6) *	2 (1.4) *	
Consumer (*n* = 322)	76 (23.6)	69 (21.4)	57 (17.7)	57 (17.7)	43 (13.4)	19 (5.9)	
Health Star Rating	117 (25.2)	91 (19.6)	89 (19.1)	88 (18.9)	64 (13.8)	16 (3.4)	<0.001
NP (*n* = 143)	57 (39.9) *	31 (21.7)	28 (19.6)	13 (9.1) *	14 (9.8)	0 (0.0) *	
Consumer (*n* = 322)	60 (18.6)	60 (18.6)	61 (18.9)	75 (23.3)	50 (15.5)	16 (5.0)	

* Chi-Square tests using Bonferroni adjustments—within group differences (z score ± 1.96).

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Review

Local Entrepreneurship in the Context of Food Production: A Review

Izabela Kwil [1], Katarzyna Piwowar-Sulej [1] and Małgorzata Krzywonos [2,*]

[1] Department of Labor and Capital, Wroclaw University of Economics and Business, Komandorska 118/120, 53-345 Wrocław, Poland; izabela.kwil@ue.wroc.pl (I.K.); katarzyna.piwowar-sulej@ue.wroc.pl (K.P.-S.)
[2] Department of Bioprocess Engineering, Wroclaw University of Economics and Business, Komandorska 118/120, 53-345 Wrocław, Poland
* Correspondence: malgorzata.krzywonos@ue.wroc.pl

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Abstract: Local food production is meaningful not only for a single producer but also for the consumer, and finally for the entire region. Therefore, it would be beneficial to take up the issue of local entrepreneurship in the context of food production. The aim of the study was to analyze important terms, research topics, and research results related to the issue of local entrepreneurship in the context of food production. Literature review revealed definitional discrepancies related to the subject of the study. Thus, the need to create an unambiguous definition of local food and local entrepreneurship was emphasized. Own definitions of these issues were provided. Most of the available publications are devoted to local food produced in selected countries. In the analyzed research papers, the problem of local food is most often correlated with marketing or health-promoting properties of local food. A research gap was identified: suggestions were made in regards to the research problems worth bringing up in empirical research in the interest of activating local entrepreneurship.

Keywords: local food; local entrepreneurship; regional products; traditional product; empirical research

1. Introduction

In recent years, agricultural companies have been forced to adapt to new challenges such as market changes, changes in consumer habits, food safety, sustainability, and biotechnology [1]. According to the statement by Migliore et al. rapid changes in the agro-food sector (globalization and industrialization) have encouraged agribusiness companies to implement strategies for coping with the economic situation, which are mainly oriented towards mass production and profit maximization. This has raised several environmental concerns related to the exploitation of natural resources and the exclusion of many small family businesses (local producers) in rural areas oriented towards high-quality production from the global market [2]. The specific economic characteristics of the agricultural sector such as strong regulatory environment, mature markets, and start-up subsidies make this sector interesting to study, especially in the context of configuration and restructuring of entrepreneurs' resources [3–6].

Local food production is a subject that is becoming more and more popular in the media because it is associated with high quality ingredients. However, local food is not often known regionally or nationally. Moreover, the term "local food" is defined in various ways. For example, Coelho et al. [7] define it as food produced in close proximity to where the consumers live. However, these authors also point out that alternative food or culturally significant food is sometimes treated as local food. What is more, local food is often equated to such terms as 'traditional food' or 'regional food'. The latter term, though, has specific labeling.

It is important for particular regions to produce products which are not only healthy and tasty, but also well known. Factors that play an important role in regional promotion are culture, history, and the skills that people have as well as the local land. Local food production is inherently connected with the local entrepreneur.

The term 'entrepreneurship' was coined at the turn of the 19th century. The First Industrial Revolution can be pinpointed as the beginning of the scientific and research interest in entrepreneurship. At that time, entrepreneurship was associated with creating new forms of administration and economization of social life. It manifested itself in an appropriate use of capital, technology, raw materials, and human potential. Allocation of capital was incidental to risk related to the opportunity to quickly multiply profits or possibility to suffer a financial loss or go bankrupt. The term entrepreneurship was explained in works of representatives of economic and social liberal thought. Smith, Say, and Schumpeter are considered to be the precursors.

As pointed out by Hjorth and Steyaert [8], there is very little agreement on the issue of entrepreneurship. The terms entrepreneurship and entrepreneur were first described in the 18th century in a study written by Say. He presented entrepreneur as a person who allocates his own capital to risky and unknown investment. An analysis of literature on the subject of management shows that Drucker was first to present the definition of entrepreneurship. He specified that entrepreneurship is related to the introduction of new, better changes which are meant to build a foundation for the future business activity, without overlooking the optimum way to use the already owned resources [9]. Entrepreneurship can also be understood as an attitude or process of entrepreneurial changes resulting from this attitude. Such entrepreneurship manifests itself in readiness to take on new or improve the already existing activities. In his pursuit of reaching intended financial gains, the entrepreneur intends to increase his profits as well as improve his work and life conditions [10]. Griffin [11] on the other hand, pointed out that entrepreneurship is a process of organizing and running a business activity as well as taking risks related to running such activity. He was first to specify the semantic scope of the term entrepreneur.

Modern definitions emphasize that the "process of designing, launching and running a new business is often related to a small business" [12]. A model of entrepreneurship created by Morris, Lewis, and Sexton [13] includes:

- 'input' element encompassing important factors of entrepreneurship (opportunities, existence of an entrepreneur, organizational conditions),
- entrepreneurial process encompassing identification of opportunities, preparation and clarification of the concept, acquisition of resources, and implementation,
- 'output' element encompassing functioning of the venture, creation of values, new products and services, financial effect (including gain or loss, employment, assets).

Many typologies of entrepreneurship can be found in literature. What is surprising, is that these typologies do not adopt any particular criterion of division [14]. Several types of entrepreneurship can be distinguished including spontaneous, evolutionary, academic, technology, innovative, family, social, ecological, and female. Even though the general definition of entrepreneurship mentions building a new business, there is a separate type of entrepreneurship—corporate entrepreneurship (or intraentrepreneurship), which refers to entrepreneurial activities—such as innovation, venturing, and strategic renewal—within existing firms [15].

One can also come across a general definition of local entrepreneurship which describes entrepreneurship as a new and complex value creation on a local market that triggers change—examples would be a new production structure, new product, or new premises—and affects other firms, actors, and economic players in this locality. The new value disturbs the market in some way, causing the locality itself to change and ultimately develop by responding better to the needs of its own citizens and outside customers, and by creating more inside jobs and wealth, leading ultimately to local economic development [16].

Taking the above into consideration we have formulated the following research objectives:

1. Conducting an analysis of terms such as 'local food', 'regional food', and 'traditional food'. Formulating, on the basis of this analysis, an unambiguous definition of local food and local entrepreneurship related strictly to the production of analyzed food.
2. Conducting an analysis of the research topics and research results related to the issue of local entrepreneurship in the context of food production, identifying the research gap and research problems worth taking up in empirical research in the interest of activating local entrepreneurship.

2. Materials and Methods

Literature study conducted for the purpose of this paper included materials from the electronic database of publications—Web of Science (WoS) uploaded before 15.05.2019. This database was selected because—similarly to the Scopus database—it lists most of the international literature from a variety of scientific disciplines. There are many papers which are indexed in both of the above-mentioned databases.

An assumption was made in regards to the search, namely that the search will be based on the titles of publications because the keywords that are the main focus of the study are usually used in the title. An analysis of the contents of all publications (articles, book chapters, proceedings papers) which came up as a result of the search using queries: 'local food', 'local food', and 'entrepreneurship', as well as 'local food' and 'producer' was conducted. The Scopus search engine showed 1399 publications in total while WoS showed 1169. However, WoS includes more open access publications, 333, while Scopus includes 229.

The first publication which included searched words in the title was published in 2005. As a result, publications which were published since that point in time were accepted for analysis (Table 1).

Table 1. Number of publications devoted to the analyzed topic indexed in WoS and published in years 2005–2018.

Year of Publication	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2005–2018
Publications including "local food"	17	37	23	33	38	70	67	69	98	86	156	145	167	149	1155
Publications including "local food + entrepreneurship"	1	0	0	0	0	0	0	0	0	0	0	1	1	1	4
Publications including "local food + producer"	1	1	0	0	0	0	0	0	0	1	2	1	3	1	10
Total	19	38	23	33	38	70	67	69	98	87	158	147	171	151	1169

Source: own study.

Having prepared the statistics of publications the authors read the abstracts of all the articles which were displayed by search engines. Even if the content of the abstract was determined to be irrelevant, we analyzed the content of the paper in order to present, e.g., different ways of defining the issue of 'being local'.

In their analysis the authors chose two perspectives, i.e., topic of research and its relation to the particular geographical area. The process of analysis took 5 months.

It is not possible to present a summary of all the articles within this paper. Therefore, the authors illustrated the research topics by means of a presentation of several publications from each of the research areas.

3. Results of Literature Studies

3.1. Regional Products, Traditional Product, Local Product—Definitional Issues

Making a distinction between terms regional or traditional and local product is very difficult because they are often used interchangeably. Such situation may lead to mistakes in the analysis of production statistics as well as reasons for customers' and producers' behaviors. What is interesting is that after typing the phrase 'local food' into Google we get results related to terms such as 'cuisine' and 'dishes' and not to food products that can be bought from local producers.

Regulation (EU) No. 1151/2012 of the European Parliament and the Council [17] regulates issues related to foodstuffs labelled with the 'traditional specialty guaranteed' trademark. Whereas, the Council Regulation (EC) No. 510/2006 [18] defines regional products by referring to their origins. 'Designation of origin' or 'geographical indication' refer to the name of a region, a specific place or, in exceptional cases, a country used to label an agricultural product or a foodstuff [19]:

- originating in that region, specific place or country,
- the quality or characteristics of which are essentially or exclusively due to a particular geographical environment, and
- the production, processing and preparation of which take place in defined geographical area.

The most important characteristic of a regional food product is its high quality. It is a result of such products being manufactured using high quality ingredients. Additionally, characteristics of the products can be determined by climatic factors and natural topography. In the European Union, regional products are seen as special goods but also as European cultural heritage [20].

Food producers and marketers around the globe have long realized the importance of branding and labeling geographic associations of food products. This type of association often introduces price premia [21–24]. Regional products are certified using three designations: Protected Designation of Origin, Protected Geographical Indication, and Traditional Specialty Guaranteed. The first of the three is a symbol which specifies the name of the region, place or country used to describe an agri-food product originating from this place. In case of such products, their production as well as preparation should be carried out exclusively in the assigned area [25].

The right to use the Protected Geographical Indication certification is reserved for food products or agricultural products the name of which should be identified with a region, place, or country of its origin and production. In contrast to the Protected Designation of Origin here only one phase of production has to take place in a particular area [26].

According to the Council Regulation (EC) No. 509/2006 [27] traditional product is a product which has specific character—which means that it has one or a few characteristics that in some way make this agricultural product or foodstuff different from similar products or foodstuff belonging to the same category whereby, the characteristic or a few characteristics may refer to its physical, chemical, microbiological or organoleptic qualities, method of production, or specific production conditions [19]. As stated by Kupracz [28] traditional products can be defined as agricultural products, foodstuffs, and spirit drinks the quality or unique characteristics as well as properties of which are a result of using traditional production methods (on a small scale). These methods are considered to be traditional if they have been used for at least 25 years. In Poland, such products are put on the list of traditional products kept by the minister in charge of matters pertaining to agricultural markets.

As it can be concluded from the above considerations, regional product is most of all a certified product. Sometimes, its production is based on traditional formula and it is not mass produced. Similarly, traditional product is produced using traditional methods of production. Moreover, regional product is partially or entirely produced in a specific geographical area. Taking the above into account, how can we define a local product? Boros et al. [29] pointed out the attributes that characterize local food. They are as follows:

- geographical distance between the place of production and the target consumer,
- methods of production that relate to environmental sustainability, e.g., reduce the use of synthetic chemicals and energy-based fertilizers,
- personality and ethics of the food producer, attractiveness of the farm as well as the landscape,
- strong social ties between farm-producer and the surrounding environment.

The above concept emphasizes the role of a farm which is also a producer of the local food. Meanwhile, some authors of publications use the term local food when referring to businesses owned by big producers. For example, Kokkinakisa et al. [30] took up the subject of producing local food in Greece (Crete). In his publication, he presented the functioning of the HACCP system in three large production facilities: ice-cream, ready-made sandwiches, and bottled water production facilities.

It is worth mentioning that the most used criteria for putting manufactured products into analyzed categories are place of production and perceiving products as being locally produced. Taking into consideration the geographical aspect, local food is food produced within 100 km from the place of residence of the buyer. Local products are associated more closely with a particular town or village than with a region [31]. What is important is that local products are protected by law [32]. Local products may become regional or traditional products [33].

Another important characteristic of local products is that they are manufactured on a small scale in environmentally friendly manner, and they use local ingredients [34]. As a result, this type of production is very profitable from the social, environmental, and economic point of view. Due to its originality, it can become a showpiece not only of a particular town but also of an entire region. This type of production is also a way of implementing the sustainable development policy. This concept is described as development, where the main focus is on fulfilling current needs while simultaneously caring for the needs of future generations and, to do so, it is required to protect natural environment [35].

Bearing in mind the above definitions of analyzed products, a comparison of regional, traditional, and local food and their examples was created and presented in Table 2.

Table 2. Comparison of regional, traditional, and local product based on the previously presented definitions (source: own study).

Comparative Criterion	Regional Product	Traditional Product	Local Product
EU Certification	Yes	Yes	Yes/No
Traditional manufacturing method	Yes/No	Yes	Yes/No
Listed on the Traditional Polish Products List	No	Yes	No
Associated with a specific region	Yes	Yes	Yes
Production (all phases of production) located in a specific region	Yes/No	Yes/No	Yes
Ingredients originating from in-house production	Yes	Yes/No	Yes/No
Produced on a small scale	Yes	Yes	Yes/No
Example	Heather Honey from Bory Dolnośląskie (Poland), Parma Ham (Italy), Cheddar (Great Britain)	Raspberry Syrup from Dolina Baryczy (Poland), Chorizo (Spain)	Strunga Winery Wines (Romania), Černá Hora Brewery Beers e.g., Matouš (the Czech Republic)

Data included in the table show that the definitions presented in literature and legal acts are fuzzy, which was already emphasized. Also, Granvik et al. confirmed that the interpretations and definitions of the term local food might be confusing and may lead to misunderstandings [36].

That is why, a new, own, and unambiguous definition of local food was created. Local food is a product or a preparation of the agri-food sector, non-certified, not mass produced, produced using best quality ingredients (from verified producers, who produce them in the same area), closely associated with the town or village where the production takes place, with consideration for the sustainable development policy.

Who then, is a local entrepreneur? As it was pointed out in the introduction, no coherent definition of local entrepreneurship was coined in source literature. There are also no regulations or norms which define such type of entrepreneurship. Analysis of the data from the Polish Central Statistical Office (GUS) and from portals devoted to local food producers indicated that it is difficult to estimate how big the general population is. GUS does not keep statistics pertaining to local enterprises (it only publishes figures encompassing the number of all enterprises in the region- divided according to their size).

Based on Sautet [37], it was concluded that local entrepreneurship is a socially productive activity which is limited to a small number of market transactions. It does not create a complicated division of work, it does not involve raising a substantial capital, and it is based on personal and informal relationships. Local entrepreneur/producer is in practice an entity which is a micro-enterprise, i.e., it employs less than 10 employees and has an annual turnover not exceeding 2 million euros [38]. He processes his ingredients using his own formula. In the course of the process he develops his passions thanks to which he can generate an additional or sole source of income.

3.2. Description of Research Topics and Research Results in the Analyzed Area

Analysis of the content of publications included in Table 1 allows for the conclusion that the research presented in scientific literature focuses on the following issues:

a. local food in the context of the idea of sustainable development [7,39,40],
b. benefits of local food production [7,39],
c. transportation of local food and food supply chains [7,41–43],
d. supporting local food by governmental and non-governmental initiatives (i.e., educational programs, agri-food systems) [29,44–52],
e. consumers' perception of local food [7,52–58],
f. producers point of view on local food [53,59,60],
g. marketing of local products [7,29,61],
h. safety of local food [30,62],
i. local food in the context of tourism [57,63–65],
j. health properties of local food [66–71].

First identified area of research encompasses the idea of sustainable development. Coelho et al. [7] addressed the problem pertaining to consumption of food produced locally with special consideration for sustainable development practices on both the local and global level. They pointed out that promoting such food is a complex problem that includes environmental issues, economy, and health. Moreover, they concluded that transport is not the only deciding factor when it comes to the volume of local food consumption. Technologies used in agricultural production have a much greater impact owing to the fact that they are responsible for the degree of sustainability of production and supplying food to people. They have also emphasized the fact that consumption of local food produced in a way that is in harmony with local environment and using ecological technologies is also beneficial for the economy and society.

In the research conducted by Edwards-Jones [39] special attention was given to the issue of following the sustainable development policy when producing local food and on the health-promoting qualities of local food. For that reason, the authors analyzed source literature looking for arguments

confirming the environmental and health benefits of such food. The analysis indicated that no proof confirming this phenomenon was found. As a result, they came to the conclusions that in the future a more in-depth and comprehensive research should be conducted to analyze the issue more thoroughly.

Research devoted to the subject of transportation of local food and food supply chains was conducted by, i.e., Korhonen et al. [41]. They have characterized the issue of customers' interest in local food in Northern Ostrobothnia, Finland. Short food supply chains proved to be an important aspect of this research. The authors concluded that short food supply chains are the key to developing local food markets as they are connected to giving customers easier access to local food. In Finland, the local food program is an instrument which has been steering and supporting the national food policy since 2014. It has been implemented by means of administrative measures as well as development activities encompassing all entities in the local food chain. Logistic cooperation is highly organized around the typical production in Finland such as animal husbandry and milk production. Due to the fact, that logistics chains are highly oriented towards wholesale and retail there are some difficulties related to transporting local food to consumers. In this case, such food is distributed via very small operators, mainly by the farmers. The above-mentioned authors devised a method for analyzing the potential for integral networking of producers and transportation companies by combining qualitative and quantitative geographic information system (GIS)-based analysis.

Whereas, Romero-Lopez & Ramos [43] searched for connections between producers and consumers in a small agricultural market in Mexico. They identified two short food supply chains used for selling eggs which reduced the distance between the producer and consumer, which in turn, enabled the exchange of information regarding, e.g., egg origin or egg production practices. Conducted research had a positive effect on increasing consumers' knowledge and trust in small-scale producers and their products. Moreover, the producer–consumer relationships in short chains allow for closeness, trust, and exchange of information.

The aspect that is closely associated with supporting agriculture is the aspect of agri-food systems. Sanz-Cañada & Muchnik [51] described one of such systems namely Local Agro-Food Systems (LAFS) in North America and Europe. In the research on LAFS the term of local food origins is based on the historical and biocultural analysis of food identity. Belonging of such products to a particular place is determined based on natural, cultural, socio-economic, and demographic factors. Additionally, geographical and organizational proximity is important from the socio-cultural as well as economic point of view in the context of group actions aiming at developing rural areas. LAFS is a reflection of certain spatial density and a network of farms and enterprises cooperating in order to produce and introduce local products based on identity to the market. There is a need for an interdisciplinary view, where the emergence and the evolution of food based on identity is as important as understanding the role it plays in creating sustainable development of rural areas in the future. However, currently, not only the quality of products, their sensory properties or agri-food systems are important in promoting local food, what is also important is the innovativeness of such products. Authors devoted attention to that issue because food centers, food innovation districts as well as agricultural commodities markets are main examples of local gastronomy which can attract consumers. Thereby, they increase the interaction between communities, improve access to local healthy food and provide new market for small enterprises.

Another study conducted in North America (North Carolina) was devoted to local food systems created in the last 15 years. The authors pointed out that food hubs are part of an expanding network of local food distribution infrastructure aiming at helping small, local farms access not only local but also national market. However, the influence of food hubs on the region's developing food system is contradictory. It is so, because on one hand food centers contribute to developing local food supply chains and by that they create market opportunities for the farms, but on the other they may also work against bigger and long-term goals of the local food movement. Taking as an example the systems operating in the western North Carolina it was concluded that the food hubs are used as primary

mechanisms for building local food systems and that building local food systems requires to engage people in the processes which can shape production, technology, and distribution of local food [50].

Other research conducted in North Carolina (the United States of America) in 2012 was also devoted to the issue of local food systems. Additionally, an attempt was made at estimating the willingness of consumers to pay for locally grown products. In relation to that, the authors carried out a survey which was divided into few sections i.e.,: current consumption of agricultural products, learning about the knowledge and opinions of the respondents (340 people) on the subject of local food and local food systems as well as socio-economic demographic characteristics (age, gender, level of education, etc.). Obtained results indicate that households are willing to pay 11% more for local products in comparison to agricultural products not produced locally. Introducing a local food system into a particular area may result in strengthening local food distribution networks. The analysis indicated that such system allows to foster economic development through agglomeration and clustering, improvement of the quality of life in the region, stimulating social capital formation, and it may be the basis for regional branding strategies [52].

Benedek and Balázs [45] analyzed the situation of local food systems (LFS) in Hungary. The authors have also described the food relocalization index (PIFRI—Policy Intervention for Food Relocalization Index) in order to quantitatively reveal how rural development program measures should be allocated efficiently to promote local food production. This index additionally points out underdeveloped areas that require further support and as a result it helps in setting goals of food policy. LFS in Hungary is in the early stages of development. Only in Budapest it is involved in short food supply chains. In their research paper, the authors concluded that PIFRI may be a valuable and easy tool to be used for mapping local food activity and may support rural development planning processes in Hungary. Other authors who focused their attention on food systems are Papaoikonomou and Gineis [49]. They focused their attention on two other systems: Community Supported Agriculture in Manhattan, New York and Responsible Consumption Cooperatives in Catalonia, Spain which allowed them to study the relationship between producers and consumers of local food.

Ballantyne-Brodie & Telalbasic [44] focused their attention on the issue of ensuring that society has possibility to implement food systems and studied ways to effectively design post-capitalist models for food systems. In order to do so, they described three case studies characterizing the following systems: 'Shepparton', 'Dandenong', and 'Coltivando'. The first of the three systems was created in Regional Victoria, Australia. It was created due to the serious economic issues resulting from cheap importation of fruit. The second system pertains to food strategies of the City of Greater Dandenong, Metropolitan Melbourne (Australia). The local food strategy was designed in order to support food policy. The last of the three systems was created in Politecnico di Milano, Italy. This project led to establishing urban agriculture. The first of the three projects was carried out on the premises of the university garden. Described cases show that local institutions are changing their attitudes towards citizens and vice versa. The ability to adjust to socio-economic changes is the key here, as it drives the business design process of local food systems to generate sustainable and scalable models. The model creates a platform for building capacities by strengthening the position of local people in order for them to take an active part in setting up food systems.

Whereas, the results of the study conducted by Lutz et al. [47] show that cooperation between farmers is a good way of creating local food systems in Australia. The study demonstrated that local production infrastructure, processing, and distribution are becoming more approachable when farmers cooperate with each other, consumers and institutions. Additionally, the authors pointed out that sharing knowledge helps to optimize local agriculture and food supply systems (farmers are often lacking knowledge and time to establish new cooperation or to reorganize work, distribution, and communication).

Martinez [48] raised the issue of federal, state, and local policy in the United States of North America in the context of supporting local food systems. Local food was linked to several government actions, i.e., improving rural economy and supporting agricultural producers. What is important is that

United States policy lowers the barriers that inhibit further growth of local food markets, e.g., lack of infrastructure for increasing local food sales, producers lacking sufficient knowledge. Positive actions that should be taken up in this context are: increasing small farms' production, fulfilling the needs of bigger retail outlets, creating ability to track the origins of the product, and educating producers on the subject of local food expansion.

An important part of research on local food is related to consumer preferences. For example, in Italy a survey was carried out in order to assess factors influencing consumers' perceptions of Riso e Rane Carnaroli. Preliminary research results revealed that consumers are more aware of such information as: the origins of the product, local food system, and tradition, than for example DNA tested certification [55]. Rytkönen et al. [57] focused on the issue of identifying preferences as well as factors motivating consumers and tourists to buy local artisanal cheese in Jämtland (Sweden). They have conducted two surveys in Östersund. The place where the survey was conducted was selected based on the fact that farms, farm cafés, and markets are the main sales channels for dairy. The research determined that respondents appreciate combinations of various attributes defined as MDDPS—market-driven direct produce system; and CTS—close typicity system. In MDDPS, it was determined that the nature of relationships between producers and consumers can be specified by the level of common knowledge between the buyers and sellers. In this system, the involvement of consumers is often a result of searching for unconventional food production. In CTS, it is the relationship between the product and region that plays the central role when it comes to consumer deciding to buy a product. Moreover, the survey revealed that respondents choose local products firstly, because of their 'good taste 'and 'high quality'. The authors also concluded that purchasing this type of food is very often determined by tradition and historical ties of the consumers with the region in which local products are being produced.

Similar subject was taken up by Albrecht and Smithers [53]. They conducted a survey among 13 producers of local food (meat products) and 31 consumers in the Southwestern Ontario (Canada) between June and September of 2013. The area of their research was focused on identifying ways in which farmers shape 'value' and 'quality' of the manufactured products and assess the preferences for such products (questions pertained to farm size, produced goods, and the frequency of the consumer/producer interaction). Whereas, when it comes to consumers the authors focused on their opinions, expectations, and motivations for buying local food. Therefore, they were looking for factors that could bring the two studied groups together. Collected information enabled the authors to formulate conclusions which indicated that making connections between producers of local food and consumers is appreciated by both parties in terms of profitability (producers) and the health-promoting nature of the manufactured products (consumers). Authors came to the conclusion that creating connections between producers and consumers is determined by what both groups have to offer to each other (sharing collected knowledge, raising awareness of local products, and various partnerships between producers).

Another research devoted to the issue of consumers' interest in local food was conducted by Lim and Hu [56]. Their aim was to determine consumers' demand for local food (pork chops, local beef) and point out barriers for purchasing such types of food. A survey was conducted with 1406 respondents from Connecticut (North America). Results of the survey revealed that the most crucial purchasing barrier is the price and availability of local products. The authors drew attention to the health-promoting properties of such food products suggesting that they may be helpful in fighting with obesity in the United States. Crespo et al. [54] focused their attention on the role of social capital in developing the region. They have concluded that nowadays farmers have to face the challenge of product certification that would allow local society to transform their resources and the know-how into new market opportunities.

Halldórsdóttir and Nicholas [40] conducted research which focused on identifying behavioral barriers influencing production and consumption of local food in Iceland. The authors assessed the structure of pro-ecological behaviors which result in purchasing local food in the context of three

groups of factors: structural (sustainable production), cultural, and personal (sustainable consumption). With that in mind they have analyzed the survey data on cultural norms and purchasing behaviors of local food consumers. The data was obtained from the Matis research and development company. As a result of the conducted research they came to the conclusion that two-thirds of the respondents find it important to support local agriculture (in the context of environmentally friendly production). They have also identified barriers which decrease demand for local food. They were as follows: decrease in variety of food (structural barrier) and skepticism of the consumers (as a barrier hindering the growth of consumption of such food).

The significance that local food has for the modern consumer was described in the research carried out by Litavniece et al. [72]. Their goal was to study local food choices and how they are used by modern consumers. Over 500 respondents from Łatgalii (Latvia) took part in the research which was conducted in 2017. The survey was conducted in order to assess the extent of people's knowledge on the subject of local as well as functional and ecological food. Additionally, they asked how often are the responders choosing local food and what is their attitude towards that choice. The results revealed that consumers pay attention to the quality of food, date of production and price. They have also concluded that responders are regularly purchasing food from local producers.

While in the research conducted by Wenzing and Gruchmann [58], who studied preferences of consumers vis-à-vis local food, (327 respondents took part in the research) the researchers demonstrated that respondents have some limitations when it comes to buying local food that are related to lack of knowledge in this area.

Another important issue associated with local food is related to producers promoting their products, e.g., via educational programs. This issue was described by local food researchers in Spain. They aimed to recognize and characterize activities promoting purchase of local food intended for schools and local education centers. They were looking for governmental and non-governmental initiatives which organize programs that promote this type of food in schools and other autonomous communities. The non-governmental initiatives were found on the internet and were analyzed in terms of their geographical distribution, organizational area, number of schools, management style, and purchasing local food. In the course of the research, they identified 12 (6 governmental and 6 non-governmental) initiatives that were carried out by 318 schools (which constitutes 2.16% of all Spanish schools which have their own food services). They have concluded that local initiatives promoting buying food in Spain have limited scope [61].

Boros et al. [29] have also focused their attention on the way local food product manufacturers are promoted by the trading policy of one of the largest Hungarian food retailer chains. They conducted a supplementary analysis in categories which offered very few regional food products. They came to a conclusion that the percentage of sales of products produced locally is higher in these categories in which production is less complicated and the role of complex marketing is less important. In those categories where professional marketing tools or production procedures are required the existing producers were able to keep their significant market position. The authors drew attention to the need to produce food of the highest quality after scandals related to bad quality of products. Therefore, the government of Hungary realized that there is a necessity to create new legal conditions to define local food. This decision led to creation of 'Hungaricum Act' which describes the typical Hungarian traditional food and 'Local Product Act' which determines which products could be called local.

In North America (State of Michigan) in 2013 a project under the name of Grand Rapids Downtown Market (DTM) was developed in order to create space for producing local food, entrepreneurship, supporting health of the community, and providing work places. The aim of the project was to ensure that consumers have the possibility to buy healthy food. Creation of this concept allowed to promote local food systems to boost economy by agglomeration of small producers located in the region. Food innovation districts are supposed to stimulate job growth, increase healthy food options, and create a 'sense of place', concentrating on improving the quality of life of local residents [46].

The next area of research associated with local food is the issue of local food security. Burke et al. [62] in their research focused on local food stored in traditional storage cellars in Alaska (North America). They focused their attention on food stored by the poorest section of society living in rural areas. This section of society includes in their diet foods that are mostly natural and made at home. They conducted interviews on the basis of which they determined that food stored in storage cellars is microbiologically safe.

Another issue related to local food production is tourism. Although there are many studies on behaviors of tourists, they rarely take into consideration the influence of local food on tourists' experiences. Demand for local food generated by tourists occurs on many levels of intensity. For that reason, tourists could be divided into those who travel around the region for gastronomic reasons and those who treat local food just as an addition to their experience. Sengel et al. [65] studied factors that have influence on choosing local food by tourists in various parts of the Old Town of Istanbul. They have concluded that the issue of food tourism is important because it is a new trend and also because gastronomy has started to be recognized as a symbolic value representing territories and culture in tourism. Beforehand, local food was considered to be an additional rather than the main attraction of the visited place. Culinary tourism, beyond the dishes offered by a region, encompasses getting to know local food producers, visiting food festivals, restaurants, as well as purchasing local products directly from producers. According to Forné [63] food tourism is currently one of the most important and specialized tourist niches. Tourism benefits from traditional farming and breeding in the context of rural tourism. Local gastronomy reflects the fusion between natural and cultural characteristics of the region. Therefore, culinary heritage has to act as a source of local development by overcoming the seasonal character of demand for tourism. It is then necessary to aim for balance, so that the citizens and tourists could live in a region in a sustainable way.

The issue of culinary tourism was also taken up by Madaleno et al. [64]. The authors conducted an empirical study in Portugal (Lisbon, Porto, and Coimbra) in 2015. The study involved 500 respondents. The aim of the study was to specify the factors which have influence on the decision to purchase local food products by foreign guests from Portugal. It was determined that approximately 84% of respondents enjoy buying local food during their travels. The factors that influence tourists when they make the decision to purchase food are related to their personality and their motivation to make a purchase as well as determining relationships between the place of production and the local product itself. It turned out that the authenticity as well as the appearance of local food has a positive influence on the decisions of the consumers. They have then pointed out that certification of local products should be taken into consideration when specifying the policy actions promoting local products.

In the research conducted in North America (Southwestern Ontario) authors drew attention to the issue of local food in the context of its health promoting properties. For that purpose they created a research project promoting this type of food by means of using an application designed for smartphones named 'SmartAPPetite'. The application was designed to encourage healthy dietary behaviors by reducing educational, behavioral, and economic barriers. SmartAPPetite proved to be effective in improving awareness and consumption of healthy food and it also drew people to local food producers more frequently than traditional measures [67].

In another study focused on describing the problem of obesity, authors compiled an overview of literature (review research) and described conceptual framework characterizing the health-promoting indicators of local food. They have found 177 research papers which correspond with the subject in question. The research demonstrated that obesity is a result of lack of energy balance (from the ingested food) and little physical activity (sedentary lifestyle) [69].

Morland and Evenson [68] as well as Pelletier et al. [70], and Cobb et al. [66] described the issue of consumer obesity and confronted it with consumption of local food. Each of the research was conducted in the United States. The authors of the first and the second paper carried out surveys where 1295 respondents took part in the 2003 survey and 1201 respondents took part in the 2010 survey respectively. In case of the first study, the authors concluded that prevalence of obesity was lower in

areas that had supermarkets and higher in areas with small grocery stores or fast food restaurants. The second study determined that approximately half of the respondents gave local food high marks. Additionally, respondents who pay a lot of attention to purchasing local food consume much more fruit and vegetables, dietary fiber, and less sugar and fat in comparison to people who do not pay attention to the food they purchase. The last paper used a review of literature pertaining to the described issue as the research method. They have found 71 matching papers which proved that there are no links between presence of food establishments and obesity. Table 3 presents geographical areas where research on local food is most prevalent.

Table 3. Research topics related to local food taking into account the geographical areas (source: own study).

Research Topics	Geographical Area
Local food in and the idea of sustainable development	USA, Brazil, Great Britain, Iceland
Benefits of local food production	USA, Brazil, Great Britain
Transportation of local food and food supply chains	USA, Brazil, Great Britain, Scotland, Finland, Mexico
Supporting local food by making use of governmental and non-governmental initiatives (i.e., educational programs, agri-food systems)	Europe with particular reference to Hungary, Spain, and Austria, Australia, USA
Consumers' perceptions of local food	USA, Canada, Mexico, Brazil, Italy, Sweden, Iceland, Latvia, Germany
Local food from the producer's point of view	USA, Canada
Marketing of local products	USA, Brazil, Spain, Hungary
Safety of local food	USA, Greece
Local food in the context of tourism	Turkey, Spain, Portugal, Sweden
Health properties of local food	Australia, USA, Canada

The conclusion based on the data from Table 3 is that issues relating to the subject of local food production are taken up most frequently by researchers from the USA. Researchers from European countries are focusing mainly on: issues relating to tourism (Spain, Portugal), food safety (Greece), and marketing (Spain, Hungary) as well as the meaning that the local food has for the consumer (Italy, Sweden, Iceland, Latvia, and Germany), and the idea of sustainable development (Great Britain).

4. Discussion and Directions for Further Research

Literature review revealed definitional discrepancies related to the subject of the study. The analysis of the publications proved that the issue of local entrepreneurship in the context of food production was not fully explored.

Most of the available publications are devoted to local food produced in the United States, Canada, Hungary, Greece, etc. Local food is often defined as food produced by a big enterprise in a particular area. Critical literature review revealed significant insights provided by prior research. In the analyzed research papers the problem of local food is most often correlated with its marketing or health promoting properties. However, examples of supporting local production and distribution provided in the publications may serve as a benchmark for initiatives undertaken in other countries. For example, in Poland governmental and non-governmental initiatives—such as in Spain—which organize programs that promote local food in schools are needed [61]. One can use the list of health indicators prepared by Murphy et al. [69] and a similar application to above-presented 'SmartAPPetite' [67] in order to make education more attractive for youth (generation Z). Moreover, network of producers and transportation companies can be improved by means of using a dedicated geographic information system, such as the system that has been implemented in Finland [41].

While looking for research problems which could be raised in empirical research in the interest of mobilizing local entrepreneurship (important for the development of the region) it was concluded that there is a lack of publications pertaining to:

(a) types of local entrepreneurship
(b) determinants of local entrepreneurship in the context of food production

There are many typologies of entrepreneurship that can be found in source literature. Examples of definitions were presented in Table 4. It would be interesting to inter alia explore the scope of cooperation between local enterprises and academic centers, explore the manner of conducting a business (traditional vs. virtual/internet based) or the degree to which the entrepreneurs act in an ethical manner (i.e., care about the quality of the product even at the expense of decreasing revenue). As stated by Lutz et al. [47], farmers are often lacking knowledge and time to establish new cooperation or to reorganize work, distribution, and communication. The issue can be studied further from different perspectives, e.g., reasons for cooperation/non-cooperation with universities or correlation between specific family business culture and implementation of the idea of open innovation. Other implications for further research are presented in Table 4.

Table 4. Types of entrepreneurship in the context of local food production (source: own study on the basis of [14,73–82]).

Type of Entrepreneurship	Characteristics	Implications for Local Food Production and Further Research
Academic Entrepreneurship	Entrepreneurship is based on the knowledge possessed by the members of the academic world.	Implementation of academic knowledge in local food production as a way of introducing innovation
Family Entrepreneurship	Family entrepreneurship is the type of entrepreneurship where the owner and the employees are family members (one-generation or multigenerational family).	Family business in the context of propensity for implementing the idea of open innovation
Innovative Entrepreneurship	Is based on implementing (in the enterprises) new and pioneering solutions new technologies and products.	Local food producers as pioneers. Implementation of design thinking concept in local food production.
Social Entrepreneurship	Is based on actions focused on social integration in the aspect of local community and preventing social exclusion e.g., by implementing employment support programs.	Implementation of Management by Values as basis for sustainability in local food production
Internet Entrepreneurship	Internet entrepreneurship's economic activity is focused on e.g., selling products or services online.	Local food products and their delivery in the context of preferences of new generations (generation Y, generation Z)
Ecological Entrepreneurship	It encompasses all entrepreneurial activities beneficial for the natural environment e.g., production waste management.	Implementation of Management by Values and modern methods connected with environmental sustainability in local food production
Ethical Entrepreneurship	Ethical entrepreneurship is a type of entrepreneurial activity in which ethical values such as high quality of products is more important than the economic value.	Management by values in local food production (which values dominate in the management philosophy of local food producers)

When considering the 'social' type of entrepreneurship one can conclude that the relationship between commercial entrepreneurship and social entrepreneurship has been studied in literature devoted to this field of research. To give an example, the commercial entrepreneurship can create social value by generating economic wealth [2]. The findings of Mars and Schau revealed that the commercial and social variations of local food entrepreneurship are assorted, yet synergistic enactments of the economic, environmental, and social conditions and principles that characterize the southeastern Arizona local food system. It would be worth conducting research on specific management concepts (e.g., management by values) and their application in practices of local food producers to create ethical, ecological, and social business [83].

In order to find ways of mobilizing local entrepreneurs it would be worth conducting research on the subject of determinants of entrepreneurship. The determinants can be divided into external and internal (personal) determinants. External determinants are the characteristics of socio-economic environment of the enterprise. Availability of capital, systems of economic and legal policies, national and international entrepreneurship support programs, systems of education and training, etc. are some of the external determinants. Internal determinants are the qualities possessed by an entrepreneur. Table 5 presents examples of internal and external determinants of entrepreneurship.

Table 5. Characteristics of selected determinants of entrepreneurship in the context of local food production (source: own study based on: [84–93]).

Determinants of Entrepreneurship	Characteristics	Implications for Local Food Production and Further Research
Internal		
'Hard' elements of human potential	Examples of such elements are: age, gender, education, professional qualifications.	Correlations between "hard" and "soft" elements of human potential and type of entrepreneurship (see Table 4). Examples: the level of qualification vs. the openness to cooperation with universities or willingness of implementation of the idea of open innovation, honesty as a predictor of ethical entrepreneurship
'Soft' elements of human potential	• Character traits of an entrepreneur: communication skills, diligence, honesty, assertiveness etc. • Personality of an entrepreneur: sanguine, choleric, melancholic or phlegmatic person • Attitudes of the entrepreneur: optimism, pessimism, pioneering attitude, conservative attitude, creative abilities, and lack thereof etc.	
External		
Economic (micro- and macroeconomic)	e.g., availability of capital, taxes, availability of a loan, exchange rate, market fluctuations.	Which determinants are the most important stimulators and barriers for local food entrepreneurship in particular region/country/business (e.g., local wine production)? What activities should be taken by local government in order to stimulate local food entrepreneurship? If there is possibility of implementation of governmental and non-governmental initiatives which are undertaken in foreign countries.
Institutional	Efficiency of administration, business organizations, guarantee funds, business advisory, system of education	
Formal and legal	e.g., suitable procedures, norms, and decrees, licenses and certifications.	
Socio-cultural	Social mobility and openness, status, socio-political climate, level of education, criteria for social mobility, and level of social optimism.	
Geographical	e.g., regional climate, typical soils, landform.	
Technological	Technological changes in production of goods and services.	

The local food producers, especially those who allow for in-site tasting, have a strong implication for the structure of local product added-value chain because they satisfy consumers' preference and needs [94]. They also contribute to the health of community members and the economic livelihood of small farms [88]. Engelseth suggests that local food supply is "personal" and associated with proximity makes it more closely resemble service supply chains [95]. Local markets are the platform where people share memories, experiences, stories, and values based on trust [96]. Abatekassa and Peterson stated that local producers need to provide additional market services and develop relationships with their buyers based on trust to create better market access for local foods [97]. Schmit et al. indicated that sufficient engagement between local producers and urban consumers, combined with educational programming by the farmers market, can increase the transmission of intellectual capital flows to rural areas [89]. However, the local food business often suffers from a lack of economic viability [98]. Boys and Fraser indicated that practical marketing considerations, such as payment terms, and processing, packaging and delivery requirements of supplying institutional foodservice buyers, were identified as obstacles to the efficient function of this market channel [93]. Food safety challenges, including the related issues of obtaining (food) products liability insurance and food safety certifications, were also acknowledged among top concerns [93]. High transaction costs for direct exchange, however, impede growth in the direct market channel [99]. Small farms face extreme difficulties in reaching formal market channels and therefore rely on subsistence and informal sales [91]. The producers of local food are often small, and many are facing bottlenecks in logistics and transport when trying to expand their business [100] They need to integrate within networks of suppliers, distributor, customers, and community representatives to increase their competitiveness [101,102]. Direct marketing is a widespread marketing practice among smaller producers. Packing and grading standards, sampling and consumer premiums (marketing factors) can also affect the profitability [103]. Scale, production enterprise specialty, market outlet choices, land ownership, and management of expenses have the most significant influence on producer financial efficiency [104]. The number of farmers and producers selling through local food markets is growing.

Community-supported agriculture is a unique local food channel adopted by producers. It was initially established as a strategy for producers to directly benefit from the season-long investments of buyers who align with their community-focused mission [92]. Local food system development is a popular strategy employed by many communities in the pursuit of sustainable and equitable economic growth and development. This strategy includes a range of economic projects, including farmers' markets, community-supported agriculture enterprises, urban farming/agriculture projects, and food hubs. Sometimes, it includes intermediated marketing channels like grocery stores and broad-line distributors interested in providing local foods [105]. Short food supply chains are now widely believed to be more sustainable in comparison to mass food delivery systems [106]. Development of short food supply chains may help to provide various benefits support of the local economy, the strengthening of relations between consumers and their food traditions, the supply of fresher food products in comparison to conventional food networks, the re-valuation of the small-scale farmer's role in the food systems, the use of sustainable production methods and the reduction of CO_2 emissions [107]. Nevertheless, farmers' engagement in short food supply chains' is still limited in many countries [108].

As it was pointed out earlier, the conducted source literature review determined that various authors focus in detail on issues connected with local food production. For example, the subject of supporting local production by means of governmental and non-governmental initiatives has been discussed. Consumers' perceptions of local products are also important. However, institutional support and consumers' opinions are only two of the many determinants of entrepreneurship. Before introducing public initiatives, it is worth to conduct research on determinants which are the most important stimulators and barriers for local food entrepreneurship in particular region/country/business (e.g., local wine production). One can conduct further research including a combination of a variety of issues. An example of such research topic could be joint influence of different public initiatives with the moderating role of specific elements of entrepreneurs' human potential on business results.

The above described lines of research may be taken up globally or may be based within specific country or region or may be focused on production of particular food products. As it was determined by the source literature studies, research on the subject of local food conducted in Central and Eastern Europe is sparse.

5. Conclusions

Local food production is meaningful not only for single producer but also for the consumer, and finally for the entire region. Therefore, it would be beneficial to take up the issue of local entrepreneurship in the context of food production. The need to define local food and local entrepreneurship in an unambiguous way was emphasized in the study and own definitions of the issues were provided. An analysis of the research topics undertaken in papers published after 2005 and indexed in the Web of Science database was conducted. Local food is associated with, i.e., its health promoting properties as well as the idea of sustainable development. The authors have also investigated the subject of local food transportation and delivery chains. Many forms of local production supported by means of governmental and non-governmental initiatives are widely featured in literature. Tourism associated with learning about local food is a relatively new research subject.

There are many practical implications of the source literature review, related to, e.g., implementing local food production support programs. Whereas, we identified research gaps that created room for further empirical research on the subject of, e.g., cooperation of local entrepreneurs with academic world, ethicality of activities performed by the local producers, and numerous determinants of entrepreneurship. It would also be worthwhile to conduct research in the 'neglected' geographical areas such as Central and Eastern Europe. Conducting the above-mentioned research would be valuable not only from the scientific point of view but also from a practical one—it could contribute to the development of local entrepreneurship and thereby, to the development of the entire regions.

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Organic Food Consumption: The Relevance of the Health Attribute

Giuseppina Rizzo [1,*], Massimiliano Borrello [2], Giovanni Dara Guccione [3], Giorgio Schifani [1] and Luigi Cembalo [2]

[1] Department of Agricultural, Food and Forest Sciences, University of Palermo, 90128 Palermo, Italy; Giorgio.schifani@unipa.it
[2] Department of Agricultural Sciences, Agricultural Economics and Policy Group, University of Naples Federico II, 80055 Portici (Naples), Italy; massimiliano.borrello@unina.it (M.B.); cembalo@unina.it (L.C.)
[3] CREA Research Centre for Agricultural Policies and Bioeconomy, 90143 Palermo, Italy; giovanni.daraguccione@crea.gov.it
* Correspondence: giuseppina.rizzo03@unipa.it; Tel.: +39-3200415120

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Abstract: During the last decades, organic food products have become the main sustainable alternative to conventional food consumption. Among the several organic food attributes that consumers recognize in organic food, healthiness has been reported as the primary motivation to buy products certified as organic. The objective of the current study is to assess the relative weight of the health attribute among other recognized organic food attributes. To achieve this aim, a multiple price list (MPL) methodology is adopted to elicit consumers' Willingness to Pay (WTP) for organic extra virgin olive oil (EVOO). Findings show that the contribution of the health attribute to determine the average premium price for organic EVOO is 78.9% of its total premium price. The study generates managerial implications to promote further expansion of the organic food market.

Keywords: health concern; sustainable food; organic food; extra virgin olive oil; organic attributes; health attribute; consumer behavior

1. Introduction

Sustainability in global food systems is one of the most relevant goals in this century [1]. If one considers agri-food production, this may be achieved by reducing trade-offs between productivity and sustainability, by choosing appropriate production methods [2,3]. On the other hand, fostering sustainable food consumption addresses the sustainability goal emphasizing the relevance of consumers' choices. In this regard, over the years, changes in consumer behavior have been observed, with increasing number of individuals choosing more sustainable products in their daily dietary choice [4]. This is due to the spreading awareness of environmental impacts of the agri-food sector [5], as well as the growing interest for the health dimension of food related to nutrients intake [6] and food safety [7].

Within this scenario, consuming organic foods has become one of the most popular sustainable consumption options among the several alternatives to conventional food [7,8]. According to the latest available data, organic food consumption in the world continues to grow with a consolidated trend in every country [9]. Organic produce counts on a market of 90 billion euros in the world, with the United States as the top market with 40 billion euros, followed by Germany (10 billion euros), France (7.9 billion euros), China (7.6 billion euros), and Italy (3.1 billion euros).

Studies undertaken in different countries, using different empirical strategies, identify common attributes associated with organic products [10–12]. These attributes are, in order of relevance to consumers: healthiness [13], food safety [14], environmental protection [15], animal welfare [16], and the support of the local economy [17–19]. Literature informing consumers' choice for organic food

states that, although the attitude of consumers for animal welfare and environmental consequences is a determining factor, the attitude and the awareness of health represent the main factor that influences willingness to pay (WTP) [20]. Among others, Li and colleagues [21] found that the higher is consumers' concern about health, the greater is their willingness to pay for organic food. Furthermore, consumers who believe that organic food is healthier are less likely to purchase a conventional product, even if the organic product is more expensive than they expected [22,23]. According to Massey et al. [24] and Krystallis and colleagues [25], the most important arguments used to justify consumers' price premium for organic foods is the health attribute recognized to organic food, followed by the nature conservation attribute and the perception that it has a good taste. Despite the extensive literature providing a list of the main reasons to buy organic food (e.g., [10,12]), to the best of our knowledge, the relative importance of organic food attributes to determine consumers' preferences and WTP has received scant attention. Based on the studies reporting healthiness as the primary consumers' motivation for purchasing organic foods (e.g., [21–26]), the current study seeks to assess the relative weight of this attribute among other recognized organic food attributes. More specifically, the following research objectives are addressed: 1) to find the contribution of the health attribute in determining consumers' WTP a premium price for organic food products, and 2) to explore the drivers behind consumers' WTP for the health attribute. Discovering the contribution of each attribute to consumers' preferences would provide a better understanding of consumers' valuation of organic food products, generating, as a consequence, managerial implications to support the further expansion of this sustainable market, thus contributing to the goal of more sustainable food systems.

The remainder of this paper unfolds as follows. Following this introduction, Section 2 describes the empirical strategy adopted in the study. In Section 3, findings are shown and discussed. Section 4 concludes the work by providing implications and suggestions for future research.

2. Empirical Strategy

The empirical strategy adopted assumes to derive consumers' preferences for the health attribute of the organic extra virgin olive oil (EVOO) by comparing this product with a counterpart conveying to consumers food healthiness as unique attribute, i.e., functional EVOO. Food products can be considered functional if, together with the basic nutritional impact, they have beneficial effects on one or more functions of the human organism, thus either improving the general and physical conditions or/and decreasing the risk of the evolution of diseases [27]. In this regard, with the Reg. (UE) 432/2012, the EFSA (European Food Safety Authority, Parma, Italy) has authorized some functional health claims (hc) to apply to EVOO. The rationale to compare organic EVOO with its functional counterpart lies in the assumption that a functional product brings, somehow clearly isolated, the health attribute [28,29]. Therefore, by comparing the two products, it is possible to isolate consumers' preference for the health attribute in the organic version. This empirical strategy was, to the best of our knowledge, never applied before in other studies.

A structured and closed online questionnaire on the consumption of EVOO was submitted. Data were collected between Spring and Winter 2018. Consumers were invited, via social networks and e-mail, to participate in the online survey. There were no restrictions except for being older than 18 years old (adult age in Italy) and a regular EVOO consumer (at least once per month). Though not statistically representative, a convenient sampling strategy allows to target a wide number of consumers.

The questionnaire was structured in four sections, lasting about 20 min. In the first section, information was collected regarding: frequency of EVOO consumption; whether respondents were responsible for the family's olive oil purchases; the prevailing EVOO purchase channel (i.e., supermarket, specialty shop, direct selling by farmers, etc.); the most frequent consumption circumstance; the annual quantity consumed.

In the second section, WTP for EVOO was elicited by using an elicitation mechanism named Multiple Price List (MPL) [30,31]. Prices were presented as an array of ordered prices in a table (ranging from €7.50 to €12.00 at €0.50 intervals), one per row, and respondents asked to indicate whether they

were willing to buy the specific product at each price level (i.e., yes/no). Respondents were informed of the average market price of conventional EVOO (€7 per liter).

It is known that food is not only a mean to satisfy basic needs, but plays a key role in preventing food-related diseases and improving physical and mental well-being [32]. Therefore, in the third section, different measures have been used to understand whether the preference for the two versions of EVOO is influenced by extra-mercantile factors such as, attitudinal or psychological ones. To analyze constructs related to these factors, measurement scales developed in the field of generic foods can be used also in the domain of organic and functional products. First, Roininen et al. [33] developed an attitude scale to measure general health interest (GHI) in food choices. As functional foods differ from conventionally healthy foods, this scale is expected to correlate positively, but only moderately, with attitudes towards functional foods. Second, the same authors developed a scale for measuring natural product interest (NPI) [33]. Under the hypothesis that functional foods are considered by consumers as less natural than conventional ones [34], this scale is expected to have a negative correlation with functional food attitudes. Third, in order to assess the interviewees' specific attitudes towards functional products, a short version of the scale defined by Urala and Lähteenmäki [34] was used. The dimension taken into consideration is defined "perceived reward for the use of functional foods" (FF REW) which includes statements expressing personal fulfillment derived from the use of such foods, intended as a tool to improve health and to take care of oneself. Fourth, NEP scale [35] was used to predict environmental activism, environmentally significant behaviors, people's real environmental behavior, awareness for environmental problems, and emotional connectedness to nature [36]. These validated GHI, NPI, FF REW, and NEP attitude scales were collected by means of seven-point Likert scales. The different items taken into consideration were formulated in such a way that respondents with opposing attitudes provided different answers by positioning on the various anchors: 1 = totally disagree; 2 = disagree; 3 = partially disagree; 4 = uncertain; 5 = partially agree; 6 = agree; 7 = totally agree, so as to be able to detect and quantify the variables.

In the fourth and last section, socio-demographic information of participants is requested, namely: region of origin, age, gender, number of members and presence of minors in the family, educational qualifications, profession, and income of the interviewee.

Statistical Analysis

In order to find the relative contribution of the health attribute in an organic product, and then, to explore the drivers behind consumers' willingness to pay for the health attribute, the data collected through the online platform questionnaire were processed in three distinct phases, using the Stata integrated statistical software.

In the first phase descriptive analysis of the data were conducted in order to define the socio-demographic characteristics of the sample and the consumer purchasing behavior; in the second phase the psycho-attitudinal scales were decoded; in the final part, after a description of the WTPs detected for the two types of EVOO, a Tobit Regression was performed to measure how the individual variables examined in the analysis can influence the price premium.

This stochastic model may be expressed by the following relationship:

$$\begin{array}{ll} y_t = X_t\beta + u_t & \text{if } X_t\beta + u_t > 0 \\ y_t = 0 & \text{if } X_t\beta + u_t \leq 0 \\ *** & t = 1,2,\ldots,N \end{array}$$

where N is the number of observations, y_t is the dependent variable, X_t is a vector of independent variables, β is a vector of unknown coefficients, and u_t is an independently distributed error term assumed to be normal, with zero mean and constant variance ϑ^2. Thus, the model assumes that there is an underlying, stochastic index equal to $(X_t\beta + u_t)$ which is observed only when it is positive, and hence qualifies as an unobserved, latent variable.

3. Results and Discussion

3.1. Socio-Demographic Characteristics

The questionnaire was correctly filled in by 867 consumers, who are equally distributed in gender, with 441 females (51%) and 426 males (49%). The questionnaire was administered to adult consumers, and this resulted in a respondents' age distribution ranging from 18 to 73 years, with an average age of 42 years.

Except for 11% of respondents who declared themselves single, the average number of members of the households was 3. Specifically, there were families of four components (34%), three components (23%), two components (20%), five components (11%), and more than five components (1%). Minors were present in 33% of the sampled households.

The highest percentage of the participants had a high education degree, while 32% of the sample had a high school degree, 47% had a bachelor's degree, 18% had master or a doctorate and the remaining 3% had secondary school education. Further, 77% of the sample declared that their monthly income falls in the class between 1080 and 4320 euros, 10% ranked between less than 540 and up to 1080 euros, and the remaining 13% had income of between 4320 and over 8100 euros.

As for profession, 43.6% of respondents claimed to be public or private employees, in second place were the unemployed (18%) and freelancers (18%), followed by teachers with 8.5%, entrepreneurs with 7.3%, executives and pensioners with a percentage just over 4.6%.

Furthermore, 79% of the sample were concentrated in the South and Islands, compared to 21%, which includes the remaining regions, so the data are not representative of the Italian population. This distribution is part of the sample selection process, as we wanted to detect the largest number of respondents in the regions with the highest oil production and daily use in the normal daily diet. In fact, presented with the question "With what frequency do you consume EVOO?", 90% of the interviewees declared "every day".

For the evaluation of purchasing habits, the survey showed that 39% of consumers purchase EVOO personally, 35% together with another family member, and the remaining 26% said that EVOO's purchasing manager was another family member. The descriptive analyzes of the sample are summarized in Table 1.

Table 1. Descriptive statistics of the sample (n = 867).

	Mean	Std. Dev.	Min	Max
Gender [1]	0.51	0.50	0	1
Age [2]	41.98	13.27	18	73
Family members [3]	3.17	1.23	1	6
Minors [4]	0.33	0.47	0	1
Level of education [5]	3.80	0.77	1	5
Monthly income [6]	1.81	0.64	1	3

[1]: Dummy variable, 1 = Female and 0 = Male; [2]: Continuous variable; [3]: Categorical variable, 1 = Single, 2 = Two members, 3 = Three members, 4 = Four members, 5 = Five members and 6 = family with more than 5 members; [4]: Dummy variable, 1 = minors are present in the family and 0 = minors are not present in the family; [5]: Categorical variable, 1 = elementary school, 2 = junior high school, 3 = diploma, 4 = degree, 5 = Master/PhD; [6]: Categorical variable, 1 = low income, 2 = middle-income, 3 = high income.

3.2. Psycho-Attitudinal Scales

Attitude can be defined as "a psychological tendency that is expressed by evaluating a particular entity with some degree of favour or disfavour" [37]. Because attitudes strongly affect food choice behavior, they can be used to explain consumers' food choices by means of appropriate attitudinal scales [38].

The used attitudinal scales concerning the general interest for health (GHI), for natural products (NPI), the perceived reward for the use of functional foods (FF REW), and the attitude towards the

environment (NEP) have already been presented in the second section. Each interviewee expressed his or her degree of agreement or disagreement, positioning himself on the seven-point Likert scale for each individual statement reported (item). The average and standard deviation of each item were calculated and are shown in Tables 2–5.

Table 2. Descriptive statistics of GHI scale.

	General Health Interest (GHI)	Mean	Std. Dev	Min	Max
GHI_1	The healthiness of food has little impact on my food choices	3.07	2.39	1	7
GHI_2	I am very particular about the healthiness of food I eat	5.9	1.3	1	7
GHI_3	I eat what I like and I do not worry much about the healthiness of food	2.67	1.73	1	7
GHI_4	It is important for me that my diet is slow in fat	4.35	1.63	1	7
GHI_5	I always follow a healthy and balanced diet	4.78	1.53	1	7
GHI_6	It is important for me that my daily diet contains a lot of vitamins and minerals	5.23	1.48	1	7
GHI_7	The healthiness of snacks makes no difference to me	1.96	1.63	1	7
GHI_8	I do not avoid foods, even if they may raise my cholesterol	3.35	1.71	1	7

Table 3. Descriptive statistics of NPI scale.

	Natural Product Interest (NPI)	Mean	Std. Dev	Min	Max
NPI_1	I try to eat foods that do not contain additives	5.33	1.59	1	7
NPI_2	I do not care about additives in my daily diet	2.61	1.67	1	7
NPI_3	I do not eat processed foods, because I do not know what they contain	3.96	1.8	1	7
NPI_4	I would like to eat only organically grown vegetables	5.43	1.81	1	7
NPI_5	In my opinion, artificially flavored foods are not harmful for my health	2.95	1.83	1	7
NPI_6	In my opinion, organically grown foods are no better for my health than those grown conventionally	2.91	1.96	1	7

Table 4. Descriptive statistics of FF REW scale.

	Reward from Using Functional Food (FF REW)	Mean	Std. Dev	Min	Max
REW_1	I get pleasure from eating functional foods	5.92	1.31	1	7
REW_2	The idea that I can take care of my health by eating functional foods gives me pleasure	5.93	1.31	1	7
REW_3	Functional foods make me feel more energetic	5.19	1.57	1	7
REW_4	Functional foods help to improve my mood	4.9	1.7	1	7
REW_5	My performance improves when I eat functional foods	4.93	1.66	1	7
REW_6	I actively seek out information about functional foods	4.61	1.79	1	7
REW_7	I willingly try even unfamiliar products if they are functional	4.76	1.74	1	7

Table 5. Descriptive statistics of NEP scale.

	New Ecological Paradigm (NEP)	Mean	Std. Dev	Min	Max
NEP_1	If things continue on their present course, we will soon experience a major ecological catastrophe	5.16	1.66	1	7
NEP_2	The earth is like a spaceship with very limited room and resource	5.59	1.54	1	7
NEP_3	When humans interfere with nature it often produces disastrous consequences	5.72	1.51	1	7
NEP_4	Humans are severely abusing the environment	6.19	1.27	1	7
NEP_5	The idea that we will experience a major ecological disaster if things continue in their current course is a wrong nonsense	2.54	1.88	1	7
NEP_6	I can't see any other real environmental problems created by rapid economic growth. Create only benefits	2.02	1.48	1	7
NEP_7	The idea that the balance of nature is terribly delicate and easily susceptible is too pessimistic	2.4	1.66	1	7
NEP_8	I don't think the environment is badly exploited by humans	1.94	1.5	1	7
NEP_9	People who claim that the inexorable exploitation of nature has brought us to the brink of ecological collapse are wrong	2.21	1.69	1	7
NEP_10	The balance of nature is very delicate and easily upset	5.79	1.51	1	7

In order to verify the internal validity of the four used scales, the Cronbach's alpha was computed. This coefficient is a statistical indicator used to measure the consistency or reliability of a score in psychological tests for a sample of subjects examined. It is calculated as follows:

$$\alpha = \frac{K}{K-1}\left(1 - \frac{\sum_{i=1}^{k} \sigma_{yi}^2}{\sigma_x^2}\right) \quad (1)$$

where k is the number of items; σ_X^2 is the variance of the total score and σ_{Yi}^2 is the variance of the items, for the sample of individuals under examination.

In general, high reliability values are to be considered as those greater than or equal to 0.65; therefore, from the results reported in Table 6 relating to the 4 scales, we can confirm a good internal consistency for the different items.

Table 6. Cronbach's Alpha for the four psycho-attitudinal scales used.

Item	Cronbach's Alpha
GHI	0.71
NEP	0.68
NPI	0.91
FF REW	0.86

From the correlation analysis, it turned out that the four scales are interrelated (especially GHI and NPI, with 57% correlation). Except for the NEP scale, which turns out to be inversely related to the others since it presents reverse items, all the scales show direct proportionality, that is, as one increases, the other considered increases (Table 7).

Table 7. Correlation analysis.

	Mean_GHI	Mean_NPI	Mean_RWE	Mean_NEP
Mean_GHI	1.0000			
Mean_NPI	0.5665	1.0000		
Mean_REW	0.4600	0.4854	1.0000	
Mean_NEP	0.2952	0.4138	0.2787	1.0000

3.3. Willingness to Pay

The growing awareness of the link between food and health has led consumers to perceive and associate an additional value to those products that lead back to health attributes. The questionnaire included, after providing information on the health value of the organic and functional EVOO, a question through which it was asked to express the willingness to pay a price premium for the two types of EVOO.

As mentioned in Section 2, the elicitation method adopted in the study is the Multiple Price List (MPL). In the context of eliciting willingness to pay for some good, MPL confronts the interviewee with an array of ordered prices in a table, one per row, and asks him/her to indicate "yes" or "no" for each price. WTP values were based on the average calculated on the highest price for which the respondent indicated "yes" and the first price for which he/she responded "no". It was also allowed an opt-out. In the event, a price premium of zero was associated.

Findings reveal that 76.7% of sampled consumers are willing to pay a premium price for the organic EVOO, against the remaining 23.3% who do not believe that the health attribute of organic EVOO justifies a premium price. For the functional EVOO, 67.6% of respondents declared to be willing to pay a premium price for its health claim, against the remaining 32.4%.

The averages of the price premium for the two types of EVOO were calculated. The willingness to pay a price premium for organic EVOO (WTPbio) is €1.405, while that for functional EVOO (WTPhc) is €1.109 (Table 8). Figures 1 and 2 show WTPbio and WTPhc Kdensity and box-plot.

Table 8. Descriptive statistics for WTPbio and WTPhc variables.

	Obs	Mean	Std. Dev.	Min	Max
WTPbio	867	1.405	1.387	0	5
WTPhc	867	1.109	1.306	0	5

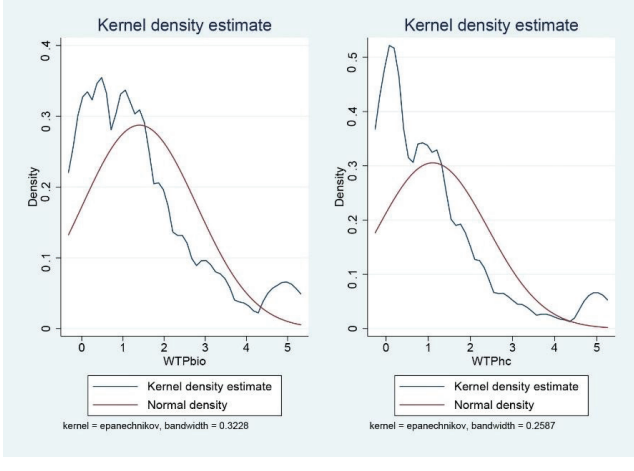

Figure 1. WTPbio and WTPhc Kdensity.

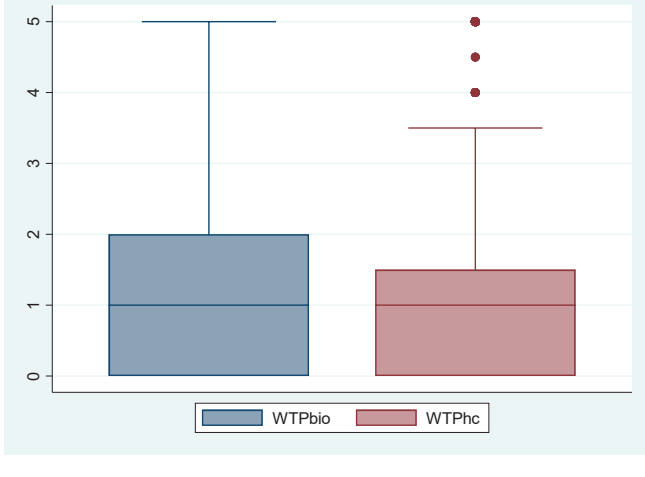

Figure 2. WTPbio and WTPhc Box-plot.

Parametric (*t*-test) [39] and non-parametric tests (Wilcoxon tests) [40] demonstrate that the value of WTPbio is significantly different and greater than that of WTPhc, with an average delta of about €0.30. This delta represents the value of all attributes associated to organic food, once that the health attribute is isolated by difference between the WTP of the two EVOO versions. Therefore, and answering to the first research question of the current paper, the contribution of the health attribute to determine the

average premium price for organic EVOO is €1.109 (78.9% of its total premium price), corresponding to the respondents' average premium price for the health claim of functional EVOO (WTPhc).

3.4. Drivers behind Consumers' WTP for the Health Attribute

It has been previously emphasized that consumers' choice depends on a multitude of factors. A Tobit regression model having as dependent variable the relative contribution of the EVOO health attribute (euro amount of WTP for the health attribute) and as regressors the other variables collected in the questionnaire—i.e., the socio-demographic characteristics and psycho-attitudinal scales—was implemented to find the main drivers of consumer' willingness to pay for the EVOO health attribute. Table 9 shows the estimated coefficients, with relative statistical significance, for the model. Only statistically significant variables are reported.

Table 9. Results of Tobit Regression Model.

Variable	Coef.	Std. Err.	*t*	*p* > |*t*|
GHI	0.175474	0.084640	2.07	0.038
FF REW	0.391949	0.064188	6.09	0.000
Monthly income	0.077366	0.040657	1.90	0.057
Gender	−0.30616	0.140974	−2.17	0.030

Dependent variable: Organic Health Attribute; Limits: Lower = 0 and Upper = 5; Number Obs = 867 (516 Uncensored; LR chi2 (9) = 82.80, Prob > chi2 = 0.0000; Pseudo R2 = 0.0294.

As the Tobit regression model shows, the expected value of y in the model is:

$$E_y = X\beta F(z) + \sigma f(z) \quad (2)$$

where X is a vector of independent variables, β is a vector of unknown coefficients, z is the unit normal density, $F(z)$ is the cumulative normal distribution function and $f(z)$ is the normal probability density function. A Tobit model is a regression in which the observed range of the dependent variable is censored/truncated in some way. In the presence of a censored dependent variable, usual ordinary least squares regression does not yield consistent parameter estimates, while Tobit estimates are consistent [41].

In Table 10, marginal effects are shown. They are the variation of the dependent variable y when one explanatory variable x varies of one unit, considering all the other x variables to the average; if the independent variable x is a dummy, the marginal effect indicates the variation in the dependent variable y, in the passage of the x variable from 0 to 1.

Table 10. Marginal effects calculation.

Variable	Dy/Dx	Std. Err.	Z	*p* > |Z|
GHI	0.110991	0.0535	2.07	0.038
FF REW	0.247347	0.04048	6.11	0.000
Monthly income	0.048936	0.0257	1.90	0.057
Gender *	−0.193775	0.8924	−2.17	0.030

(*) dy/dx is for discrete change of dummy variable from 0 to 1.

What emerges from the analysis is the relevance of the general interest scale for health (GHI), the reward scale perceived by the consumption of functional products (FF REW), monthly income, presence of minors, age, and gender. In particular, it is possible to notice that the two scales and the monthly income are positively correlated (+0.11, +0.24 and +0.04, respectively) with the dependent variable and therefore as the value of these regressors increases, the average of the dependent variable tends to increase. On the contrary, the negative coefficients of the presence of minors, gender, and age

variables suggest that as they increase, the dependent variable tends to decrease. The data elaboration shows that being a female reduces WTP for healthy attribute of organic EVOO by 0.19 euro/L relative to male. The presence of children in households decreases WTP for the same attribute by 0.15 euro/L, and as age increases the WTP decreases by 0.004 euro/L.

These results are only partially in line with previously published literature. For example, Gunduz and colleagues [42] found that monthly income is positively correlated with the WTP for organic chicken, while Krystallis and colleagues [25] argue that income affects mainly the quantity of organic products bought by households and not their willingness to buy them.

The negative effect of being a woman in determining WTP for the health attribute of organic EVOO contradicts existing literature; this is probably due by the fact that, even if women are more careful and aware of the health dimension of their food choices, men are generally inclined to pay a higher price premium than women [43].

Finally, in agreement with Charatsari and Tzimitra-Kalogianni [44,45] and Magnusson et al. [46], the age factor does not seem to play an important role, with younger consumers showing only a slightly higher WTP (as in our results where age is not significant).

4. Conclusions

Organic food is peculiar since it is associated by consumers with an array of attributes, among which the perceived positive impact on human health has been shown as the main one to drive consumer preferences [47]. Informed by these evidences and adopting extra-virgin olive oil (EVOO) as contextual example, the current research was aimed to evaluate the relative contribution of the health attribute to determine consumers' preference and WTP for organic products and to explore the factors behind consumers' WTP for the health attribute. To achieve this goal, an online survey of 867 consumers of Italian EVOO was conducted, in which a multiple price list (MPL) mechanism was adopted to elicit consumers' WTP. WTP was elicited for organic EVOO and for a functional counterpart in order to isolate the health attribute of the organic product.

Results show the fundamental role of the health attribute to generate consumers' preferences for organic EVOO. Particularly, our findings show that the relative contribution of the health attribute amounts to about four fifths of the total value attributed by consumers to the organic EVOO. It was also found that the willingness to pay for the health attribute under study is positively influenced by the consumers' interest in health, the perceived personal fulfillment generated by the consumption of functional products and monthly income, while gender negatively affected the consumer's willingness to pay.

It is recognized that food is one of the three consumption domains responsible for the largest share of environmental impact [48] and that, at the same time, environmental sustainability is a fundamental determinant of human health [49,50]. In this regard, global calls for sustainable food systems solicit market strategies to foster the consumption of food products coming from sustainable alternatives to conventional agriculture [51–53]. Among the several sustainable alternatives to conventional food production, certified organic foods undoubtedly represent those that have gained greatest momentum.

The new EU regulation on organic production recognizes that "Organic production is an overall system of farm management and food production that combines the best environmental and climate action practices, a high level of biodiversity, and the preservation of natural resources" [54]. Thus, fostering organic food consumption by studying the drivers that guide consumer preferences for this category of products is a crucial strategy to preserve environmental sustainability [55]. Based on this assumption, this study was designed with the aim to gain more insights on consumers' perception of organic food characteristics, as well as on the main drivers of organic food purchase.

Further research is expected to follow the lead of our study to make findings generalizable to the reference population. The current study did not seek statistical representativeness of the sample. Such a strategy implies that the data generating process does not allow to infer the unknown population. If known, that population would be made of adult Italian regular consumers of EVOO. Based on this,

we had no chance for a comparison with the whole population, even though we believe it would make results more robust with a wider external validity. Moreover, consumers with different demographic profiles, such as age, education background, occupation, and income should be considered. As follow up of this research, another organic food product should be considered to validate our findings, as it would also be relevant to evaluate the relative weight of other attributes of organic products.

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Role of Seaweed in Diets of Samoa and Kiribati: Exploring Key Motivators for Consumption

Hayley Butcher [1], Sarah Burkhart [1,2], Nicholas Paul [3], Ulusapeti Tiitii [3,4], Karibanang Tamuera [5], Taati Eria [5] and Libby Swanepoel [1,2,*]

1 School of Health and Sport Sciences, University of the Sunshine Coast, Maroochydore 4557, QLD, Australia; hrb014@student.usc.edu.au (H.B.); sburkhar@usc.edu.au (S.B.)
2 Australian Centre for Pacific Islands Research, University of the Sunshine Coast, Maroochydore 4557, QLD, Australia
3 School of Science and Engineering, University of the Sunshine Coast, Maroochydore 4557, QLD, Australia; npaul@usc.edu.au (N.P.); Sapeti.Tiitii@maf.gov.ws (U.T.)
4 Ministry of Agriculture and Fisheries, Apia WS1300, Samoa
5 Ministry of Fisheries and Marine Resources Development, PO Box 64 Bairiki, Tarawa, Kiribati; karibanangt@mfmrd.gov.ki (K.T.); taatie@fisheries.gov.ki (T.E.)
* Correspondence: lswanepo@usc.edu.au

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Abstract: Edible seaweeds have significant potential to contribute to sustainable diets that promote health of Pacific Islanders in ecologically, economically, and socially acceptable ways. No studies to date have investigated motivators for and the consumption of edible green seaweed from the genus *Caulerpa* (sea grapes) in Samoa and Kiribati. An observational, cross-sectional study utilized an interviewer-administered questionnaire to explore consumption behaviors and the role of sea grapes in the current diets of individuals in Samoa and Kiribati. Of the total 145 participants (n = 79, 54.5% Samoa; n = 66, 45.5% Kiribati), half (n = 76, 52%) reported consuming sea grapes. A significantly greater proportion of Samoans (n = 56, 70.9%) reported consumption than I-Kiribati participants (n = 20, 30.3%). A greater proportion of consumers were male (n = 47, 61.8%). Samoan consumers reported consumption of sea grapes with a higher diversity of foods and being related to traditional events or ceremonies. Motivators for consumption varied between countries, with Samoan consumers reporting strong agreement for taste and value for money, and identified sea grapes as nutritious food, as influences on consumption. Easy access was a motivator in Kiribati only. The findings of this study are underpinned by the degree of food security and differences in culture in Samoa and Kiribati. Future public health efforts to integrate traditional fresh food into local food systems will need to work within the existing social parameters in each respective country.

Keywords: sustainable diet; algae; *Caulerpa*; research for development; RDI; livelihood; Pacific; nutrition; NCDs

1. Introduction

The Pacific Islands are a collection of island nations located across the Pacific Ocean, which divide into the regions of Melanesia, Micronesia, and Polynesia [1]. Many Pacific populations are in nutrition transition, manifesting as changes in dietary intake and a move away from local food supply chains [2,3]. These nutrition transitions have coincided with a rise in the incidence of diet-related non-communicable diseases (DR-NCDs), such as cardiovascular disease, type 2 diabetes mellitus, and cancer [4], and these diseases are the leading cause of mortality in the Pacific region, accounting for 70–75 percent of deaths [5]. Poor diets are a major contributory factor to the rising prevalence of malnutrition in all its forms [6]. Following a sustainable healthy diet can promote optimal growth and development,

support functioning and physical, mental, and social wellbeing at all life stages for present and future generations, contribute to preventing all forms of malnutrition, reduce the risk of DR-NCDs, and support the preservation of biodiversity and planetary health [6]. Malnutrition is a key risk factor for NCDs, exhibiting as nutrient disorders caused by either deficient, excessive, or imbalanced intake of energy and nutrients [7]. Obesity, hyperglycemia and hypertension are diet-related risk factors linked to the manifestation of NCDs in the Pacific Islands [8].

Samoa and Kiribati are two countries located in the Pacific Islands region, close to the equator but separated by 1200 km [1] (Figure 1). Samoa, an independent country in Polynesia, is made up of two main islands, Upolu and Savai'i, and smaller islands as part of the archipelago, with a land area of 2841 km^2. In 2018, Samoa had a population of 201,000 and a Gross Domestic Product (GDP) per capita of US$ 6022 [9]. The Republic of Kiribati, located in Micronesia, is one of the most remote and geographically dispersed countries in the world, comprised of 32 atolls and one coral island with a land area of 811 km^2 [5]. In 2018, Kiribati had a population of 110,000, half of whom reside in the capital of South Tarawa, and a GDP per capita of US$ 1981 [10]. In 2020, according to World Bank classifications, Samoa was ranked as an upper-middle-income country, whilst Kiribati was a lower-middle-income country [11]. While both are in the Pacific Ocean, Samoa and Kiribati have different food systems based on their geographical location, participation in trade, and land mass (volcanic soil in Samoa vs. coral atolls in Kiribati). A positive association between GDP per capita and intake across all food groups has been found, indicating poorer dietary diversity and diet quality in lower-middle-income countries [12]. Dietary shifts toward a modernized and less varied dietary pattern are considered a major factor in the rise of obesity and NCDs in Pacific Island countries, including in Samoa and Kiribati [13,14]. Samoa has higher dietary diversity in comparison to Kiribati, primarily due to greater access to a variety of foods (tubers, legumes, fresh fish and meat, fruit, and green leafy vegetables) [15]. Greater dietary diversity is typically indicative of better diet quality and improved health status [16]. The low dietary diversity in Kiribati has been linked to the high cost of imported foods, low socio-economic status, limited agricultural capacity secondary to environmental effects of climate change and geographic remoteness [17]. Each of these factors also increases the vulnerability of I-Kiribati people to food insecurity, defined as the situation that exists when people lack secure access to sufficient amounts and types of safe, nutritious food [13].

Edible green seaweeds (genus *Caulerpa,* commonly referred to as sea grapes) are a natural resource that grows on shallow reefs around Samoa and Kiribati. The term sea grapes includes several species of *Caulerpa,* two of which (*C. racemosa* and *C. chemnitzia*) are available in Kiribati and Samoa. Sea grapes can be cultivated for local consumption [18], and also potentially exported, providing economic opportunity for Pacific Island countries [17], although neither country is involved in cultivation or exports at present. Like other edible seaweeds, sea grapes are a rich source of nutrients, including fiber, vitamin A, iron, and calcium [19–21], thus providing potential to contribute to the nutritional adequacy of Samoan and I-Kiribati people. Given the coexistence of undernutrition and overnutrition in the Pacific region [22], the high fiber and micronutrient content of indigenous sea grapes may potentially offer preventative health solutions. To date, the population consumption practices of seaweed in Pacific Island Countries is not known and will, therefore, be explored in this study. Additionally, the role that sea grapes play in the anthropology of Samoan and I-Kiribati diets is unknown. If seaweeds are a possible positive addition to Pacific Islanders' diets, it is important to first understand if, how, and why these populations are including seaweeds in their diets. Thus, the aim of this study was to undertake an initial exploration of how sea grapes are currently included in Samoan and I-Kiribati diets by quantifying intake and exploring motives for consumption.

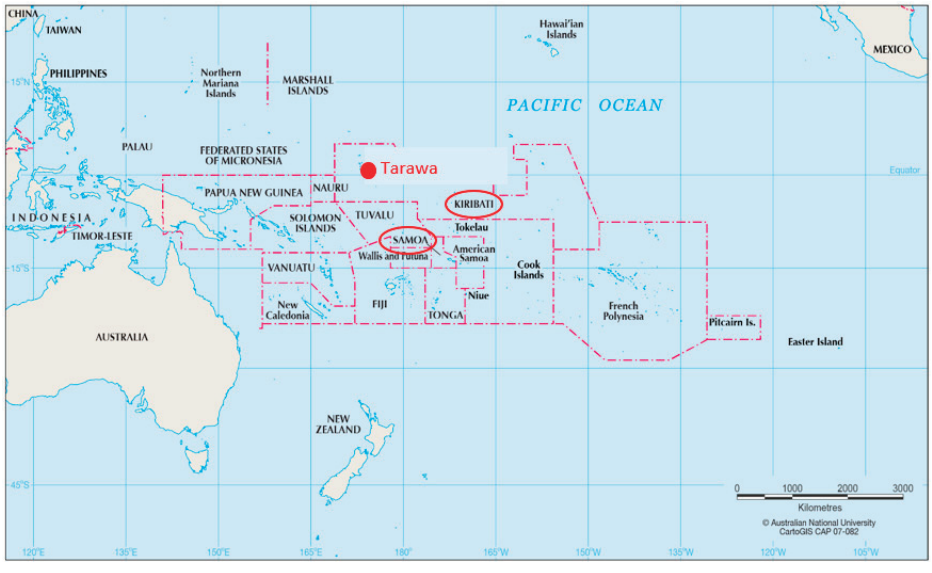

Figure 1. Location of territorial waters of Kiribati (Tarawa, red dot) and Samoa either side of the equator in the Pacific Ocean, from CartoGIS Services, College of Asia and the Pacific, The Australian National University. [23].

2. Materials and Methods

An observational, cross-sectional study design was used to explore the consumption behaviors and role of sea grapes in the current diets of individuals in Samoa and Kiribati. An interviewer-administered survey was used to collect quantitative and qualitative data to analyze consumption behaviors, including the frequency of intake, portion size, and methods of inclusion in the diet. Motives behind participants' decision to consume sea grapes were explored with the purpose of identifying differences between the Samoa and Kiribati populations. Ethical approval was granted by the University of the Sunshine Coast Human Research Ethics Committee (S181186) and local government approvals were granted through the Ministry of Agriculture and Fisheries (Samoa) and the Ministry of Fisheries and Marine Resources Development (Kiribati).

2.1. Recruitment

Recruitment for this study was undertaken in two locations, Samoa and Kiribati. This study used a convenience sampling method, whereby intercept interviewer-administered surveys took place with eligible participants in the Apia Fish Market and Fungalei Market (Samoa, June 2018) and in local villages in South Tarawa, Kiribati (June 2019). In both instances, participants were initially approached by a local research assistant from the Ministry of Agriculture and Fisheries in Samoa (four staff) and the Ministry of Fisheries and Marine Resources Development in Kiribati (eight staff), in tandem with a member of the university research team. Participant eligibility was determined by initially asking two questions to confirm that participants were aged 18 years or over and identified as a resident of either Kiribati or Samoa. A participant information sheet was available for participants prior to commencing the interview and participants provided verbal consent to participate in the study. No incentive was provided for participation.

2.2. Tool

The interviewer-administered structured survey contained three sections: (1) Demographics, (2) Consumption behaviors, and (3) Motivators for consumption. Demographic questions included gender and age. *Caulerpa* species were referred to in the survey by their common name, sea grapes, acknowledging that the term encompasses multiple species of *Caulerpa* in Samoa and Kiribati including *C. racemosa* and *C. chemnitzia*. Questions on consumption behaviors were informed by the wording used in the Dietary Questionnaire for Epidemiological Studies, Version 3.2 (DQES v3.2, Cancer Council Victoria, Australia) and included two multiple-choice questions: On average, last year how often did you eat sea grapes? (options from never to six or more times a day), and choose the usual portion size of sea grapes that you would eat (with the interviewer showing the participant an actual serve size of sea grapes as sold in the country) on a scale of less than $\frac{1}{4}$ serving to more than one serving (with interviewer recording amount over one serving). Section 2 also included the questions: Do you eat sea grapes on their own? (yes/no, if not, please describe how you include them in your meals and what else do you eat with them), and are there any traditional meals or dishes that you include sea grapes in? (yes/no, if yes, please describe these traditional dishes and how often would this occur, and how did you learn to prepare these dishes?). Section 3 included questions relating to motivations for eating sea grapes. These questions were informed by a review of the literature which identified key factors influencing food choice and read as follows: Thinking about the factors that influence your decision to eat sea grapes, please rate the level to which you agree with each of the following statements (on a four-point scale of strongly agree to strongly disagree) for: I like the taste, texture, smell, it is nutritious, it is healthy, it is value for money, it is a local food, it is fresh, and it is natural. Participants were also asked one open-ended question: Please describe any other reasons that influence your decision to eat sea grapes. The survey questions were reviewed by the research team for content validity. Additionally, the survey was reviewed by a member of the in-country research team and piloted with five participants in each country, prior to data collection in Samoa and Kiribati. Minor changes were made to wording of questions to ensure culturally appropriate language was used in each country. Researchers and research assistants were provided with in-country training to ensure a consistent process was followed to collect survey data. Surveys took between 10 and 15 minutes to complete. Surveys were completed in English, however, researchers provided the option to verbally translate into the local language (Samoan or I-Kiribati) if the participant chose not to converse in English.

2.3. Analysis

Descriptive analysis was completed in Statistical Package for Social Sciences (SPSS version 24, SPSS Inc., Chicago, IL, USA). Demographic data and reported consumption are presented with frequency and proportion for each variable. Likert scale responses regarding motivators for consumption are presented as a proportion of each category. Chi-square analysis was performed to identify associations between nationality and consumption status, consumption status and gender, and consumption status and age.

To determine an average portion size in each country, responses to the question on the usual portion size were assigned a gram equivalent to an average bunch weight of sea grapes (640 g). The average bunch weight of sea grapes is based on data collected by the Ministry of Agriculture and Fisheries (personal communication, June 2018). The average portion size for each eating occasion was subsequently calculated for both Samoa and Kiribati. A Mann-Whitney U test was performed to analyze the difference in portion size between the samples.

Conventional content analysis of qualitative data was performed based on the limited understanding of this phenomenon [24]. Working independently, two researchers (H.B. and L.S.) initially immersed themselves in the data by reading through this repeatedly [24]. Both researchers then identified exact thoughts or concepts and highlighted these on a Microsoft Excel spreadsheet (Microsoft Office 2019), while making notes to describe the initial analysis [24]. From here, code labels emerged from the data and were recorded on the spreadsheet. The codes were then categorized into

categories, based on related thoughts or ideas [24], and then further grouped into meaningful clusters (key categories) [24]. At this point, the researchers H.B and L.S discussed the analysis and resolved any discrepancies in coding. This analysis was completed by two authors (H.B. and L.S.) for triangulation and to increase research rigor. The results of the open-ended questions are presented as key categories, with examples of responses where relevant.

3. Results

3.1. Participant Characteristics and Consumption Behaviours

A total of 145 participants completed the interviewer-administered survey, with n = 79 (54.5%) from Samoa and n = 66 (45.5%) from Kiribati. Half (52%) of the total participants in this study (76 of 145) reported consuming sea grapes, with a significantly greater proportion of consumers in Samoa (n = 56, 70.9%) than Kiribati (n = 20, 30.3%) ($p < 0.01$). Of those who reported consuming sea grapes, a greater number of these were male (n = 47, 61.8% vs. female n = 29, 38.2%). Overall, there was no significant difference in reported consumption across age categories (Table 1).

Table 1. Participant characteristics in the Samoan and I-Kiribati participants. Raw number and percentage (bracket).

	Samoa n (%)		**Kiribati n (%)**	
	Consumers * (n = 56)	**Non-Consumers (n = 23)**	**Consumers (n = 20)**	**Non-Consumers (n = 46)**
Sex				
Male	33 (59)	9 (39)	14 (70)	23 (50)
Female	23 (41)	14 (61)	6 (30)	23 (50)
Age (years)				
18–30	9 (16)	7 (30)	6 (30)	8 (17)
31–49	31 (55)	11 (48)	6 (30)	20 (44)
50+	16 (29)	2 (9)	8 (40)	18 (39)
Undisclosed		3 (13)		

* Greater proportion of consumers in Samoa ($p \leq 0.01$).

Of the participants who reported frequency of consumption (n = 55), most reported consumption of sea grapes one to three times a month. No participants reported consumption more than once a day (Figure 2). Self-reported average portion size was larger in Samoa (365 g) than in Kiribati (240 g), but not significantly different ($p = 0.218$).

Conventional content analysis revealed that Samoan consumers primarily eat sea grapes with taro (68.9%, n = 31), banana (28.9%, n = 13), breadfruit (15.6%, n = 7), fish (15.6%, n = 7), and other meats (13.3%, n = 6). I-Kiribati consumers reported less variety, with consumers reporting fish (55.6%, n = 10), breadfruit (50%, n = 9) and rice (44.4%, n = 8) to accompany sea grapes. Further, most Samoans who reported consuming sea grapes (92.1%, n = 35) identified that it is consumed at traditional events or ceremonies, such as weddings, birthdays, and Church services. The I-Kiribati did not associate sea grape consumption with any special events.

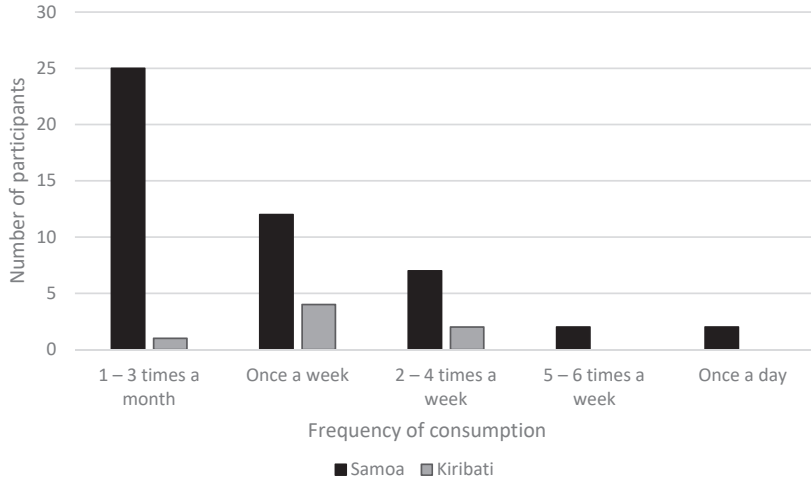

Figure 2. Frequency of consumption in Samoan and I-Kiribati participants.

3.2. Motivators for Consumption

Motivations for sea grape consumption differed between Samoan (n = 56) and I-Kiribati consumers (n = 20), with a greater proportion of Samoan consumers reporting strong agreement for taste, value for money, and that sea grapes are nutritious, as influences on consumption (Figure 3).

Conventional content analysis of the open-ended questions allowed participants to clarify their primary motivators for eating sea grapes or offer new factors that were not listed in the previous question. Three key categories emerged as motivators: Taste, health, and price. No new factors emerged from the qualitative comments, with the three key categories corroborating quantitative responses in the previous question (Figure 3). In line with quantitative ratings of key motivators (Figure 3), only Samoan respondents qualitatively described the importance of taste as a positive influence on them eating sea grapes (n = 33, 41.3%), as illustrated through the following quotes:

> *"I like the bitter salty taste from the sea."* [Participant 6, Samoa]

> *"It tastes so good and is delicious with taro. I crave it when I see other people eating it."* [Participant 43 Samoa]

Health and price were important to consumers in both countries (Samoa n = 35, 43.6%; Kiribati n = 14, 66.6%), as evidenced through the following quotes (limu is the Samoan name for seaweed):

> *"It's free and healthy."* [Participant 49, Samoa]

> *"It's good for my throat, the saltiness of limu makes my throat clearer."* [Participant 20, Samoa]

> *"It's healthier than salt and helps to prevent high blood pressure."* [Participant 54, Samoa]

> *"It's the number one health food to consume."* [Participant 7 Kiribati]

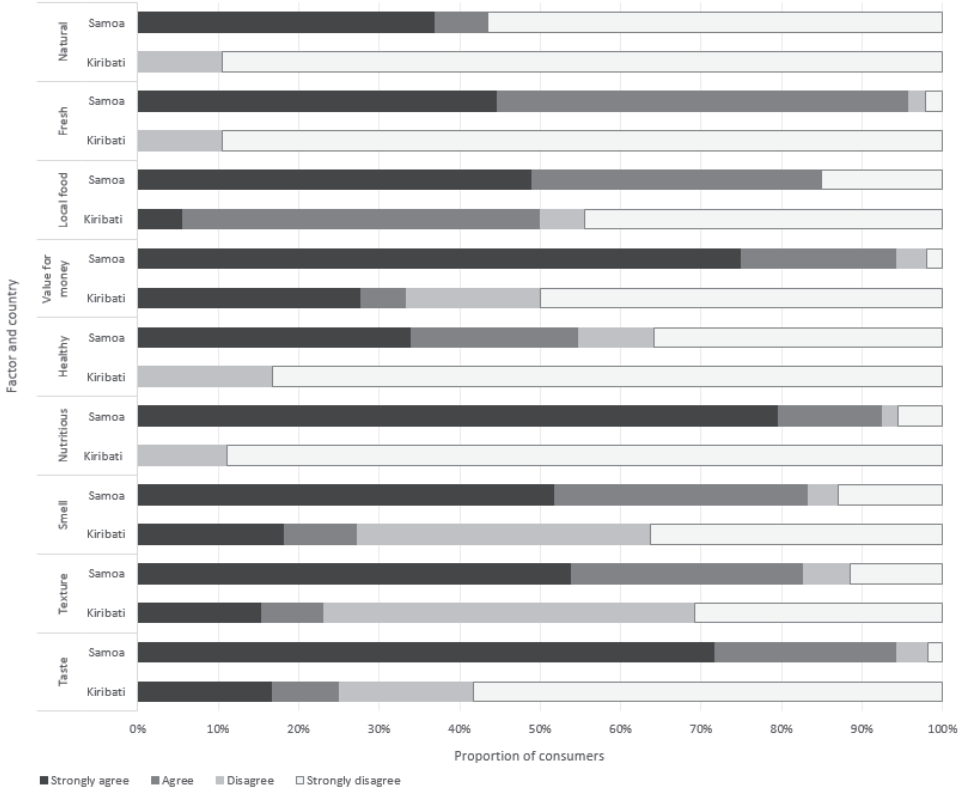

Figure 3. Proportion of Samoan and I-Kiribati consumers and level of agreement of factor as an influence on consumption of sea grapes.

4. Discussion

The aim of this study was to undertake a preliminary exploration of how sea grapes are currently included in Samoan and I-Kiribati diets by quantifying intake and exploring motives for consumption. Our study provides first insights into how the edible seaweed *Caulerpa* (sea grapes) is included in Samoan and I-Kiribati diets. Given the potential that sea grapes may play in contributing to sustainable healthy diets, this understanding makes a valuable contribution to the literature and can inform future practice and policy efforts to support sustainable diets and promote human health. Our findings confirm the complexity of food choice in this setting, as we uncovered multiple intertwined factors that influence sea grape consumption. We found that sea grapes are eaten in both countries, however, consumption is more common, more frequent, and in potentially larger amounts in Samoa compared with Kiribati. Despite being indigenous to both countries, an exploration of consumption practices revealed different motivating factors for consumption.

4.1. Reported Consumption

While only half of all participants reported eating sea grapes, consumption was more likely in Samoans than the I-Kiribati. In both countries, the majority of consumers did not report consumption greater than one to three times per month. As such, it is unlikely that sea grapes contribute substantially to the international targets for specific nutrients [25], despite having a favorable nutrient profile and the portion size being relatively high (365 grams). Samoans also reported consuming sea grapes

alongside a higher variety of foods, such as taro, banana, breadfruit, fish, and meat. Samoans have a preference for high fat, processed foods, which are characteristically high in added sugar and salt [26]. Dietary diversity in Kiribati, on the contrary, is low [17].

Interestingly, despite knowing that seaweeds are indigenous species to the Pacific, readily available for consumption, and have possible health benefits [27], their potential contribution to meeting recommended nutrient intakes is largely unknown. Further investigation to describe how seaweeds fit within a broader diet and the amounts needed to meet recommended nutrient intakes for groups of individuals of different ages and genders is warranted. Sea grapes are an affordable source of nutrients, available locally that could replace less healthy alternatives in the diet. The various motivators identified could be used to inform culturally and geographically appropriate health promotion efforts to help encourage such a change.

4.2. Motivators for Sea Grape Consumption

Gaining insight into the various interconnecting factors that influence food intake is needed to develop holistic policies and programs that promote sustainable diets. Sensory perception is a known determinant of nutrition and eating [28]. Sensory drivers for consumption, such as taste, texture, and smell, were important to all consumers in our study. To a lesser degree, our study revealed the importance of health and nutrition, and cultural connectedness to sea grapes as key factors motivating consumption for some Samoan participants. Whilst in Kiribati, value for money and local accessibility were more commonly identified as motivators.

4.3. Sensory Drivers for Consumption

Sensory drivers for consuming sea grapes were important to all participants in our study, however, Samoans were more likely to be motivated by taste compared with the I-Kiribati. Taste as a motivator in food choices in low-middle income countries (LMICs) has not been well researched [2]. Given socioeconomic status is a key determinant of food security [29], it is possible that the difference in taste motivators seen in our sample is due to the greater relative socioeconomic advantage in Samoa compared with Kiribati. Importantly, a positive association between GDP per capita and intake across all food groups has been found, indicating poorer dietary diversity and diet quality in low socioeconomic countries [12]. The prevalence of food security in Samoa and Kiribati is difficult to compare due to a lack of accurate food security data reporting in Kiribati. However, the Global Nutrition Index (GNI) ranks Samoa as more advantaged than Kiribati, with a GNI of 0.681 and 0.650, respectively [30]. While this data is not without its limitations, we postulate that Kiribati is at higher risk of food insecurity, which underpins the lack of emphasis on taste by I-Kiribati consumers. It is possible that motivators for consuming food in Kiribati is driven by satiety, rather than sensory satisfaction. Another possible explanation for this finding is the lower dietary diversity in Kiribati when compared to Samoa [15,17], suggesting that I-Kiribati people are accustomed to having low variety in their diet, and as such, do not seek to diversify in flavor and texture.

4.4. Health and Nutrition

Samoan consumers identified health and nutrition as one of the motivators in their decision to consume sea grapes. This finding confounds the existing literature, as it is typically those of high socioeconomic status who opt for food choices based on the premise of health [31]. Our study may be limited due to participant bias, as only consumers of sea grapes were asked to identify motivators for its consumption, as such, it is possible that these participants (who currently eat sea grapes) are already more health-conscious. It is also possible that Samoans have a greater awareness of the link between dietary behaviors and health outcomes (health literacy) with Samoans previously reported as having basic knowledge of NCDs [32]. Future research targeting both consumers and non-consumers is warranted to capture both barriers to, and enablers for, sea grape consumption.

4.5. Freshness and Food Access

Freshness was identified by the Samoans as a key motivator for the consumption of sea grapes, which was not the case for I-Kiribati participants. Freshness is a dimension of food access that, alongside other factors within the food environment, are known to influence dietary health [33]. Access and availability of nutritious, culturally appropriate food, key pillars of food security [34], are issues in Kiribati, given its isolated geographical location, poor soil quality, overcrowding, and limited space. Household decisions around food procurement in Kiribati are primarily based on the foods that are accessible and available across seasons [35]. Low dietary diversity in Kiribati is likely due to the limited availability and affordability of nutritious foods [17]. Given the population density and scarcity of fresh food vendors in South Tarawa, the I-Kiribati people may rely on imported processed foods and home food production. A key barrier to fresh food production in Kiribati is the perceived effort of home gardening in comparison to easy access of other imported foods [35]. As a 'no feed' crop that does not require exogenous feeding [36], edible seaweeds grow plentifully in oceans and can be cultivated with little or no costs [37]. Involvement in seaweed production can contribute to improved wellbeing through positive economic and social impacts [38]. Given the ready access to reef flats (Figure 4) and the desire of I-Kiribati people to develop new edible seaweed supply chains [39], there is great potential to overcome the barriers of access and availability that currently hinder sea grape consumption in Kiribati. However, currently, we have little understanding of fishery access in Kiribati, as opposed to the long-term monitoring of fisheries (including sea grapes) by the Ministry of Agriculture and Fisheries in Samoan markets. The highly exposed, fringing reef flats common in Kiribati are different from those of Samoan reefs. Revision of ministerial processes to include structured field auditing operations is warranted to determine if, and how, habitat influences the abundance of sea grapes in Kiribati. For this study, the Kiribati samples of sea grapes shown to participants during the survey were collected primarily from walls of the artisanal fish traps on the exposed reefs (Figure 4), which were traditionally owned and cared for by coastal communities to capture fish for their daily sustenance.

Figure 4. (**a**). Kiribati women collecting sea grapes (*Caulerpa chemnitzia*) from the wall and sheltered pools of an artisanal fish trap at Temwaiku village, South Tarawa; (**b**). Close up of Pacific Island sea grapes (*Caulerpa racemosa);* (**c**). Harvesting environment, low tide on the reef flat utilizing buckets for collection; (**d**). Close up of prepared Pacific Island sea grapes *(Caulerpa chemnitzia).*

4.6. Cultural Connectedness

Sea grapes are consumed in a number of locations across the world and are a culturally significant food source in Hawaii, Japan, Indonesia, Malaysia, Fiji, and the Philippines [40]. In our study, Samoan consumers recounted the importance of sea grapes as a local food, that was not evident in Kiribati. In Samoa, the consumption frequency and the inclusion of sea grapes at ceremonial events suggest that it may hold a traditional place within the diet. The association between sea grapes and the Samoan culture may be attributed to the strong food culture in Samoa [41,42]. Most festivities or celebrations are centered around food in Samoa, including the traditional *to'onai* (Sunday lunch), *Lotu Tamaiti* (White Sunday), in addition to weddings, birthdays, village or church meetings. The composition of a meal is reflective of status, for instance, the butchering of a pig or a large deep-sea fish is considered appropriate for *ali'i sili* (High Chief) visits [41]. The nostalgia that Samoan consumers associated with sea grapes was not reciprocated in Kiribati, where consumption was reported to be infrequent and local food and culture did not emerge as a motivator to consume. These results highlighted a key point of difference between the two countries. As Samoan consumers associated sea grapes with a local food that may link to their cultural background and heritage, the I-Kiribati did not. Limited recorded data exist in relation to the role of food in the I-Kiribati culture. The diet is based on seafood, however, due to the low dietary diversity and poorer access to fresh foods [17], it is possible that food does not play a significant role in the I-Kiribati culture in comparison to the Samoan. This insight suggests that a cultural component is important to complement edible seaweed promotion efforts in Kiribati.

Samoan's have repeated exposure to sea grapes through their cultural heritage and attendance at ceremonial events that serve traditional foods. Familiarity with a food is known to increase consumption [43]. Whilst research into Pacific food environments is emerging, it has been found that perceptions of food availability are significantly and positively associated with food acquisition [34]. The culmination of these factors (cultural traditions and familiarity) may potentially be enhancing consumption in Samoa, and lessening consumption in Kiribati. Understanding the cultural drivers underpinning sea grape intake in Samoa offers promising insights that could inform culturally appropriate promotion strategies in Kiribati and elsewhere. Research in Samoa [26,44] and Solomon Islands [45] has demonstrated a preference for local foods. Nostalgic past-focused marketing (as opposed to present-focused marketing) can lead to more favorable brand awareness and greater intent to purchase a product [46]. From a marketing perspective, private companies and the food industry could employ similar strategies whereby advertising is designed to directly elicit feelings of nostalgia that connect consumers to eating sea grapes. Future studies, including qualitative investigations, should explore the factors that would motivate a change in behavior in those who do not consume sea grapes.

4.7. Limitations

There are several limitations to our study. Firstly, our sample size was modest, and our results are not representative of the broader Samoan and I-Kiribati people. Given our sample size, limited statistical analysis was able to be undertaken. As we used an intercept interviewer-administered survey, we did not record those individuals who declined to participate in the survey. However, given the exploratory nature of this work, our descriptive results are novel and provide a starting point for further work to understand seaweed consumption patterns and motivators in Samoa, Kiribati, and the wider Pacific region. Given the cross-sectional nature of our study design, we relied on self-report data and typical bundle size to quantify sea grape consumption. We acknowledge that there are limitations to self-report dietary data and there may be variance in typical bundle size between vendors and over the course of the year. The literature suggests that differences in typical diets exist between urban and rural areas in Samoa and Kiribati [44], so it is likely that further research may find variations in consumption behaviors across these countries, and the broader Pacific region.

4.8. Conclusions

This study provides preliminary findings on seaweed consumption behaviors and motivators in Samoan and I-Kiribati people. In Samoa, the cultural significance of sea grapes is evident through its inclusion in celebratory meals that occur on a weekly or monthly basis. Sea grapes could play an important role in Kiribati to address poor access to and availability of fresh food, as a sustainable diet approach to tackle low dietary diversity, multiple micronutrient deficiencies, food insecurity, and livelihoods.

Future research from a whole-diet approach, with a larger sample size, is warranted to determine the contribution that sea grapes (and other edible seaweeds) have towards improving diet quality and addressing the malnutrition in all its forms. Our exploration of motives for consuming sea grapes provides first insights that can inform the food industry and private companies, as well as future practice and policy efforts to support sustainable diets and promote human health. Our findings also confirm the complexity of food choice in this setting, recognizing the interplay between multiple influences, necessitating the adoption of sociological and anthropological approaches for a robust understanding of dietary motivators in this context.

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The Process of Ethnocentralizing the Concept of Ecological Agroalimentary Products for the Romanian Urban Consumer

Alina Butu [1], Codrin Dinu Vasiliu [2], Steliana Rodino [3,*], Ioan-Sebastian Brumă [2], Lucian Tanasă [2] and Marian Butu [1,*]

1 National Institute of Research and Development for Biological Sciences, 060031 Bucharest, Romania; alina_butu@yahoo.com
2 "Gh. Zane" Institute for Economic and Social Research, Romanian Academy, 700481 Iași, Romania; codrindinuvasiliu@gmail.com (C.D.V.); sebastianbruma1978@gmail.com (I.-S.B.); lucian.tanasa@gmail.com (L.T.)
3 The Bucharest University of Economic Studies, 010374 Bucharest, Romania
* Correspondence: steliana.rodino@yahoo.com (S.R.); marian_butu@yahoo.com (M.B.); Tel.: +0040-742-090-021 (S.R.); +0040+723-822-573 (M.B.)

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Abstract: In the case of the Romanian urban consumer, ecological agroalimentary products do not merely operate on the discursive line mapped by the rules of certification. The ecology of the agroalimentary products is reinterpreted and, thus, an interesting phenomenon occurs. The products perceived as natural, local, or peasant are seen as ecological enough to influence the purchase decision. Hence, according to the Romanian urban consumer, the ecological product stands for a symbolic projection provided by their own experience and trust level as a consumer. In the present paper, we aimed to go beyond the theory claiming that such behavior is determined by confusion in the social action of purchase and, following this line of interpretation, we also intended to identify the symbolic systems and hermeneutical criteria by which the Romanian urban consumer makes a social projection of ecological agroalimentary products through certain ethnocentralizing mechanisms. Our research paper was based on a qualitative and quantitative anthropological analysis that had, as a starting point, a questionnaire applied online (with a total of 1792 respondents, out of which 1342 were urban respondents).

Keywords: urban person; ecological alimentary products; health; consumers; symbolic systems; Romania; natural product; traditional product; countryside product; local product

1. Introduction

One of the best-known critics of the consumption society [1–4] has brought reproaches on consumerism based on the fact that it lays the foundations for a hedonist society. The first half of the 20th century marked the emergence of mass consumption, where meeting the basic needs started turning into a socioeconomic system of also satisfying pleasure and prestige.

The need for nourishment has been gradually replaced by the gourmet pleasure, while the need for clothing has turned into the desire to be trendy or fashionable. Moving, dwelling, and socializing have all acquired extra objectives: pleasure and prestige publicity including the pleasure of eating, the delight of dressing up, the comfort of one's dwelling, and the enjoyment of travelling and communicating. Therefore, the comfort, delight, and extra notoriety become criteria, according to which the added value of the goods and services we purchase is being decided. We no longer possess a body whose mere needs translate into survival and preservation; instead, we own a body in which we need to procure recognition and pleasure.

From the individual, regarded as a survival unit, we move onto the idea of the consumer, regarded as a unit establishing the psychosocial and socioeconomic bases. Thus, a consumption economy inevitably involves a sociology of delight. The consumption society takes us into a direct relationship with the basic necessary resources and also places us into a gearing where we are shaped in our own image and pleasures.

Regardless of how alarming these critical positions may sound, the consumption society can hardly escape the hedonism label. The consumption surplus as delight looks like a label permanently attached. The contemporary person has forever moved into that universe of pleasure generated by purchasing goods at grassroots level. A certain term has been invented, namely consumerism, to morally qualify this connection between consumption and delight [5], which conveys both the idea of consumption surplus and pleasure.

Thus, the simple fact of going shopping becomes a pleasant, private, and gender neutral activity, engaged into a daily rhythm and rituals clearly defined in a world especially created and designed for consumers. What is called the "shoppers' economy" [6] is no farther than a utopia under the purchasing mark. In this context, a little paradox is born: how does a contemporary person, subject to hedonistic consumerism, increasingly desire to live in a healthy universe? Why do we want to eat and live as naturally as it can be? Is it about a critical moment in the symbolic universe of consumerism?

All these questions are related to a systemic matter of the consumption. The entire system of the consumption society displays this sort of behavior, which is rather close to an anthropological paradox. Somewhere, along the line, a symbolic fault line occurs in the structural understanding of the entire system of the consumption society when we are discussing the hedonistic nature of the whole assembly, and the health wish, as it has been increasingly noticed among the emerging individual behaviors.

For the reasons presented above, these are precisely the main questions, the ones we ask ourselves when the Romanian urban consumers of ecological agroalimentary products are in question. Starting from the data gathered through the above-mentioned questionnaire, we shall attempt to understand how the ecological concept reaches certain adjustments between two apparently opposed symbolic systems: consumption and a healthy life. The current paper does not intend to analyze the impact of the ecological food products upon health, but the manner by which the concept of ecological food products goes through resemanticization in the interaction area of these symbolic systems.

2. Methodology

Having these questions as a starting point and based on the analysis of the data obtained by means of a nationwide questionnaire, we propose the following working hypotheses:

- We are dealing with an increased responsibility of the Romanian urban consumer regarding the purchase of food products; and
- This increase of responsibility is not decisively determined by the ecologically certified products, but rather by certain local reactions toward the globalization phenomenon. These reactions are closely connected with the imagining of healthy alimentation and with the discourses that have an influence on trust in what concerns food safety and security.

Therefore, the concept of ecological food product goes through a process of ethnocentralizing and obtains connotations that no longer regard the ecological certification. It concerns a phenomenon that does not involve a confusion, but rather the pressure put by the collective imaginary on the semantics of the concept of ecological food products.

In 2016, the interdisciplinary research group known as Rural Development Research Platform developed a questionnaire on the behavior of the Romanian consumers of ecological agroalimentary products. The questionnaire was conducted nationwide and mostly applied online through Facebook and email. In the case of Facebook, it employed various pages, groups, and the private accounts of some authors who wrote the present article. The questionnaire was posted on the following Facebook pages and groups: Rural Development Research Platform (with an audience of 1889 persons); Eco Ruralis—an

association of peasants from Romania (with an audience of 11,948 persons); Regiunea de Dezvoltare Nord-Est (4496 members); Iasul vrea produse locale (over 36,000 members); Iasiul vrea produse naturale (over 39,000 members); Targuri si manifestari taranesti (290 members); Iasiul vrea produse naturale din gospodării (over 10,000 members); Academia Română, Filiala Iași (with an audience of 2633 persons); Institutul de Cercetări Economice şi Sociale "Gh.Zane" (with an audience of 325 persons); and so on. The above-mentioned questionnaire was also sent on by email to approximately 400 email addresses and registered a response rate of roughly 10%.

The questionnaire was conducted on a sample of 1792 people across Romania. Out of the 1792 answers received, 1613 were validated. Among these, 1342 people lived in the urban space of Romania. Regarding the urban respondents 'age, according to gender, out of the total respondents, there were 423 male (31.5%) and 919 female respondents (68.5%). Based on the age category, 14 respondents (1%) were up to 18 years old, 218 (16.2%) were between 18 and 25 years old, 642 (47.8%) were between 26 and 40 years old, while 441 (32.9%) were between 41 and 65 years old, and 27 (2.0%) were ranged over 65 years old. According to educational background, urban respondents fell under the following categories: 544 (40.5%) had post-graduate degrees, 643 (47.9%) graduated college, 148 (11.0%) graduated from high school, and seven (0.5%) graduated from secondary school.

Within the questionnaire, 20 questions were introduced regarding gender, age, civil status, children in care, family monthly income, main activity, frequency of ecological alimentary products purchase, acquisition of other ecological products, main reason for buy eco-friendly products, place of purchase, main criterion for identifying eco-friendly food products, what does eco-friendly food product mean, degree of trust in the ecological products, the official logo of the ecological products in EU, the most important source of information, the most used device for Internet surfing, and how eco-friendly food products could be best promoted.

A series of these questions had already been addressed in a previous study [7] that focused primarily on a purchase decision analysis of ecological agroalimentary products. Following the writing of the above-mentioned study, the research team reached a conclusion that could not be fully explored within that particular paper: that, in Romania, although consumers of ecological agroalimentary products are aware and informed about the ecological certification and easily recognize the labels of ecologically certified products, they also chose to interpret the meaning of the concept of ecological agroalimentary products according to their own experiences and financial means. The certification itself was not sufficient motivation to force an understanding of healthy alimentation within the official conceptual delimitations of ecological alimentary products.

Along these lines and based on the study mentioned earlier, we reached the conclusion that the idea of ecological agroalimentary products is the object of a mental projection that regulates itself, especially within the symbolic system of relating to a healthy life. These symbolic projections and structures lead to formulating some uncommon selection criteria in the purchasing process of food products. At the same time, based on these subjective criteria of selection, the Romanian urban consumer seems rather more interested in purchasing products as ecological as possible without paying much attention to the officially accepted certification. In other words, the Romanian consumer is more interested in purchasing what corresponds as much as possible with their own interpretations on the ecological agroalimentary product, rather than on the fact that a certain product is certified or not.

To further advance this research, the present paper aimed to analyze the symbolic mechanisms by which the Romanian urban consumer decodes the semantics of the ecological concept in its private contexts as well as the ways in which these contexts lead to a resemanticization of the ecological concept.

Therefore, we would like to explore the following:

- The consumption community and the ethnological contexts of purchasing food products.
- The symbolic systems of consumption and health together and the interactions between them.
- Constituting the ecological concept as a legitimizing narrative of the interaction between the symbolic systems of consumption and health.

- Resemanticization of the ecological concept in the conceptual zone of traditional, local, and peasant products.

This paper used both a qualitative and quantitative approach. Our analyses concerned both the anthropology of the Romanian urban consumer, as they been revealed from the literature and our own observations, and the quantitative data were obtained by applying our questionnaire.

The graphics of the data employed in the present study were made with the assistance of Microsoft Excel and the statistical application R Program [8–10]. In the case of R Program, the following work package was used: multiple correspondence analysis (MCA) to identify the strongest correlations [11–13].

3. Preliminary Data

3.1. Reductionism in Understanding the Ecological Agroalimentary Product

On quite a few occasions, the consumption society has been regarded through the lenses of reductionism. This perspective can put at risk the understanding of this society viewed as an automatic phenomenon that should be exclusively regulated in accordance with the official regulation. In the case of the present analysis, we would like to highlight two of these reductions.

The first type of reductionism resides in the idea that between conventional agriculture and ecologically certified agriculture, there are fundamental differences regarding food security. We see the agroalimentary products obtained from conventional agriculture as a non-ecological product by far, while, in what concerns the certified product, we consider that it possesses all the ecological arguments related to food safety and security. The opposition between conventional and certified becomes an exclusive one, at least, by the manner in which these two terms are in absolute opposition.

This reductionism has, at least, two side effects in terms of mentality and functionality:

- It reduces the importance of the short food supply chains in terms of food safety and security; and
- It places the entirety of conventional agriculture in opposition to sustainability and durability.

To further explain why we believe we are not dealing with a confused consumer, we need to point out a few aspects connected to the culture of imaginary of the consumer. Sociologically speaking, Romanian urban consumers can be seen as a consumption community as they share common symbolic systems. Thus, the perceptions, representations, emotions, ideas, preconceptions, and their actions are influenced, to a lesser or greater degree, by the same discourses that circulate openly in the public space and are also at the level of the common imaginary. These discourses work as legitimizing narratives [14] and become interpretative agents that either balance or unbalance the link between the symbolic systems. In this case, these legitimizing narratives intervene at the level of tension between the symbolic system of consumption and that of health.

For instance, the fact that peasant agroalimentary products are seen as ecological products does not create confusion, but a legitimizing narrative by which this consumer is trying to balance the symbolic system of consumption with the symbolic system of health. Such a legitimizing narrative is backed by a personal history, a subjective system of valorization, a set of purchase routines, and last but not least, an individual or family interpretation on alimentary consumption.

A second type of reductionism worthy of attention regards the preconception according to which we are dealing with a confused consumer [15–17]. The Romanian urban consumer is indeed confused as long as he/she, by their purchase decision, does not identify the ecological agroalimentary product as strictly the ecologically certified agroalimentary product. Resting on this reductionism lies the idea that we are dealing with a bidimensional concept of the ecological product, where the production and commercialization are the only dimensions where the certification occurs. Actually, the consumption, especially through the purchase decision, introduces a third dimension in this configuration system of the ecologically certified products.

These legitimizing narratives, as shown further, reconfigure the concept of ecological agroalimentary products and have the following consequences:

- Resemanticization of the ecological concept in the traditional, local, and peasant areas (ethnocentralization of the ecological concept).
- Raising the importance of memory and sensorial impact in the purchase decision of ecological products.

In the beginning, we shall present the fundamental data of these two symbolic systems, namely the urban consumption of food products and health.

3.2. The Symbolic System of the Urban Consumption of Food Products

The analysis of the consumption symbolic system may very well commence from an idea expressed by Gilles Lipovetsky, that "The consumerism civilization is defined by the central place occupied by the expectation to well-being and the search for a better life for himself/herself or his/her own family." [6]. Three issues are worth remembering in this quotation: The consumer is determined by the expectation to well-being, improved life quality, and family context. We could add that as a consumer, their aspiration to wellbeing conditions his/her satisfaction; the improved life quality determines his/her objectives on a daily basis; while the family context defines his/her immediate space of valorization and action.

Based on these three coordinates, in the case of the Romanian urban consumer, we can safely make the following observations regarding the purchase symbolic system of the food products:

a) In the case of urban consumers from Romania, the food supply sources are as follows: hypermarkets, supermarkets, farmers' markets, wholesale markets, specialized shops, online shops, producers' shops or stands, fairs, gastronomic festivals and events, brunches organized by producers, mobile markets, straight from the farmgate, or other forms of innovative short food chains of supply. The largest percentages on the food product consumption are registered in the retail shops and farmers' markets.

b) The metropolitan territorial organization is relatively identical in Romania. Hence, in what concerns the purchase centers of agroalimentary products, their location is quite the same in each town/city in Romania. The hypermarkets are generally located at the outskirts of a city/town, while supermarkets and farmers' markets are found in the busy and populated areas [18]. In the case of metropolises, almost every neighborhood has its own farmers' market and, at least, one supermarket.

   At the same time, as Cristian Dragoş and Vincenţiu Vereş state, at present, in Romania, farmers' markets still occupy a privileged position and remain competitive through price, proximity, freshness, and quality of the agricultural products, and also in the range of agricultural products [19]. Regarding the smaller cities/towns, the presence of supermarkets, malls, or hypermarkets can produce a recreational type of consumption phenomenon or display of social prestige, behaviors that go beyond the simple motivation of going shopping for supply reasons.

c) Concerning the anthropology of the visit paid to the supermarket, it should be highlighted that urban Romanians are more daily shoppers than weekly ones. The supermarket purchase reveals a rather completing behavior of the daily needs than that of a long-term supply. This phenomenon can also be influenced by the following facts: supermarkets are generally located at a short-distance walk/drive from the consumers' dwelling; most supermarkets are open from Monday to Sunday inclusive, and from early hours in the morning (some as early as 6 a.m.) till late evening (10 p.m.). The long-term purchase is generally made in the farmers' markets.

d) The extra-urban peasant fairs are increasingly seldom visited by the urban consumer. They are mainly spaces serving for peasant exchanges. There are also the so-called wholesale markets located in the urban areas and which are practically taken by storm every autumn when most

Romanian consumers buy large quantities of agroalimentary products to prepare home-made canned food for winter (jams, canned vegetables, tomato juice, fruit compotes, and many others). Many of the Romanian urban consumers are still preparing these home-made canned foods (before 1989, during the communist regime, this was a frequent and necessary activity for almost any Romanian household). This aspect can be explained by either tradition or due to the fact that the products offered by the big producers do not satisfy these buyers in terms of taste or because the traditional products offered by the small producers are considered too expensive.

e) To better understand the subjective and objective determinations of the food consumption, a few clarifications should be made in terms of what concerns the consumption context of the basic food products.

Bread—The product always present on a Romanian kitchen table is bread. Romanians are one of the largest consumer groups of bread worldwide [20], and they occupy first place in Europe on bread consumption [21]. Concerning the agricultural areas of cereals cultivated in an ecological system, wheat occupies the first position in Romania, registering over 45,000 ha in 2017 [22]. Both bakers' wheat (*Triticum aestivum*) and durum wheat (*Triticum durum*) used for making bread and pasta are cultivated in Romania.

Despite these facts, ecologically certified bread is hardly found in the big retail shops. It is commonly present in specialized stores and less easily sold. Most varieties for sale fall within the category of white bread (around 65% out of the total of bread consumption) [23]. This is a purchase behavior that seems largely motivated by taste, and not one related to nutritional values.

Meat—Chicken and pork are among other food products often purchased by the Romanian urban consumer. Beef is also highly appreciated, but it is less consumed due to its relatively costly price. Similar to the case of bread, there is a relatively low offer of ecologically certified precooked meats products.

Eggs—Romanian cuisine values eggs as basic products that are either consumed by minimum cooking (boiling or frying) or as ingredients for many traditional recipes. In the retail shops, the offer of ecologically certified eggs is quite well-supplied. The 0 (zero)-marked eggs come from ecological production as there are strict regulations related to the rearing areas, wellbeing standards, fodder, and medical treatments administered to the laying hens (the birds are fed with ecologically certified, pesticide, and hormone-free fodder only, without antibiotics or other synthesis substances) [24].

Fish—In Romania, fish consumption is quite significant, although the Romanian consumer does not excel at this food chapter. Fish farmed in an ecological system is barely present on the market. However, the Romanian consumer chooses freshly caught fish when they wish to buy a healthy product.

Dairy products—Related to cheese, the variety is considerably lower than that of other countries with long traditions such as France, Italy, Switzerland, Spain, and others. Romanians, except for some geographical regions, do not have a strong tradition in matured cheeses. The offer of ecologically certified products is also low. The purchase decision is mainly focused on traditional, local, or peasant products. In comparison to other European gastronomical cultures, sour cream is among the most consumed dairy products in Romania. Yogurts register high percentages in preferences along with milk, which has the widest offer of ecologically certified dairy products. Butter is another highly appreciated dairy product in Romanian cuisine.

Maize—Maize flour is largely used as a prime ingredient in "mămăligă" (a sort of maize porridge similar to Italian polenta). "Mămăliga", quite legitimately, has often been associated with the history of Romanians [25]. Gastronomically speaking, "mămăliga" successfully replaces bread in association with foods based on cheese, eggs, or meat (and often combined). Romania is also an

important maize producer for both human and animal consumption and, recently, as a novelty, for bio fuel production [26].

The maize crop in the ecological system occupies the second position after wheat (approximately 20,000 ha cultivated in 2017). However, the yield is largely used as fodder for the animals raised ecologically [22].

Herbs—In Romania, the most purchased herbs are parsley, lovage, dill, and lettuce. Green onion and garlic are also associated with herbs and are often consumed. Ecologically grown herbs like parsley, lovage, and dill are entirely absent. There is a rather limited offer of ecologically certified lettuce.

Tomatoes—These are one of the most symbolically loaded aliments among the agroalimentary products for the Romanian consumer. Tomatoes are chiefly consumed during summer as the consumers favor the Romanian varieties that are considered much tastier than the imported ones. Tomatoes can be generally bought from the farmers' markets and the most important purchase criteria are the following: peasant or rural nature, variety, and area where they were grown. There are offers of ecologically certified tomatoes in the retail shops, but, in spite of this, the tomatoes labelled as Romanian peasant product are preferred during the growing season. On quite a few occasions, the Romanian urban consumer can be heard talking about "imported or supermarket tomatoes that taste like rubber".

Other vegetables—Romanians frequently eat potatoes, beans, carrots, celery, parsnip, onion, garlic, bell peppers, red peppers, hot peppers, eggplants, marrows, and cucumbers. The native peasant products are generally favored in the case of these vegetables. The offer of ecologically certified products is barely present on the market.

Fruit—These are among the most consumed products (fresh, dried, frozen, or canned). The most diversified offer of ecologically certified fruit is for apples, pears, strawberries, blueberries, raspberries, sea buckthorn, citrus fruits, and bananas.

Honey—Romanian honey is a highly successful product both nationally and internationally. It is also one of the high-quality products obtained in Romania. The offer of ecologically certified honey and apicultural products is quite generous.

Edible Oils—The consumption of cooking oil is fairly high as Romanian gastronomy has many recipes that involve tempering and frying. The most consumed oil is sunflower.

Beer and wine—In terms of legislation, in Romania, beer and wine fall within the category of aliment. Concurrently, the beer consumption is quite high in Romania (1.4295 L per capita monthly, Table 1), which places Romania in seventh position in the world. However, ecologically certified beer is barely present here. The quality beer consumption is as high as 50% [27]. Regarding the wine consumption, the Romanians register as drinking 0.887 L per capita monthly (Table 1). The ecologically certified wine offer is much more diversified and generous in Romania.

To visualize the data on consumption, Table 1 presents the processed data provided by the Romanian National Institute of Statistics [28].

Table 1. Average consumption of agro-food products and alcoholic beverages, by residence area in 2015–2018 (monthly average quantities per person) [28].

Products Categories	MU	Average Consumption	
		Total Households	Urban Households
Bread and bakery products	kg	8.216	7.723
Maize flour	kg	0.804	0.539
Fresh meat	kg	3.482	3.640
Preparations of meat	kg	1.166	1.187
Fish, fish products and tinned fish	kg	0.722	0.768
Milk	l	5.743	5.618
Dairy products	kg	1.398	1.458
Eggs	pieces	13.463	13.112
Maize, sunflower and soya oil	kg	0.886	0.905
Fruit	kg	3.862	4.374
Potatoes	kg	3.087	3.008
Vegetables and tinned vegetables in equivalent fresh vegetables, total	kg	7.835	7.950
Tomatoes	kg	1.089	1.192
Sugar	kg	0.742	0.739
Honey	kg	0.080	0.095
Wine	l	0.887	0.632
Beer	l	1.4295	1.441

In Romania there are [22]:

- Sixteen ecologically certified units for manufacturing grain mill products, starches, and starch products and nine similar units for manufacturing bakery and flour products;
- Five ecologically certified plants for meat processing, preservation, and production and also three similar plants for processing and preservation of fish and shellfish;
- Twenty-two ecologically certified facilities for manufacturing dairy products; and
- Eleven ecologically certified units for producing vegetable oils and fats as well as animal fats.

f) In Romania, as happens elsewhere worldwide [29], fruit and vegetables are apparently the most sought products among the ecological alimentary goods. On the other hand, in what concerns the availability of the ecological agroalimentary products on the Romanian market, as a general observation, it can be stated that most food products are imported [30].

g) On the whole, the Romanian consumer is an occasional buyer that interested in all categories of alimentary products and also a seasonal one with respect to fruit and vegetables.

h) Concerning this gastronomical context, the lack of ecological certification or the low number of ecological certifications on certain food product categories is further determined by the perception of the Romanian consumer who regards local, traditional or peasant products as highly valuable in terms of prophylaxis, nutrition, sentiment (taste memory), or sensorial perception (taste, smell, appearance). Hence, the small producers would rather not invest in ecological certification since they are aware of their market advantage, as long as they are local producers and their products fit into the segment of traditional or rural products.

3.3. The Symbolic System of Health

The symbolic system of health, as much as the symbolic system of consumption, has certain determinations related to historical memory. Certain things that occurred during the communist regime, in spite of the 30-year period, had a strong impact that is still hard to ignore.

Thus, there arises the need to highlight some particular facts such as, during the communist period before 1989, the system would censor the public exposure of the disaster in matters of the population's health and medical system. Illness was mostly perceived at a family level. Being ill was a private

phenomenon that had a quiet course within the family context and without any public exposure by which the severity of the situation could be exposed somewhat. At the same time, the discourses of prophylaxis were few in a society profoundly affected by the lack of food in the alimentary shops. Almost no one had an issue with fats. Cholesterol was a medical term largely used by professionals and the elderly who were constantly exposed to heart diseases. Preservatives were sought, not avoided, as they helped to preserve aliments for longer periods (Romanians have a real cult for preserving fruit and vegetables over winter). The food additives were never mentioned, although the Romanian chemical industry was quite advanced.

After the fall of the communist regime, in the 90s, the Romanian market became a veritable sponge for low-quality food imports [31] as there were little or no food safety and security regulations in place. At the same time, agriculture went through another crisis, while local products were replaced by food goods imported from the USA or Turkey (in the 90s), Spain, Italy, Holland, Israel (after 2000), and many others. The common feature of all these imported goods was the undeniable inferior taste in comparison with the native local products.

This phenomenon is still very much alive since the only local agroalimentary products that made it on the market are obtained where there is a strong agricultural family tradition, namely the green houses and solariums from zones of long tradition in this field of activity.

Thus, health has started being associated more and more with the quality of food products. Furthermore, over time, the Romanian consumer has started to lose their trust in certain imported products, goods originating from the extensive agriculture or highly cheminized agricultural production.

The censorship of illness, poor alimentation, and corruption [32] has also eroded trust in the medical system. Hence, at present, and related to the Romanian urban consumer, the most widespread representation of health lies in the inverse need of seeing a doctor. Being healthy equals being as far as possible (in time and space) from a hospital. According to a IRES (Romanian Institute for Evaluation and Strategy) survey made in 2011, 78% of Romanians are discontent with the medical services in relation to the sums of money paid for health insurance [33]. Concurrently, merely 39% of the Romanians trust the state hospitals and 65% of them believe in private clinics or hospitals. Problems such as corruption, hospital-acquired infections, and lack of qualified personnel are reasons enough to keep the Romanian consumer in a constant fear of medical facts.

Another determinant of this symbolic system lies in the over excessive concern of the Romanian consumer regarding health. Vintilă Mihăilescu asserts that Romanians have the highest concerns about health in Europe [34] and affirmed it by noting an alarming increased rate of self-medication and consumption of nutritional supplements. In this case, a role has been also played by the tacit consent of the mass-media [35], which has largely promoted this trend on "the new health" of the consumer. Thus, occasionally, the concern about one's own health and family creates its particular symbolic systems off the medical grid, outside the officially designated institutions that manage the medical activities and discourses. The failure of trust has turned the Romanian consumer into an individual that would rather be on their own, rather than rely on such systems, especially if the situation allows it.

As we shall notice further, the same thing occurs in the case of purchasing ecological agroalimentary products. A similar mistrust surfaces when both certified or uncertified food goods are involved, either as traditional, local, or peasant products. Every consumer develops their own assessment and selection system for the ecological agroalimentary products and this fact has important consequences on the symbolic representation of the ecological concept.

3.4. Debates and Interpretation

In the above sub-chapters, we introduced the key data of the symbolic systems regarding food product consumption and healthy lifestyle. We further aimed to identify the legitimizing narratives by which the Romanian urban consumer tried to find a compromise solution that is somewhat able to

balance these two systems. The starting point of this compromise is the very expectation of wellbeing, improved life quality, and family context.

To identify the legitimizing narratives of the consumption of ecological agroalimentary products as healthy products and starting from the earlier-mentioned questionnaire, we first analyzed the consumption context based on monthly family income, marital status, children in care, and the purchase frequency of ecological agroalimentary products.

Table 2 presents the distribution of monthly family income and comfort level provided by this income.

Table 2. Comfort level according to monthly family income.

Monthly Family Income in Lei	Monthly Family Income in Euros	Comfort Level	Total	Married	Single
Up to 800 Lei	Up to 178 Euros	Very low	58	11	47
801–1500 Lei	Between 178 and 334 Euros	Low	148	42	106
1500–2500 Lei	Between 334 and 556 Euros	Medium	194	137	157
2501–4000 Lei	Between 556 and 890 Euros	Over medium	385	241	144
Over 4000 Lei	Over 890 Euros	High	449	333	116

Furthermore, Figure 1 presents the monthly family income according to the marital status of the respondents and whether or not they have children in care.

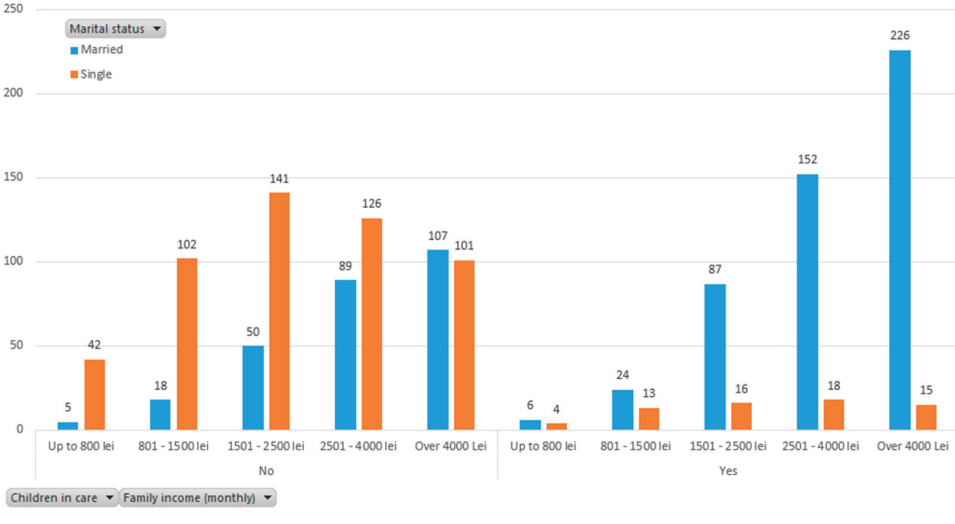

Figure 1. The monthly family income according to marital status and whether there are children in care.

Figure 2 introduces the purchase frequency of the families whose monthly income is under 4000 Lei (890 Euros) and whether there are children in care involved.

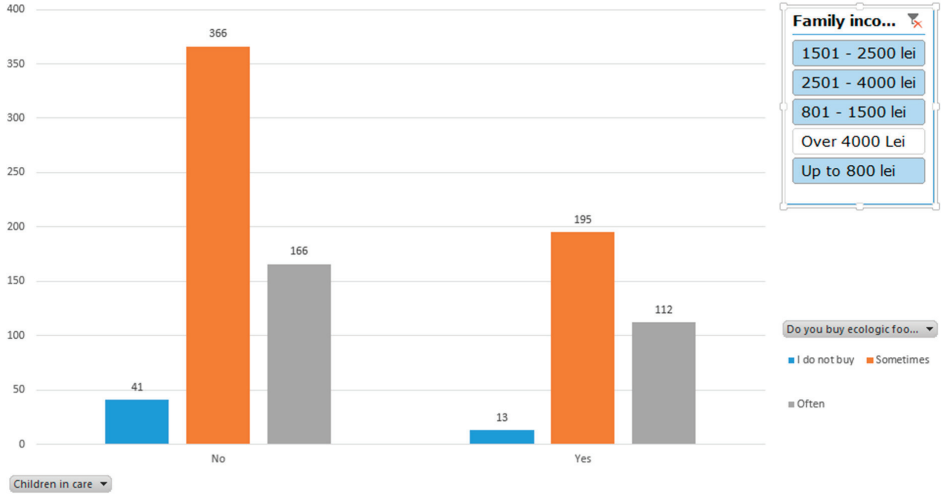

Figure 2. The purchase frequency rates of the ecological agroalimentary products for families with or without children in care, where the monthly family income ranged between 800 Lei (178 Euros) and 4000 Lei (890 Euros).

In Figure 3, the purchase frequency is displayed concerning the families with a monthly income exceeding 4000 Lei (890 Euros) and with or without children in care.

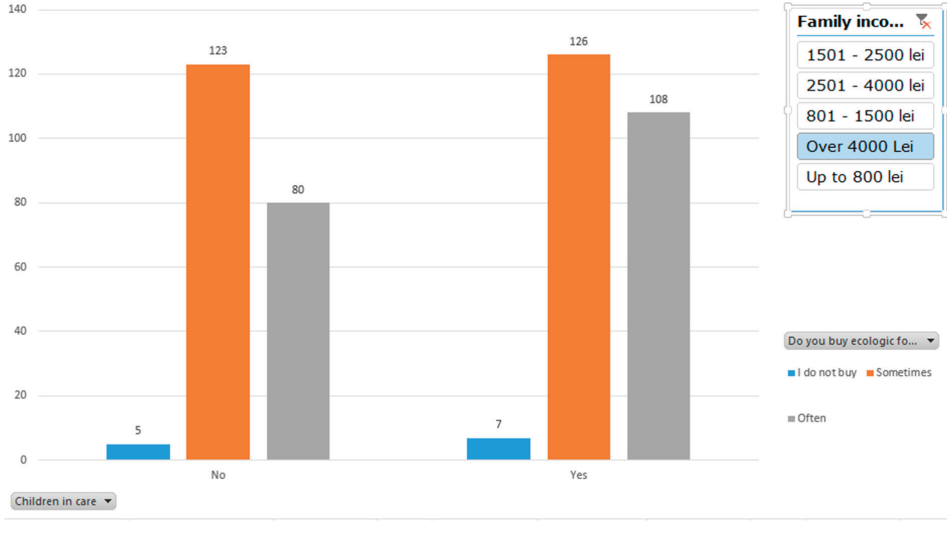

Figure 3. The purchase frequency rates of the ecological agroalimentary products in families with or without children, whose monthly family income exceeded 4000 Lei (890 Euros).

In Figure 2, it can be observed that in the case of the consumers whose monthly family income ranged between 800 Lei (178 Euros) and 4000 Lei (890 Euros), with or without children in care, the number of those who occasionally or often bought ecological agroalimentary products was higher than the number of those who had the same monthly income but had children in care.

In turn, regarding the group of respondents whose monthly family income exceeded 4000 Lei (890 Euros) (Figure 3), the values were closer for both families with children in care and families

without children. Additionally, the ratio between those who bought often and those who had children in care turned in favor of those having children.

However, perhaps the most interesting fact is that the percentage of those frequently buying ecological agroalimentary products was higher in the group of families with children in care (81.2%) than in the group of those without children in care (62.5%). Hence, we could discuss the purchase direction according to family context.

Conforming to the data above-introduced, if we are to take into consideration the monthly family income as a key factor for the wellbeing and improved life quality, the following conclusions should be formulated:

- Most subjects have a fairly limited comfort zone. The financial resources provide limitations for a living where the basic necessities of an individual and their family are met.
- Most respondents have not crossed the minimum comfort limit toward prosperity.
- We can conclude that most subjects are in a challenging situation where they constantly struggle to make ends meet. Income and expenses are monthly challenges for most subjects whether they are married or single, and with or without children in care.

However, under the circumstances, an interesting thing occurs. As long as the difference between the minimum comfort zone and prosperity is significant, the respondents should largely declare that they do not purchase ecological food products due to financial limitations. Or, at least, they should declare that they do not often purchase such items. However, the answers are not in line with this hypothesis. As observed in Figure 4, those who did not buy ecological agroalimentary products belonged to the group of respondents whose monthly family income was up to 800 Lei (178 Euros).

Figure 4. The purchase frequency on groups of monthly family income.

If we also link these similarities to the level of trust (Figure 5), we notice a correlation between the purchase frequency and the trust in agroalimentary products. Those who do not trust ecological agroalimentary products are also among the most people who do not buy such products. Additionally, those who have a medium or high level of trust are the majority, who occasionally or frequently buy ecological agroalimentary products. As it is further visible, trust is the main vector for mentally configuring the idea of ecological products as well as for the purchase decision.

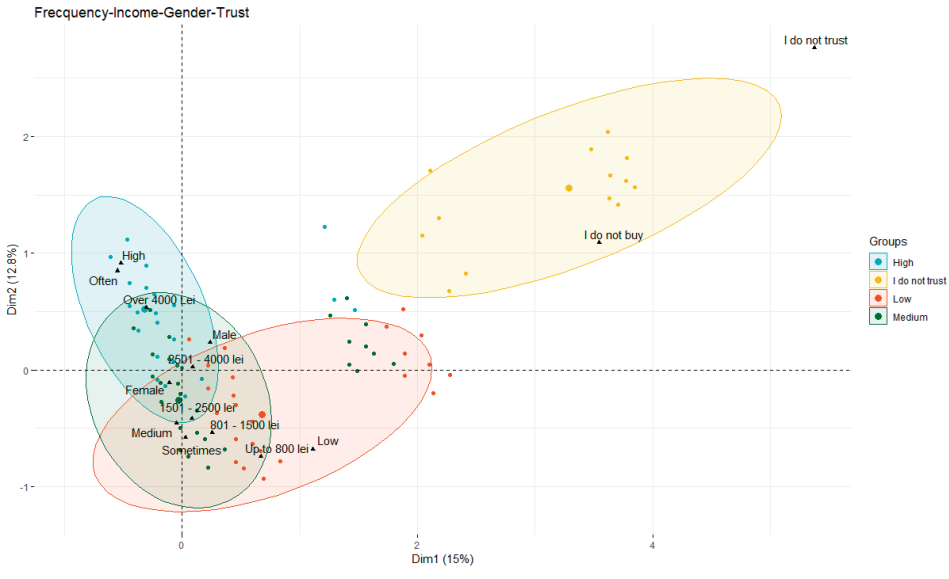

Figure 5. The multi-variable analysis of the similarities among trust level in the ecological agroalimentary products, purchase frequency, and monthly family income.

On the other hand, as it shown in Figure 6, the Romanian urban consumer has a medium and high level of trust in ecological agroalimentary products.

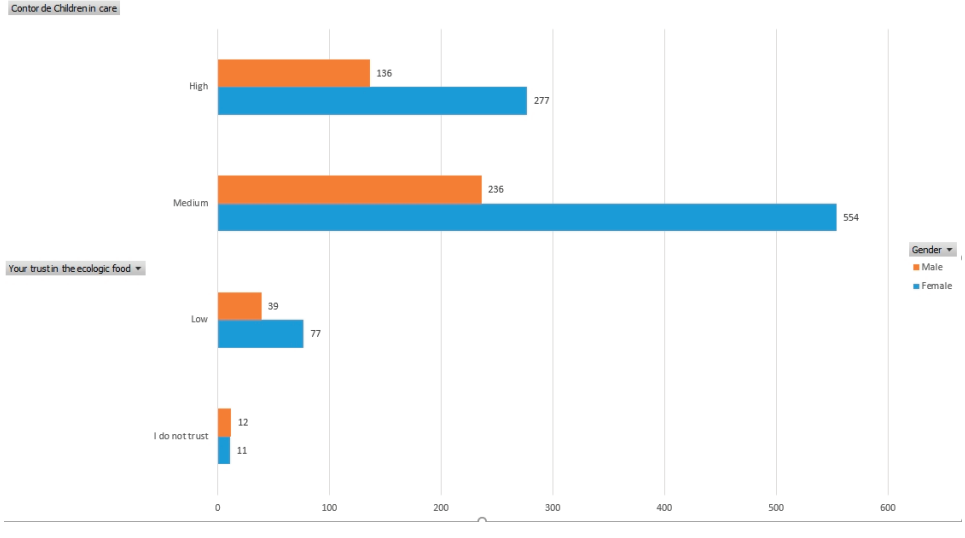

Figure 6. Level of trust in the ecological agroalimentary products.

In addition, the tough nucleus of those who do not buy nor trust such products (or they have a low level of trust) was quite low, as can be seen in Figure 7. Merely 35 (2.60%) of the respondents were part of this tough nucleus.

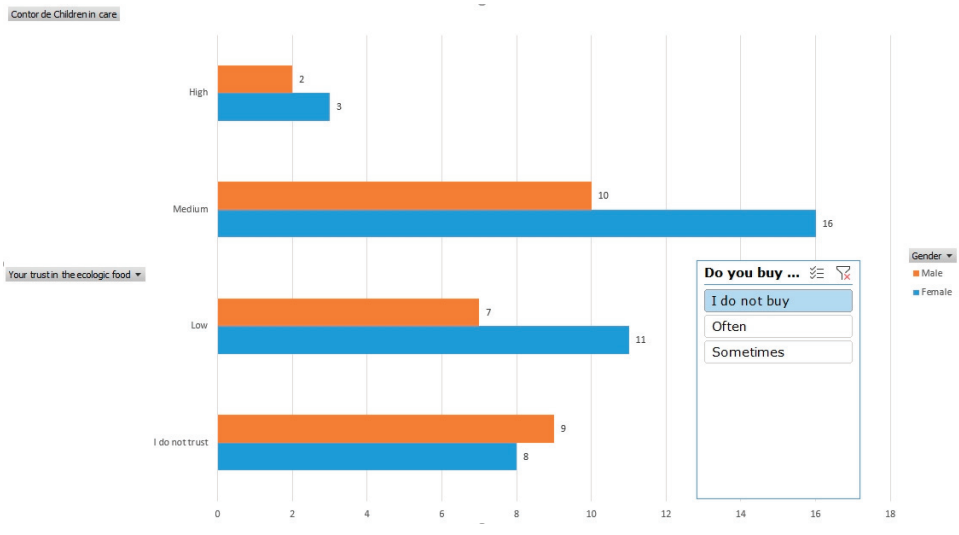

Figure 7. Level of trust in the ecological agroalimentary products in the case of those who do not buy such products.

Actually, trust here conveys the fact that associating the agroalimentary product with the ecological quality transfers this product from the area of food safety and security. The extra food safety and security may arise from the ecological nature of the agroalimentary product. However, as seen in Figure 8, merely 511 respondents identified the agroalimentary product as ecological based on the label. In other words, only 38.07% of respondents had ecological certification as the main selection criterion. In the case of the other respondents, certification was not the most important criterion for considering an agroalimentary product as ecological or non-ecological.

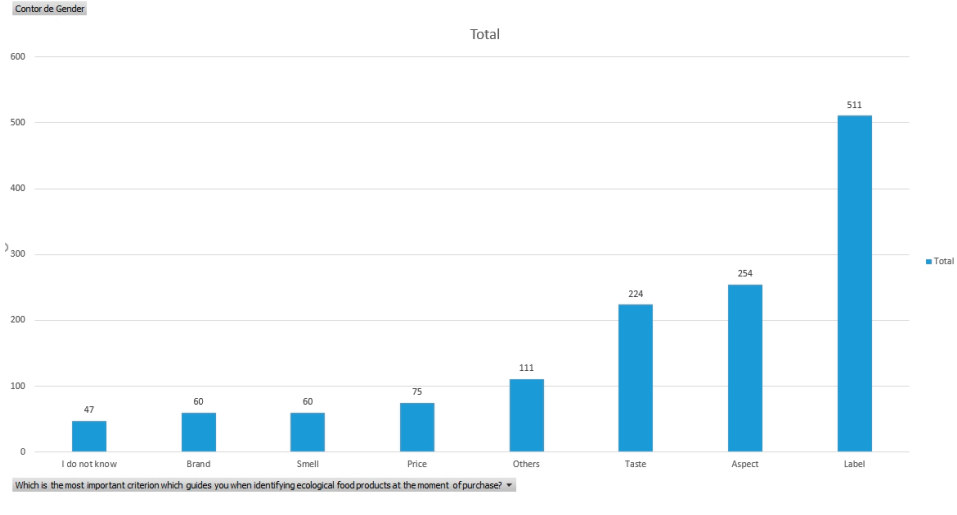

Figure 8. The most important criterion for identifying ecological food products at the moment of purchase.

As noted in Figure 9, out of the 511 respondents who guided themselves based on the label, most subjects bought ecological agroalimentary goods from the supermarket and specialized shops.

These are, in fact, the very places where these types of products can be found and purchased. These respondents represent the group where the purchase is determined by the official concept of an ecologically certified product. They buy products based on the label as a sign of certification and consider that the definition of ecological agroalimentary product conveys the idea of a certified, organic, or bio product (equivalent terms in Romanian legislation).

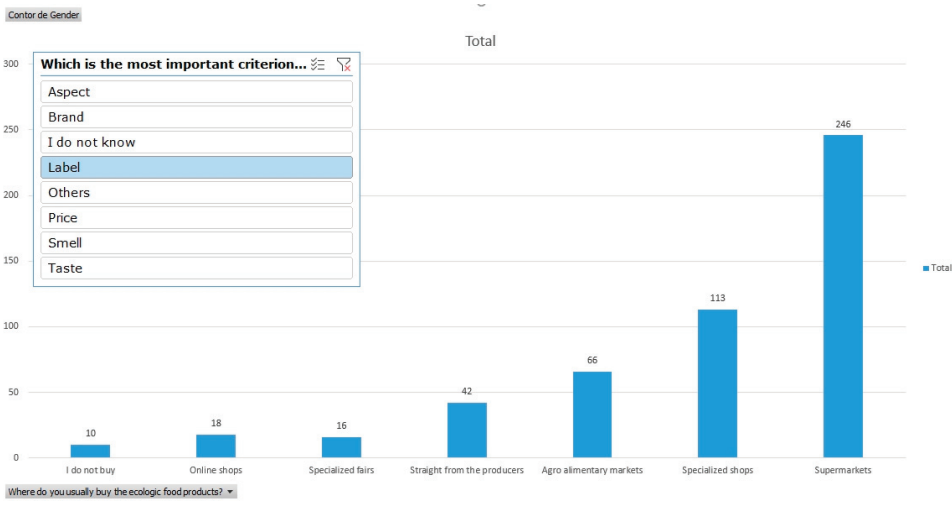

Figure 9. Where the ecologically agroalimentary products were bought by those who regarded the label as the main identification criterion of these products.

The number of these respondents only reached 331 (24.66%), as seen in Figure 10. The rest had a different approach to the ecological concept with respect to agroalimentary products.

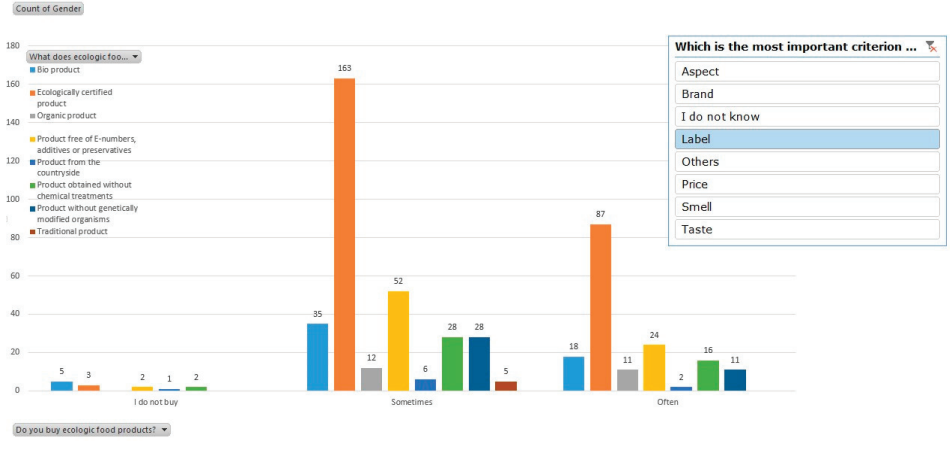

Figure 10. Purchase frequency of ecological agroalimentary products depending on the meaning of ecological agroalimentary products for those who identify these products based on label.

Thus, in Figure 11, we note three main groups of consumers:

- Group 1. In quadrant 4, bottom left, we can observe a strong correlation between those who buy ecological agroalimentary products based on label and those who think that the ecological agroalimentary product means an ecologically certified product.

- Group 2. Especially in the core area of the figure, we can observe relatively strong correlations between those who think that the ecological agroalimentary product represents an organic or bio product, and those whose main purchase reason lies in the lack of additives, chemical treatments, or genetic modifications.
- Group 3. In quadrants 2 and 3 (left side), we can observe that the group of those buying ecological agroalimentary products based on taste, appearance, and smell shares similarities with those who consider the ecological agroalimentary product as a local, traditional, or countryside product.

Figure 11. The multi-variable correlation regarding the similarities between what does the ecological agroalimentary product mean and the main identification criterion for this product.

Thus, in the case of groups 2 and 3 (which constitute the tough nucleus of understanding the ecological concept outside the concept of ecologically certified), according to Figure 12, the idea of ecological product changes its meaning in the area of the representations provided by the natural product (394 respondents think that the ecological agroalimentary product is the additive-free and chemical-free product obtained, and also without genetic modifications), local product (129 subjects think that the ecological agroalimentary product is a local or countryside product) and traditional product (38 respondents consider that the ecological agroalimentary product is the traditional product).

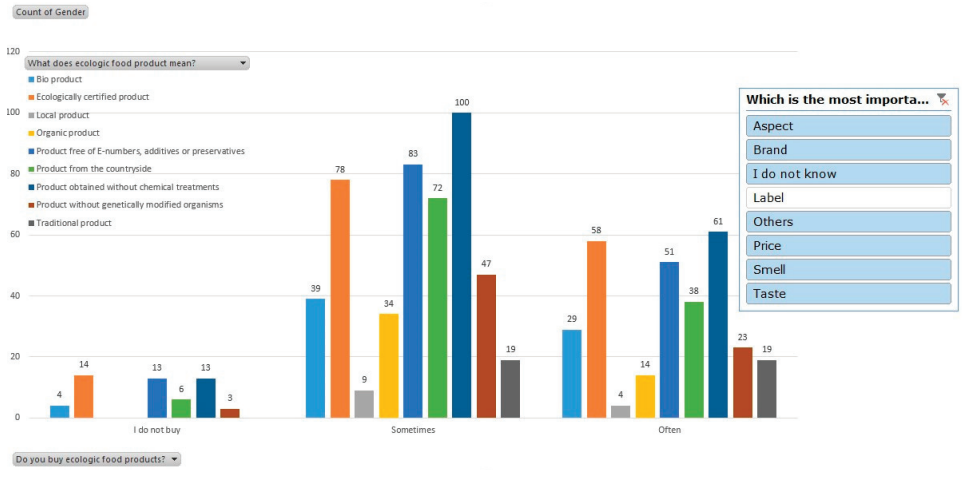

Figure 12. The purchase frequency according to the meaning of ecological agroalimentary product in the case of the respondents whose main identification criterion lies in something different from the label of a certified product.

In addition, by leaving aside the filters provided by the main identification criteria of the ecological agroalimentary products, in Figure 13, we note that 738 respondents (55.0%) symbolically configured the idea of ecological agroalimentary products outside the semantics of certified products. This percentage also turned into pressure applied to the epistemology of ecological certification and marketing of the ecological agroalimentary products.

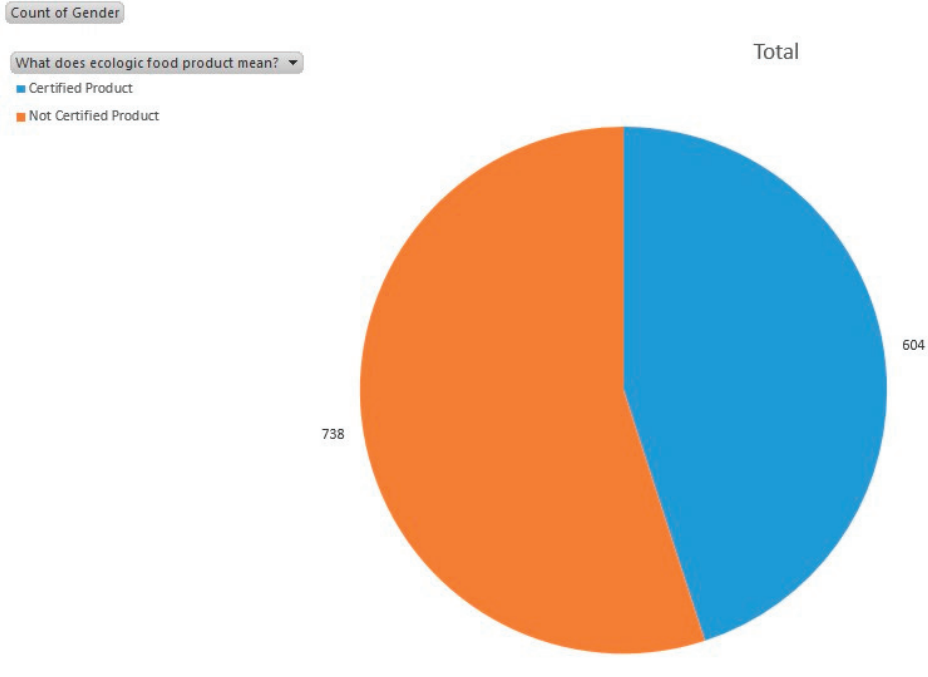

Figure 13. The percentages of understanding the ecological agroalimentary product in the area of certified and uncertified products.

It is obvious that certain features of ecological agroalimentary products become the very substitutes of this concept and start functioning as its representations. We are dealing with synecdochic thinking here.

This phenomenon is partly determined by the relatively reduced penetration power of the certification concept in the public discourse and collective mentality. As it has been recently officially regulated, the concept of ecologically certified product is not located at the social imaginary level and possesses a relatively low symbolic energy. When competing with other concepts of alimentary consumption (natural, traditional, local, peasant product), it gets to the point where it often overlaps these concepts, or even dissolves itself in their prophylactic references.

Thus, to better understand the key factors of these mental representations and identify solutions addressing a consumer ideology, the interpretations should start reconsidering the aspects previously shown not as deviant phenomena, but as representative data for the symbolic systems of health and consumption. By embracing them as archetypal data at a systemic level, we can observe that the ecological product undergoes the following changes of meaning:

- It comes out of the exclusive conceptual zone of being ecologically certified.
- It is no longer perceived as a necessarily expensive product in comparison with conventional products.
- It no longer has an inaccessible nature for those with small or medium incomes.
- A semantic contamination occurs between the healthy product and ecological product in both directions.

These particular cases of resemanticization are the lines of ethnocentralizing the concept of ecological agroalimentary products. During this process of ethnocentralizing, they are legitimized by a series of narratives that convey the idea of natural, local, or traditional products.

From this point, we can discuss three legitimizing narratives.

3.4.1. Legitimizing Narratives of Certification Decentralization

The quality of the agroalimentary products (given by taste, appearance, smell, and perishability) often provides enough arguments for the Romanian urban consumer that they are dealing with a product grown/obtained under natural conditions and is not certified (Figure 14). Under such a legitimizing narrative, paradoxically, the natural character of an agroalimentary product (or supposedly ecological in this direction) becomes a substitute and even more, a competitor at the level of trust invested in the certified agroalimentary product (related to which there are occasional suspicions about respecting the conditions of certification). The sensorial implication in the purchase decision puts the certified product in direct competition with the uncertified product, especially when the latter has a high sensorial impact upon the consumer; "flavorful tomatoes", "vegetables from old times", and "countryside products" are expressions frequently related to the imagination of the urban consumer. Thus, taste, smell, appearance, and the fact that the products are on the stand of a local producer become strong selection criteria by which an uncertified product is perceived as more valuable than a certified product.

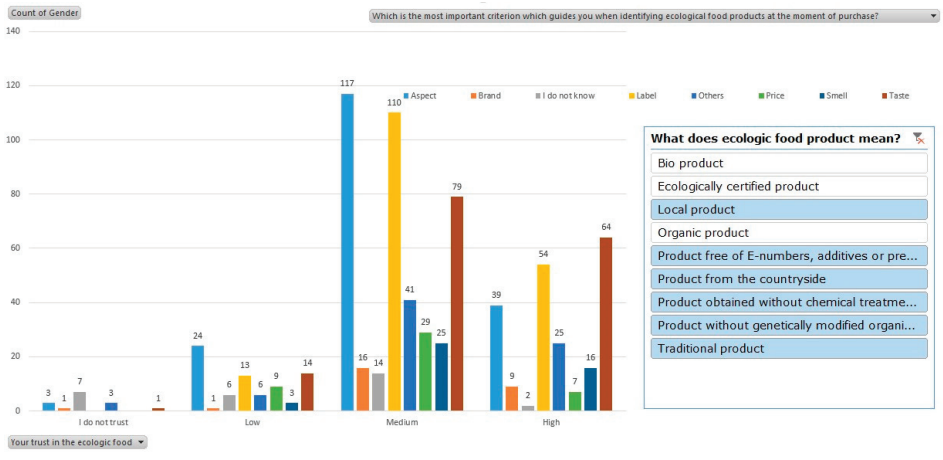

Figure 14. The main selection criterion of the ecological agroalimentary products, according to the level of trust and for the consumers who do not see the meaning of the ecological agroalimentary product as an ecologically certified product, organic, or bio product.

In this context, there is also another legitimizing narrative that relates to the perception between imported and domestic products. The Romanian consumer is more of a person who remembers than inquires. Hence, their memory is a key factor in formulating the purchase options. Moreover, domestic products have a higher success of triggering memories as they employ the most experiences gathered on food consumption over time. In this way, Romanian products gain slightly more value as a healthier product (and are also perceived as more ecological) than the imported products.

Thus, there emerges a localization phenomenon of the agroalimentary product and comes from a very strong identitary lineage as the rural space or countryside is symbolically seen as the place where parents, grandparents, and forefathers live or lived. Thus, rural products have an intensely familiar significance for the Romanian urban consumer.

3.4.2. Legitimizing the Narratives of Accessibility

Regarding the legitimization of accessibility, one of the most common narratives refers to the idea of fair price. Thus, in the Romanian public space, there are frequent discourses claiming that peasant work is not duly respected since they struggle and have basic subsistence difficulties. This type of discourse has an interesting consequence on the legitimizing level of the peasant product as an ecological product: the ideological algorithm provides enough arguments for supporting the idea that the limited resources of some peasants force them to produce in a durable and sustainable system (by using classic peasant available resources). Thus, the products obtained are not treated with substances coming from outside the farm, and are seen as natural, and therefore, ecological products. This is the reason why peasant agroalimentary products purchased at accessible prices at the farmers' markets are regarded by the Romanian urban consumer as products obtained in ecological circumstances (provided that there are certain trust networks toward some producers in the farmers' market). Concerning these discourses, it is necessary to mention that Romanian urban consumers are poorly informed about the existing subsidies for the rural environment, even in the case of conventional agriculture.

Another narrative built through the trust gained of farmers' market is related to the reliability perceived by the Romanian urban consumer toward certain producers whose products have earned their trust over time. They are seen as producers of tradition who are reliable and do not use chemical treatments, but are not interested in becoming certified either to keep prices as low as possible, or due to the lack of time and energy. Such preconceptions are not entirely unjustified. Many small rural

producers would rather base their activity in the family's inherited traditions than move to a certified production system.

3.4.3. Legitimizing Narratives of Overlapping the Concept of an Ecological Product with the Concept of a Healthy Product

When legitimizing narratives of overlapping the concept of an ecological product with the concept of a healthy product, the first thing we need to mention is the semantic contamination between a healthy product and an ecological product. At the mental level of the Romanian urban consumer, a paralogism emerges: if everything ecological is healthy, then everything healthy is ecological. Here, the inversion and contamination zone between the representation of health and that of ecological concept surfaces. It is not the certification that empowers the ecological nature, but the nature of a healthy product.

Therefore, everything related to the ecological concept changes its meaning and becomes support for the legitimizing narratives of the health symbolic system. The products seen as healthy become the only valid representation of the ecological product.

This appears as a legitimizing narrative of the health universe by consuming ecological agroalimentary products. Based on this, at a mental level, consumption and health adjust themselves as symbolic systems through the consumption of ecological products regarded as healthy consumption. Thus, the ecological value becomes a health condition and health turns into one of the ecological consequences.

Another legitimizing narrative of this overlap derives from the mistrust felt by certain consumers toward certified products. Thus, there are discourses in the public space claiming that some producers do not follow the rules of certification, or that some distributors use non-ecological substances to reduce the perishability of the ecological agroalimentary products. A possible solution in these cases can be by shortening the food chains of supply up to the point of direct sales (where the producer can interact face-to-face with the buyer and inform them about the products offered for sale).

We cannot claim that these legitimizing narratives are pertinent. Further scientific investigations should be conducted in this direction. However, these narratives are relevant within the symbolic universe of the healthy alimentation for the Romanian urban consumer.

4. Conclusions

Instead of becoming a certification hallmark, ecological agroalimentary products become a philosophy of selection. Thus, the purchase decision comes out of its automatism and embraces a deliberative character. Out in the public space, the brand of ecological agroalimentary products is more and more semantically changed by a consumer who becomes the user and reshapes it by virtue of what we nowadays call the user experience. From the rhetorical mark of certification, the ecological agroalimentary product turns into a common place of personal strategies and individual purchase decisions. Instead of capitalizing itself in the zone of general common sense, the ecological agroalimentary product moves into the zone of daily common-sense (where it is semantically changed on a regular basis and capitalized at the junction of private and public space).

Are we dealing with the general behavior of the consumer as it is stated that "consumption can be a productive force, creating and (re)creating meaning and underpinning political, economic, social and cultural practices and values" [36]? We are facing pro-active consumption, which is more and more replacing passive consumption.

The consumption society, as expression of hyperconsumption, thus defines an interesting phenomenon. The consumption is experienced individually (in a personal or family context), while the consequences are felt generally. To be able to buy a cheaper product nearby, there must be a supermarket in the area where, if I want to find food products at the lowest possible price, it is possible that they are either nutritionally poor or obtained through the conventional agricultural system, chemically treated, or over-processed. As a recurrence, such situations do not impact upon the whole community, as a

supermarket opened in my neighborhood involves problems of traffic, air quality, aesthetics of the dwelling area, and so on.

Hence, the consumption society resembles a democratic system where private decisions can be taken, while in the general context, the public phenomena are those determining the ways of life. Moreover, democracy is the most appropriate political system for the consumption society as it turns us into ideal consumers and provides the most consumption opportunities. Additionally, it hard to believe that we could easily give up a consumption society, even if we perceive it as a hedonistic society. Our bodies and experiences or emotions have developed a relationship of comfort and self-treatment with the world of products we acquire, use, or consume. The only moral way of overcoming this relationship can be provided by reconfiguring the consumption world. Lately, it seems that we have been witnessing a new revolution within the consumption society. Thus, gradually, the consumer's decision is determined by the desire to turn the consumption society into a healthy universe.

Our study intends to have an inverse approach. The resemanticization of the ecological concept has been regarded not as the consumer's confusion, but as a mental mechanism by which the consumer tries to bring a healthy order in their purchase behavior of agroalimentary products. This consumer is defined by a self-assumed interpretation of the ecological value of the agroalimentary products and is based on both the critical and hermeneutical attitude that they take part in the phenomenon of ethnocentralizing the concept of ecological agroalimentary products. In short, this consumer seizes a public concept regulated by governance and structured by market phenomena and introduces it into their private space of understanding and acceptance. From the rule formulated within the certification area, the ecology of the agroalimentary products becomes the mental and discursive playground where the Romanian contemporary person reconfigures their position in a world where health and consumption can no longer be understood and accepted unless the starting point comes from the very systems in which they trigger.

Actually, in an ideal world, where the producers fully comply with the guidelines of durability, sustainability, food safety and security, ecological certification would be pointless. The ecological certification is the present-day tool by which the socioeconomic aspects of alimentation are directed to certain standards that help us agree with the health of the environment and population. However, as we have noticed earlier, consumers are inclined to semantically change this concept of ecological agroalimentary product in the comfort of their private space in accordance with their resources, objectives, and mentalities.

Having as a starting point the present study, it is our belief that the entrepreneurial environment from Romania should take into consideration, at least, the following features concerning the marketing strategies and product development:

- From a symbolic point of view, the local product has a heavy impact on the consumer's mentality, at least as powerful as that of an ecologically certified product.
- The short food supply chains have more weight for the purchase decision, although the collective mentality does not currently perceive them in the technical acceptance of this concept.
- To increase the level of trust in the ecologically certified product, the entrepreneurial environment should exert pressure on the governing authority with respect to developing public education programs and increasing the rigorousness of controls on the conditions of producing and distributing these products.
- The entrepreneurial environment should also develop abilities to promote and distribute other types of products which, by ethics of production and distribution, can prove as valuable as the ecologically certified products.

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Important Influencing and Decision Factors in Organic Food Purchasing in Hungary

Kinga Nagy-Pércsi [1] and Csaba Fogarassy [2,*]

[1] Institute of Regional Economics and Rural Development, Szent Istvan University, Pater Karoly st. 1, 2100 Godollo, Hungary; nagyne.percsi.kinga@gtk.szie.hu

[2] Climate Change Economics Research Centre, Szent Istvan University, Pater Karoly 1, 2100 Godollo, Hungary

* Correspondence: fogarassy.csaba@gtk.szie.hu

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Abstract: Organic farming is one of the most developed and accepted production systems from the aspect of sustainability. In this study, the Hungarian organic market was segmented on the basis of attitude-relating motivations of organic food purchasing. A descriptive statistic was used for the whole sample, and factor and cluster analysis was applied to segment the organic consumers. A sample of 247 questionnaires was processed to investigate the behavior and characteristics of Hungarian organic food consumers. Our aim was to explore the Hungarian organic consumer market from the aspect of trust in labels, we would like to find answers to the questions "Which kind of information consumers check on the product?" and "What are the main influencing factors of purchase decisions?". According to our research, the majority of organic food consumers say that color is not as important as taste or freshness, so they do not associate the color of the product with the freshness of the product. Based on the factor analysis, four clusters could be separated that show different shopping motives and differ in their attitude towards food shopping. We named these clusters: Health-conscious, Disappointed, Safe and free food eaters, and Quality-price comparators. Based on the recognized consumer segments, different information should be communicated to consumers so that they can use it in their consumer decisions. Our research suggests that branding or product labeling is not as important to organic food consumers as we previously thought.

Keywords: organic consumer market; emotional factors; health consciousness; consumers' trust; labeling system; consumer behavior; bio food

1. Introduction

In the case of organic food marketing the usual direct selling form and through this the personal contact with the producers fulfill the circular economy principle also. Namely, the producers should know the demand and the consumers should know the supply to avoid overproduction or overdemand. In this context, when the organic food product leaves the short supply chain, or direct supply chain an applicable quality certification, a label becomes necessary. However, a well-functioning label is a basic instrument in the development of the sector as well as other aspects also, the realization of the circle of utilized and produced materials is a principle of organic farming also. What are the main influencing factors of purchase decisions? How can consumers' trust in certificating labels increase? To answer these questions the organic food consumers' behavior should be investigated. A key factor for organic agriculture is the perception of consumers related to organic products, in terms of attitude and preferences, as particular expressions of their behavior [1]. When analyzing consumer behavior, one should consider the following: What consumers think/ perceive, feel, and how they behave, alongside environmental factors that influence them [2]. Consumer behavior can hence be influenced by experience. This can lead to a change in attitudes and behavior [3]. The factors that determine consumer perception refer not only to physical needs, like food, health and environmental

protection [4], but also their dependence on other socio-cultural components, like culture, religion, training, income, and social position [5]. The most important incentive for the consumers in Hungary, similar to many other countries eating organic food, is the healthiness of this kind of product [6,7]. Different motives can be separated into a healthy diet. There are special needs as a consequence of illnesses, fitness considerations, search for safety, and avoiding harmful components. Hungarian food consumption habits have recently been influenced by several trends, such as the trend of convenience, health and wellness, environmental consciousness, search for experience, ethical consumption, and time consciousness [8].

The results of the Nielsen Global Health and Wellness Survey [9], conducted in 60 countries and involving 30,000 consumers, revealed that the most desirable food attributes are freshness, naturalness, and minimal processing [10]. Fresh food can fulfill most of the requirements relating to these attributes. On the basis of our survey, organic food consumers eat fruits and vegetables most frequently and the purchasing habits relating to fruits and vegetables are also relevant in the organic food sector. The research institutes GFK Hungary Ltd. and Agrar Europe Ltd. [11] conducted a consumer survey relating to fresh fruit and vegetable consumption and purchasing. According to their results, the consumers buy fresh fruits and vegetables mainly at traditional markets, from small farmers or street vendors today also. According to GFK analysis, these sources gave 27% of the total purchased quantity. The consumers buy mainly fresh food on market, 36% of the total spending went on vegetables, 18% on fruits, 12% on fresh meat, 7-7% on bakery and processed meat products [12]. In spite of the favorable health impact of fresh food, the relating microbiological and chemical risks give a reason for anxiety [13,14]. The illnesses relating mainly to the sporadic cases of microbiological hazards [15–17]. The foodborne diseases connected to the fresh products, unfortunately, are gaining importance in the last few decades. The fresh products form a separate food safety category. The bacterial agents found the most common food safety danger by the expert in relation to fresh food, this was followed by foodborne viruses and pesticide residues. The different mold toxins can have also an important health risk. It is interesting, however, that the organic food consumers judge the microbiological dangers as not so harmful, they think the residues are the most dangerous health affected factor [18]. Other food safety hazards like antibiotic resistance, the wax shield on the fruits shell, and the genetically modified organizations are all emerging problems for the stakeholders in the fresh food supply chain [19–21]. For these anxieties, eating organic food can be a solution for a great part of the consumers.

Parallelly, there is also an increasing interest in investigating the health effects of organic food consumption. However, the results are still insufficient when attempting to formulate explicit conclusions [22]. The abovementioned concerns are influencing the development of the organic markets on the world and have an impact on the consuming pattern and behavior of organic food consumers. These phenomena, the purchasing channels of organic food, the most frequently purchased food in certain purchasing channels, the attitudes of purchase and the relating subjects should be investigated, in particular, for a better understanding of the economic characteristics of this special market. Based on the above, the research questions in this study are: Do consumers in the organic market pay attention to where they buy? Do customers consider it safer to buy food from small-scale farmers? Is the appearance of the product important, or is the taste important, and how do brand and product labels influence customer decisions?

2. Literature Review

The relevant literature affects three main fields: The main motives of buying organic, the preferred supply chain in organic food purchasing and the utility and acceptance of labels relating to organic food marketing. However the organic food consumption is at a low level in Hungary, the demand for organic food is growing steadily. In 2010, the market value of organic products was 82.3 million USD, which took 1.5% of the total food trade and meant a great increase as compared to 2005. In this year the total organic selling was only 36.7 million USD, 0.8% of the total food trade. For 2015 the value of organic food selling was assessed to 110.4 million USD [23,24]. This upward trend can also be

observed in other parts of the world and relating mainly to environmental concerns [25]. The healthy diet and lifestyle are also becoming more and more important for the consumers parallelly with economic growth and this process is favorable for the development of organic selling. The analyses of major motivations that stand behind the organic food buying behavior of consumers reveal that health issues represent the main reason for purchasing organic food and that health attributes have become as important as sensory ones during the buying decision-making process [26–29]. The reduced consumption of chemicals in organic farming is the main criterion for which the consumers choose products. When it comes to the respondents' perception of the sensory quality of the organic products, it can be said that a majority of the respondents consider organic products less appealing but instead tastier. The results of a Romanian study show a positive consumer perception for the taste of the organic products, indifferent to the level of education [1]. Consumers' interest in organic foods in Hungary is also driven by the perceived health benefits associated with consuming goods free of chemical additives and pesticide residue [30,31]. On the other hand, solidarity with local producers, and the associated environmental benefits also drive sales. A positive relationship can be found between higher education and organic food acceptance [32,33]. Beside education income situation has a great impact on buying organic. Consumers with higher income buy organics more frequently [33–37]. Women were suggested to be organic food buyers [38–40]. Women are more motivated due to eating a healthy diet, men are more influenced by their social circumstances [41]. The organic food buyers tend to be older, with children, and have a higher education level than those of non-buyers [33,34,37,42,43]. Consumers' urge to seek novelty and to gain substantial information regarding product utility in terms of price and quality can also influence consumers' decisions to buy organic products [44]. According to the beforementioned it can be stated that organic food is strongly motivated by consumers' perception that organic food is healthier than conventional food [45]. This is particularly relevant in emerging markets where healthiness is perceived to be the most important characteristic of organic food that motivates consumer purchase behavior [46]. Sensory and the so-called ethical quality characteristics mentioned by many studies as a motivation factor to buy organics [47]. The organic food buyers have an inclination to pay a higher price for the higher food safety requirements [48]. It should be parallel mention that according to Csíkné [49] the most important influencing factors at food procurement in the case of an average Hungarian consumer are the price, freshness, food-safety, and the choice. She found that the least important influencing factors are the direct personal contact with the farmers, the producing methods and decreasing of the environmental pollution. Hungarian organic production and processing are underdeveloped, in 2009 almost 70% of the organic food was stemming from import. Hungarian organic food stores concentrate on vegan food and only a few of them occupy meat products however it can be more adequate for traditional eating habits [50]. Szente et al. [51] mentioned that in Hungary several times products, which are not in demand being distributed, while the selection and volume of certain products are not satisfactory on organic markets. It is contrary to the principle of circular economy also namely the suppliers should know the demand. This fact also emphasizes the role of a well -functioning label. A well-functioning label can build also trust in organic food marketing. The findings of a Chinese survey revealed that information on the label of organic food is a significant antecedent of consumers' trust in organic food [52]. Rácz found that domestic consumers do not know the objective meaning of food labels in several cases. This uncertainty can be resulted by the number of labels, so consumers cannot gather a wide range of information before purchasing decision because of the lack of unified, sustainability proving labels and the use of several label formats if we take into account also the limiting role of time [53]. The different domestic promotion campaign, also the labeling of those food products which contains raw materials produced in Hungary or those which are produced in Hungary has been operating for years. However, the special marketing program of the organic food produced in Hungary and the connected label system does not work at all. The lack of an adequate label comes out in other countries also. The Romanian consumers do not pay sufficient attention to organic food labels. The authors assumed that it is due to that the Romanians are not properly educated in this regard and because of hasty shopping [7]. Drexler et al. found that organic

product labeling can play a role in decision-making, but regardless 27% of experiment participants do not care about the organic quality labels or don't pay attention to them [54]. Due to the lack of an adequate labeling system, the consumers' trust, the personal and direct consumer-producer connection is the dominant factor in purchasing decisions of organics. The organic food consumers are interested in who has produced food items they consume and where they have originated. Organic food consumers may also be inspired by knowing and supporting the individual who has produced their food as opposed to supporting a faceless corporation or distant producer [30,55]. According to the survey conducted by Szente [40] the origin is partially or totally important for the respondents (72.9%) and those who prefer organic food also pay attention to the local origin. It should be added here that the alternative and modern form of direct selling are not popular yet in Hungary. Most of the consumers rather choose the traditional Short Supply Chains like producers' market and organic markets [48]. Hungarian consumers especially price-sensitive [43]. It should be noted here that the most important limiting factor is the price in the development of the market. Other limiting factors are the availability problems and the lack of trust relating to the labeling systems and certification processes [43]. Makatouni [56] added to these factors the lack of perceived value [57]. This phenomenon is general in other countries with developing the organic market in the world [58]. According to other international studies, the relationship between producer and buyer is also determined by behavior associated with the cultural or solidarity economy, which in combination with a number of other features, may form a different relationship or network within the consumer system [59–61]. Due to the above-mentioned phenomena, it can be stated that organic food consumers are not very interested in branded products, but rather they are looking for product groups or opting for system characteristics related to product sales that are based on consumer confidence. Hungarian organic food consumers are categorized by several authors [8,30,43,55]. The families with small children as a subcategory can be well defined inside the "health-conscious" category. Families with small children are those who give special interest to organic food. Between 2006 and 2010 the selling of organic baby food and the special baby dairy product started to increase. During the financial crisis, the families focused their spending on their children and they choose an organic baby meal which they think safer and healthier as compared to others [62].

3. Material and Methods

3.1. Sampling and Survey Instrument

To get a deeper insight into the characteristics of organic food marketing and consumption in Hungary a survey was conducted on the biggest Hungarian Organic Market in Budapest (Biokultúra Organic Market) in February 2018. This was the first step in data sampling. There 31 questionnaires were collected altogether by personal interviews. Many useful experiences were gained from this survey and the questionnaire can be improved according to these experiences. The respondents had the opportunity to add their opinion relating to certain questions. This information was noted and used for data processing. Parallelly with these interviews, to find and eliminate potential problems relating to the survey instrument, a pre-test was performed. An evaluation group consisting of three academics experts was formed to ensure the validity and suitability of the items. The applied questionnaire (Appendix A) contained 16 mainly closed questions relating to eating habits, consumer behavior, factors influencing consumers' purchase decisions, attitudes, purchasing channels and judgment of food-safety beyond the demographic characteristics of the respondents. The questionnaire was established mainly on the basis of the relevant professional literature [12,25,28,40,49,51,54] selected according to the aim of the article. Food choice motives were assessed using 18 motive dimensions, like "freshness", "taste", "colour", "wrapping", "advertisement", "impact on health", "components", "price", "high preparedness", "high endurance", "habits", "price", "free of E-numbers", free of additives", "nutrients", "recommendation", "label", "brand". The scale was a five-point Likert scale which was anchored at "1" indicating strong disagreement and "5" indicating strong agreement.

The consumption frequency of certain food products was measured by a scale ranging from 0-5, where 0 means "I do not consume.", 1 means "I consume less than once in a month.", 2 means "I consume once or twice in a month.", 3 means "I consume once or twice in a week.", 4 means "I consume three or four times in a week.", 5 means "I consume on a daily basis.". After the abovementioned on the spot survey further 811 were collected with the help of students attending to the courses of "Food safety and quality assurance" and "Hygiene in catering" in Szent Istvan University. The exercise of the students was to interview one person from their family and from other familiar households (grandmother, grandfather, aunts, uncles, friends, etc.) until the end of March 2018. It was an important criterion that the respondents should be more than 18-year-old. Finally, 842 questionnaires were collected in these ways. From the 842 questionnaires only 247 was suitable to investigate the behavior and characteristics of organic food consumers because together with the personal interviews conducted on the Organic Market in Budapest, 247 respondents buy regularly organic food. Inside this group, another subgroup can be separated called organic market consumers. The most important characteristic of this group, that they buy organic food on some of the organic markets as the most important purchasing channel. The size of this sample is 102 questionnaires, which contains the questionnaires filled in the frame of a personal interview on the biggest Organic Market in Budapest. Unfortunately, 13 questionnaires should be excluded from further analysis because of too many missing data or inconsistency. However, we processed the data of 18 questionnaires where the respondents choose the option that they do not buy organic food but they parallelly use the organic market as a food purchasing channel. The problem could be stemming from the misunderstanding of the adequate concepts because in Hungary the official term for this kind of food is ecological (means organic) but many consumers know them as bio food.

3.2. Data Analysis

A descriptive statistic was used for the whole sample and factor and cluster analysis was applied to segment the organic consumers. The data were analyzed using SPSS software, version 24. Factor analysis was performed and segmentation was conducted using K-means cluster analysis. The factor scales consisting of six factors were used in cluster analysis. Before K-means clustering a hierarchical cluster analysis using Ward Linkage was conducted to determine the adequate number of clusters. The results of this cluster analysis indicated that the optimal number of clusters was 4 (Figure 1). The differences between the segments were examined using the average related consumer attitude scores for certain clusters and the average scores of purchasing motives.

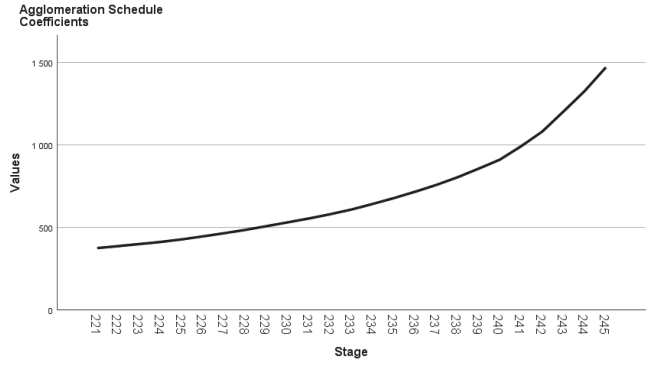

Figure 1. Agglomeration schedule of hierarchical cluster analysis.

The last two agglomeration steps were omitted on the bases of the Dendrogram and the elbow criterion method. As a result, the ideal numbers of the clusters were 4. As Table 1 shows we could get homogenous groups by using 4 clusters.

Table 1. Most important attributes of the different groups.

Cluster Number of Case		REGR Factor Score 1 for Analysis 1	REGR Factor Score 2 for Analysis 1	REGR Factor Score 3 for Analysis 1	REGR Factor Score 4 for Analysis 1	REGR Factor Score 5 for Analysis 1	REGR Factor Score 6 for Analysis 1
1	Mean	0.3719936	0.0305698	0.2100684	−0.3274677	−1.2811828	−0.2956395
	N	59	59	59	59	59	59
	Std. Deviation	0.90315332	0.88929638	0.79562377	0.91567436	0.72484566	1.12373810
2	Mean	−0.1319210	−0.6791270	0.2445502	0.5734791	0.2775804	0.1043713
	N	88	88	88	88	88	88
	Std. Deviation	0.90315332	0.69337555	0.68250015	0.89487064	0.65204011	1.05759567
3	Mean	−0.1519007	−0.5637794	−2.2113915	−0.5323831	0.4719697	0.0564277
	N	21	21	21	21	21	21
	Std. Deviation	1.16376660	0.54495091	1.08128650	1.19386063	0.69237934	0.90991976
4	Mean	−0.0916494	0.8948581	0.1605740	−0.2559682	0.5288633	0.0906803
	N	78	78	78	78	78	78
	Std. Deviation	1.05559132	0.73491381	0.64267461	0.82070203	0.70093961	0.81436277
Total	Mean	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000	0.00000000
	N	246	246	246	246	246	246
	Std. Deviation	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000	1.00000000

The variables shown in Table 2 were subjected to a factor analysis using principal axis factoring and Varimax rotation to determine the smallest number of meaningful factors.

Table 2. Variables used for segmentation.

Food Choice Motives	Mean	SD
price	3.585366	1.215054
wrapping	2.735772	1.264629
high-endurance	3.069106	1.218606
advertisement	2.065041	1.126597
origin	3.626016	1.311789
brand	3.028455	1.32911
label/certification	3.239837	1.341412
components	4.146341	1.047313
additives	4.056911	1.012581
high-preparedness	2.971545	1.179417
nutrients	3.646341	1.110675
free of E-number	3.678862	1.228289
taste	4.373984	0.946731
colour	3.211382	1.30776
freshness	4.544715	0.83056
recommendation	3.170732	1.263021
habit	3.45122	1.263159
good impact on health	4.329268	0.926546

Bartlett's test of sphericity was significant at the 0.001 level and the Kaiser–Meyer–Olkin (KMO) value was greater than 0.7 [63].

4. Results

The results of the study give a clear answer that organic food consumers are not very interested in the appearance of the product, unlike traditional consumers who make their decisions based on the appearance of the product. Our investigations also show us where they are and what kind of shopping environment organic food consumers are looking for. What kind of cultural or solidarity elements of these decisive locations can be based on the analysis!

4.1. Main Characteristics Of Organic Food Consumers

Most of the organic food consumers (60%) is female, 45% of the respondents live in Budapest, in the capital city, 51% graduated and 44% is white-collar worker. These data are in harmony with the results of former surveys also [64,65]. In that case, 86% of the surveyed consumer have average or higher income levels. The respondents of the survey think in the first place with the same scores that they are conscious consumers, they pay much attention to where they buy food and that the food is full of harmful ingredients. The respondents agreed in that to a great extent. They do not really think that they get safer food on the market but at the same time, they do not trust food traded by food stores (Figure 2).

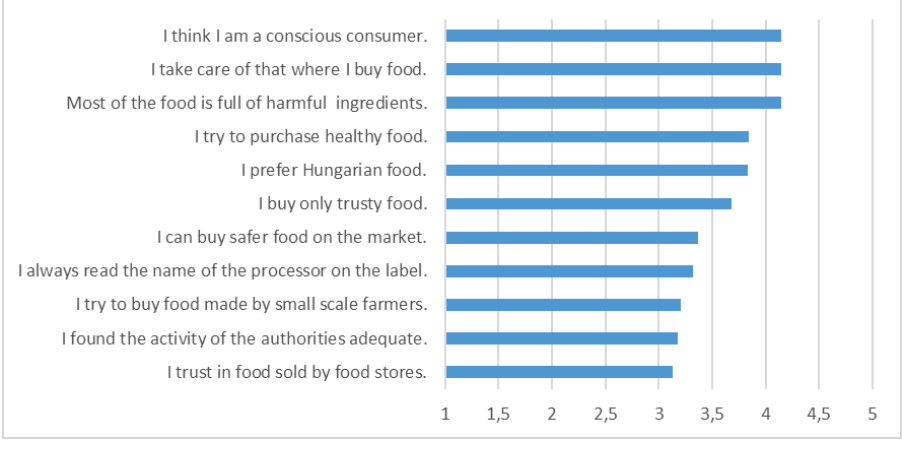

Figure 2. The attitude of the surveyed organic food consumers (N = 247).

According to the survey, the most important purchase influencing factors are freshness, flavor, and only at the third place positive health impacts. It is interesting to note here that Oroian et al. [6] found that the "extrinsic attributes" of the organic products were not considered to be the main reasons for consumers to buy organic products, but it was appreciated due to the important information on the ingredients and nutritional aspects, the factors that influence organic food consumers' buying behavior. It is important and on the contrary to the average Hungarian consumers' behavior that the price is not really important for this segment (Figure 3).

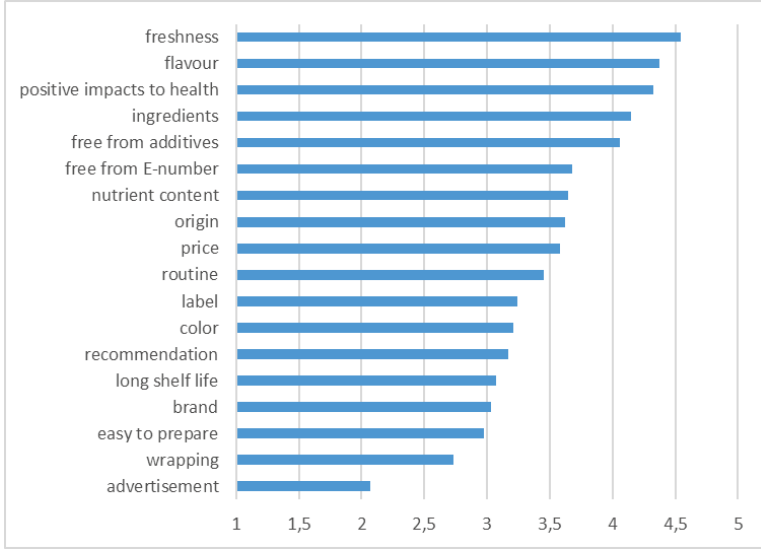

Figure 3. The influencing factors of purchase in the case of organic food consumers (N = 247).

These attributes are not surprising in light of the fact that the organic market consumers eat vegetables most frequently according to our survey. Our survey sample contained not only organic food consumers but also non-organic food consumers. Moreover, a segment could be separated from the organic food consumers, those who buy organic food basically from the organic market, these are the organic market consumers (N = 102). For comparison, the main features of the other two segments from our survey sample are hereby presented in figures. The differences between the diet of the non-organic food eaters and organic market consumers are bigger.

This latter mentioned group eats vegetables and fruits with the highest frequency (Figure 4), while the non-organic food consumers eat fruits and vegetables only at the fifth and fourth place (Figure 5). There is a slight difference between the diet of organic food consumers and organic market consumers (who buy organics mainly on organic markets) because the organic food consumers eat vegetables with the highest frequency. It was followed by the bakery and only then fruits.

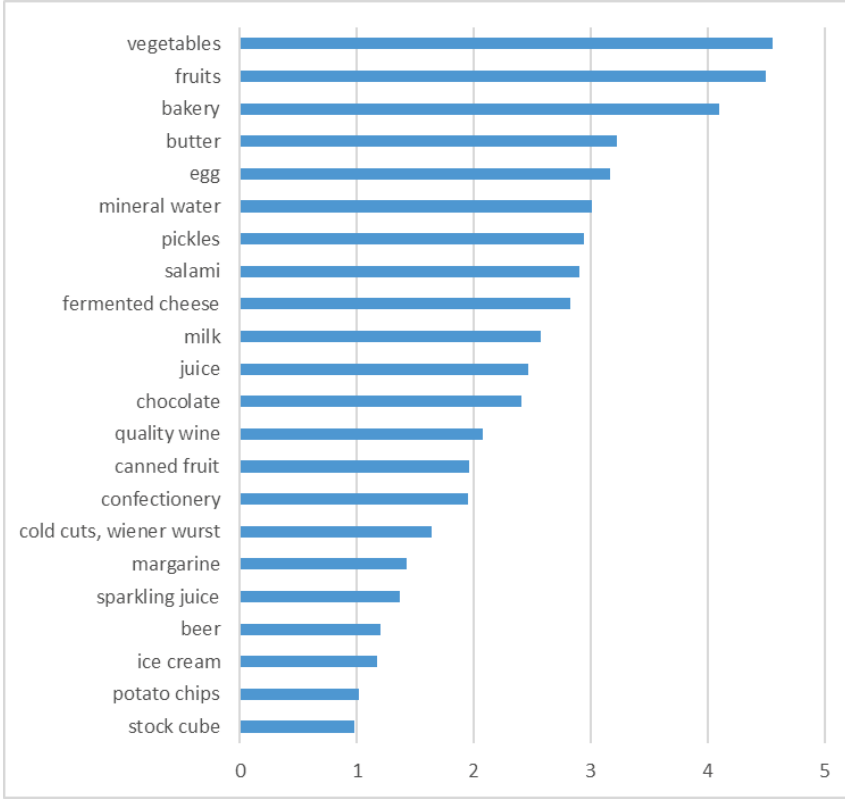

Figure 4. Consumption frequency of certain food products in the case of organic market consumers (N = 102) *Source: Own data collection and processing, 2018.*

The organic food consumers buy food with the highest frequency on the traditional market which is followed by the direct purchase from the producers and the local producers' market. This finding is in accordance with other relevant surveys. The standard deviation was the lowest in the case of the organic market, while it was the highest in the case of direct relations with the producers.

Another interesting question is where organic food buyers purchase organic food products. We found on the basis of our survey that they prefer the organic markets which were followed by special organic stores and retail chains.

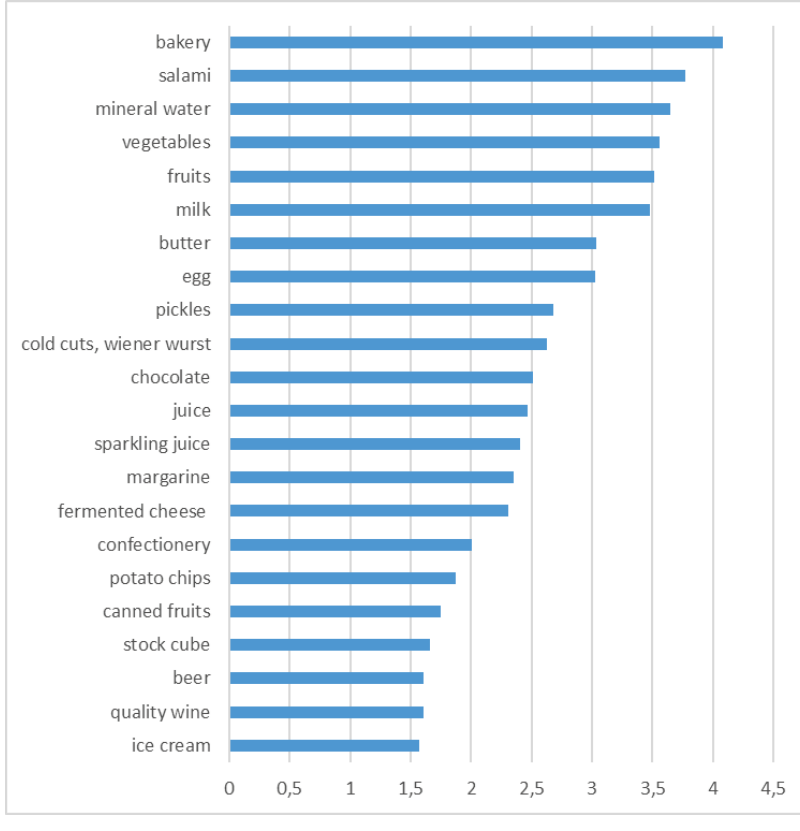

Figure 5. Consumption frequency of certain food products in the case of non-organic food consumers (N = 582) *Source: Own data collection and processing, 2018.*

4.2. The Outcomes Of Factor Analysis

The factor analysis resulted in 18 observed variables allocated to six factors. "Color" as an organoleptic characteristic is a separate explaining variable. It is interesting, because we noticed during the interviews on the Organic Market, that most of the organic food consumers think that color is not as important as taste or freshness, so they did not link color with freshness. However, they usually buy fruits and vegetables in the organic market. The six factors were named "Health effect", where the information on label plays an important role, "Influences", "Organoleptic properties", Convenience", "Price and habits", where this assigned quality characteristic and the habits have influence (Table 3).

Table 3. Results of the factor analysis.

	Components					
	Health Effect	**Influences**	**Organoleptic Properties**	**Convenience**	**Price and Habit**	**Colour**
Price	−0.019	−0.014	−0.065	0.132	**0.892**	−0.020
Wrapping	0.012	**0.437**	−0.404	0.433	0.053	0.138
High endurance	0.074	0.292	0.038	**0.691**	0.133	−0.256
Advertisement	−0.067	**0.740**	0.073	0.193	−0.041	0.242
Origin	**0.624**	0.298	0.031	−0.175	0.052	0.029
Brand	0.073	**0.793**	0.158	0.040	0.013	0.037
Label	**0.514**	0.385	−0.025	−0.232	−0.230	−0.178
Contents	**0.710**	−0.045	0.100	0.112	−0.078	−0.157
Additives	**0.772**	−0.199	−0.034	−0.059	−0.150	0.190
High preparedness	−0.257	−0.107	0.319	**0.679**	0.015	0.183
Nutrients	**0.669**	−0.054	−0.001	0.247	0.135	0.184
Free of E- numbers	**0.814**	−0.083	−0.065	−0.109	−0.048	0.137
Taste	0.047	0.124	**0.719**	0.140	0.107	0.330
Colour	0.117	0.255	0.131	−0.036	−0.013	**0.843**
Freshness	0.187	0.146	**0.759**	0.130	−0.139	−0.069
Recommendation	−0.055	**0.591**	0.497	−0.075	0.272	0.029
Habit	−0.288	0.153	0.453	−0.046	**0.506**	0.028
Good impact on health	**0.656**	0.134	0.099	−0.092	−0.060	−0.101

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization (Rotation converged in 6 iterations).

Finally, 4 clusters could be separated according to the abovementioned on the basis of the factor analysis. The most important characteristic of members of Cluster 1 (N = 59) (Figure 6) that the price of organic food influences them to the least extent as compared to the other segments' members. The freshness and good health impact of food are very important for them. They seem very health-conscious consumers, who are inclined to pay higher prices for quality and healthy food. They try to buy as much healthier food as they can (Health conscious). Freshness and a good impact on health are the most important motives for them. Price and advertisement have the least influence on their purchase decisions. They also try to buy as healthy food as they can and think the food is full of harmful components. As a consequence of this, they select carefully the source of purchase and they do not trust in food sold in food stores and judge poorly the performance of the authority. Freshness, taste, and food components are the most important motives in the second segment of the consumers, Cluster 2 (N = 88) (Figure 6). They chose organic food because they are disappointed by conventional food. They pay much attention to where they buy food and think that food is full of harmful components. These are the most influencing factor in their attitude (Disappointed). Members in Cluster 3 (N = 21) (Figure 6) choose organic food because of its favorable health effect, but they pay attention to the price also. They have a fear of additives, so the most influencing motive for them is that the food should not contain additives (Safe and free food eaters). They do not trust in food sold in the food stores and judge poorly the performance of the authority as the members of Cluster 1.

Cluster 4 (N = 78) (Figure 6) also likes eating well, and think organic food is tastier and fresher than conventional but they can be influenced and have stable purchasing source. Since they influenced by habits in purchasing the brand as a motive is ranked to the best place in this cluster as compared to the other segments. They are lag behind in trying new products (Quality – price comparator). The attitude "Food is full of harmful components" is ranked in the first two places in every cluster, which also very important information for policymakers and other stakeholders in the food industry. It is important to note that "label" as a motivator is ranked in the middle or end of the motivation list in every cluster which focuses our attention on the role of labels in the promotion of organic products.

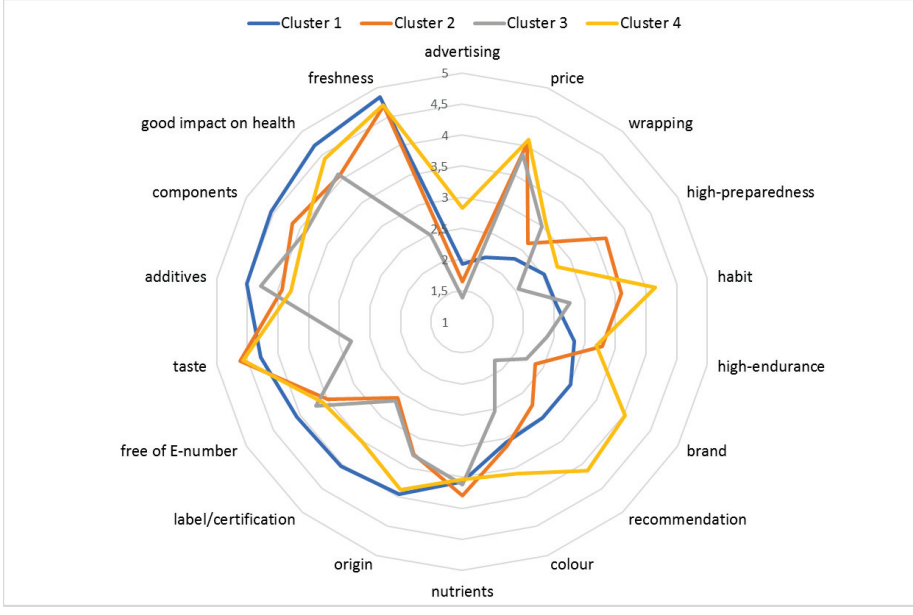

Figure 6. Factors influencing consumers' decisions in different clusters.

5. Discussion and Conclusions

Our research has confirmed the connection found in the literature that consumers mainly buy fresh food on the bio market, which mainly means buying fruits and vegetables [12]. We also see through consumer perception of labels and product labels, because of the microbiological risks associated with the consumption of fresh foods, consumers are more careful when purchasing [13,14]. From the literature review, it can be concluded that consumers of organic food can be divided into several groups based on the main behavioral categories. According to the literature, the two most influential groups are the group that prefers healthy food and the group that follows fashion or current trends [53,54,58]. The preference for freshness of products (which in many cases is also a symbol of healthy food) is an important criterion not only for organic food consumers but also for traditional food consumers. According to our survey, it can be stated that organic food consumers have the healthiest diet because they eat vegetables and fruits with the highest frequency. Organic market consumers pay much attention to where they buy food, but the respondent of the survey does not try to buy food from small scale farmers directly it is not important for them. They do not really think that they get safer food on the market and they do not trust in food traded by food stores, the most trust in their own senses. The surveyed consumers decide mainly on the basis of sensory characteristics (freshness, flavor) but the positive health impact also a very dominant factor at food purchase. According to the factor analysis we can state that there are six explaining factors, we named them as "Health effect", where the information on label plays an important role, "Influences", "Organoleptic properties", Convenience", "Price and habits", where this assigned quality characteristic and the habits have influence. "Colour" as an organoleptic characteristic is a separate explaining variable. Four clusters with different purchasing motives could be separated and some differences can be found among the clusters in attitude toward food purchase. We named these clusters as Health conscious, Disappointed, Safe and free food eaters, Quality-price comparator. Freshness and good impacts on health are the most important motives for the members of the "Health-conscious" cluster. Price and advertisement have the least influence on their purchase decisions. Freshness, taste, and food components are the most important motives in the segment of the "Disappointed" consumers. "Safe and free food eaters" have a fear of additives, so the

most influencing motive for them is that the food should not contain additives. They do not trust in food sold in food stores and judge poorly the performance of the authority as the members of cluster 1. "Quality-price comparator" think organic food is tastier and fresher than conventional but they can be influenced and have stable purchasing source. The brand as a motive is ranked to better place in this cluster as compared to the other segments. The attitude "Food is full of harmful components" is ranked in the first two places in every cluster, which is very important information for policymakers and other stakeholders in the food industry. It is important to note that "label" as a motive is ranked in the middle or end of the motive list in every cluster which focuses our attention on the role of labels in the promotion of bio-foods and also for the malfunctions of these labels. The ingredients should be well readable and markable on labels, however the origin and brand are almost irrelevant for the consumers' segments. The presence of certain ingredients in the product and the freshness of the products can contribute more to sales than branding. Based on the results of the study, we can call the group of health-conscious consumers a clearly distinct group. In their case, it is a surprising result that this group can be influenced well by different marketing tools towards healthy eating. It is an interesting finding for disappointed consumers that they try to get back the loss of consumer confidence in traditional products through their preference for the taste of the products. Consumer sensitivity to the price of the product is typical of the quality-price comparator group, but it is interesting to observe from studies that consumers pay close attention to the price of products in almost all groups. Brand awareness and personal recommendations are of paramount importance to the Safe and Free Food Eaters group. The price comparison consumer group is that they do not attach a particularly strong preference to either the product characteristics or the conditions under which the product is sold at the time of purchase. The results of the study provide valuable and important information about Hungarian consumers of organic food products that can be used by decision-makers in their development strategies in order to enhance small farmers' production and local products. Producers should accommodate their supply to the special need of the consumers' preferences to develop their products based on the needs of each group of consumers. The level of consumers' satisfaction can be increased and a profitable production can evolve. It is important to note that consumers generally believe that "Food is full of harmful ingredients" - this is the first two places in each cluster, which is very important information for policymakers and food business operators. It is important to emphasize that the "label" as a motivator is ranked in the middle or at the end of the motivation list in each group, which is important to consider because we previously thought based on the related researches, that good brands and well-known branding can create an effective sales strategy. Based on the feedback we can confidently state that the information on the label is really important, but branding itself is only a secondary consumer demand!

Limitations: The research was carried out on a small sample, so no exact behavioral patterns can be deduced from the composition of the respondents. It should be emphasized that the data were processed from two sources. In a sample of 31 people, we conducted a bio-market survey among bio-market buyers and interviewed over 800 people with university students to learn about family consumption patterns. Our study does not cover all possible topics but is limited to what we consider important. The research carried out does not represent the consumer habits of all organic food consumers living in Hungary, but the results identify appropriate trends in the consumer community.

Author Contributions: Conceptualization, methodology and formal analysis, K.N.-P.; resources, writing, writing—review and editing, and supervision, C.F.

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Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

The applied questionnaire

1. How often do you consume the following food categories?

   0—never, 1—less than once in a month, 2—1–2 times in a month, 3—1–2 times in a week, 4—3–4 times in a week, 5 every day

stock-cube	0	1	2	3	4	5
ice cream	0	1	2	3	4	5
potato chips	0	1	2	3	4	5
beer	0	1	2	3	4	5
sparkling juice	0	1	2	3	4	5
canned fruit	0	1	2	3	4	5
quality wine	0	1	2	3	4	5
confectionery	0	1	2	3	4	5
cold cuts, wiener wurst	0	1	2	3	4	5
margarine	0	1	2	3	4	5
juice	0	1	2	3	4	5
chocolate	0	1	2	3	4	5
fermented cheese	0	1	2	3	4	5
pickles	0	1	2	3	4	5
milk	0	1	2	3	4	5
egg	0	1	2	3	4	5
butter	0	1	2	3	4	5
salami	0	1	2	3	4	5
mineral water	0	1	2	3	4	5
fruits	0	1	2	3	4	5
bakery	0	1	2	3	4	5
vegetables	0	1	2	3	4	5

2. How are you affected by the following factors in your food purchase? Please, indicate it with 1–5.

   1—I am not affected at all, 5—I am affected in a great extent

advertising
high-preparedness
wrapping
high-endurance
price
habit
colour
label/certification
nutrients
recommendation
free of E-number
brand
additives
origin
components
good impact on health
taste
freshness

3. What do you think about the health impact of the following articles?

   1—it is not harmful, 5—very dangerous

animal fat
exposing food to smoke
salt
high energy content
high fat content
sweetening content
allergens
trans-fatty acid
additives
high sugar content
mold
preservatives
GMO content
artificial food colouring
antibiotic residue
pesticide residues
hormone residues
advertisement
wrapping
easy to prepare
brand
long shelf life
recommendation
color
label
routine
price
origin
nutrient content
free from E-number
free from additives
ingredients
positive impacts to health
flavour
freshness

4. Do you buy any food direct from the producer?

   1—Yes

   2—No

   If yes, list it, please!

5. How often do you use the following supply channels?

   Please, use the following code!

   0—never, 1—less than once in a month, 2—1–2 times in a month, 3—1–2 times in a week, 4—3–4 times in a week, 5 every day

local producers' market
organic market
directly from producers
through the internet
traditional market
other direct selling form

6. How often do you buy organic food?

   0—never, 1—less than once in a month, 2—1–2 times in a month, 3—1–2 times in a week, 4—3–4 times in a week, 5 every day

7. Where you usually buy organic food?

organic market
directly from producers
through the internet
special organic food store
retail chain
other:_____

8. Are you up-to-date in food-safety issues? Please, indicate it with 1–10. 1—I am totally uninformed, 10—I am very familiar with the topic.
9. What is your opinion about the food-safety situation in Hungary? Has it changed in negative or positive direction in the last 10 years? 1—it has been getting worse in a great extent, 2—it has been getting worse, 3—it has not changed, 4—It has improved in some extent, 5—It has improved much
10. Are you agree with the following statements? Please, indicate with 1–5!

    1—I am totally disagree with it, 5—I am totally agree with it.

I trust in food sold by food stores.
I found the activity of the authorities adequate.
I try to buy food made by small scale farmers.
I always read the name of the processor on the label.
I can buy safer food on the market.
I buy only trusty food.
I prefer Hungarian food.
I try to purchase healthy food.
Most of the food is full of harmful ingredients.
I take care of that where I buy food.
I think I am a conscious consumer.

11. What is your gender?

    [] female

    [] male

12. What is your highest level of education? Please, indicate it!

    [] primary school

    [] vocational school

    [] technical college

    [] grammar school

    [] college/university

13. The age of the respondent:

    [] under 20 [] between 20 and 30 [] between 31 and 40 [] between 41 and 50 [] between 51 and 65 [] more than 65
14. Settlement type of the respondents' residence:

    [] Budapest (capital city) [] chief town of a county [] other city [] village [] ranch
15. Occupation of the respondent:

    [] unskilled worker [] skilled worker [] entrepreneur [] employee [] manager [] pensioner [] student
16. Net income in your family

    much smaller than the average

    smaller than the average

    average

    more than the average

    much more than the average

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Understanding Consumers' Convenience Orientation. An Exploratory Study of Fresh-Cut Fruit in Italy

Riccardo Testa, Giorgio Schifani and Giuseppina Migliore *

Department of Agricultural, Food and Forest Sciences, University of Palermo, Viale delle Scienze, 90128 Palermo, Italy; riccardo.testa@unipa.it (R.T.); giorgio.schifani@unipa.it (G.S.)
* Correspondence: giuseppina.migliore@unipa.it; Tel.: +39-091-23896618

Abstract: In Western society, the fresh-cut fruit market is experiencing significant growth, especially in Italy, where, in 2019, the fresh-cut fruit sales volume increased by 35% compared with the previous year. This study aims to understand Italian consumers' demand for fresh-cut fruits and to explore whether this trend is also affected by the prevalence of healthy lifestyles. Health orientation seems, in fact, to be a growing trend in the food sector. Research has recognized that consumers' orientation towards products that are ready to be consumed is not only related to saving time. Sociodemographic factors and psychometric variables, including values and lifestyles, play important roles in understanding consumer demand for convenience products. For this purpose, the food-related lifestyles (FRLs) tool was used to profile consumers. The FRLs tool is a useful instrument that describes different ways in which people use food to achieve their values in life. Data were collected by using an online survey carried out with Italian consumers of fresh-cut fruits. By using a cluster analysis technique, four Italian fresh-cut fruit consumer target groups were identified. The largest target group was represented by uninvolved consumers, who are not inclined to cook or plan meals and who are very influenced by the advertising of food products in their buying decisions. An interesting target group, which may represent a challenge for food enterprises in the sector, was health-oriented consumers, who attach great importance to organic certification and to product information. This target group was also characterized by older consumers with higher net monthly household incomes than other target groups.

Keywords: food-related lifestyles; segmentation; minimally processed food; fresh-cut fruits; consumer decision-making

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1. Introduction

In the late 20th century, the evolution of society in Western countries, accompanied by increased incomes and general economic growth as well as by changes in family organization due to the increasing female participation in the labor market, led to a shift in dietary patterns [1–3]. This is observable through the growing trend to eat outside of the home and to consume convenience foods [4,5]. The increasing consumer interest in convenience foods reflects the tendency to minimize the time and effort that goes into the preparation of meals [6,7]. According to Capps et al. [8], convenience foods are partially or fully prepared foods associated with a significant reduction in time, cooking skills, and mental effort required to prepare meals. However, convenience foods have also been accused of being co-responsible for society's inclination towards a higher prevalence of obesity and lifestyle diseases, as well as reducing the joy in cooking [9–12]. Consumption of convenience foods, in fact, is associated with a high intake of calories, salt, saturated and trans fats, and sugar [13]. Moreover, these foods are rich in preservatives, flavoring, and artificial coloring, and they lack the micronutrients necessary for the proper functioning of the body.

The connection between eating habits and the intake of fresh fruits and vegetables (hereafter F&V) for health is widely recognized. These foods contribute essential micronutri-

ents as well as dietary fiber, which have positive effects on the human body [14]. According to the Consumption Monitor of the European Fresh Produce Association [15], the daily consumption of fresh F&V in European countries is below the 400 g recommended by the World Health Organization (WHO). Constraints related to lack of time and convenience are often reported as the main reasons why the consumption of fresh F&V falls below the daily intake recommended by the WHO [16]. Similarly, there seems to be a growing group of consumers who are demanding simpler solutions to achieving a healthy diet [9]. Health orientation seems, in fact, to be a growing trend in the food sector [10]. An example is the increasing interest of consumers in organic and functional food products, which are recognized by consumers as a way to prevent health diseases [11]. In this context, fresh-cut F&V can also represent a solution to meet consumers' demands to have healthy diets with more F&V, while having meals that are convenient to prepare [9,17,18]. As reported by Farina et al. [19] (p. 1), fresh-cut F&V are products that have been peeled, cut, washed, dried, and packaged in plastic trays and are finally sold in refrigerated boxes. In Europe, the fresh-cut F&V market is experiencing significant growth [20], accompanied by wide availability at various stores [21]. In Italy, starting with their first appearance in the early 1980s, sales of fresh-cut F&V have grown quickly, with a turnover of EUR 913 million in 2019. In particular, within the fresh-cut sector, vegetables accounted for most of the sales volume (96%), whereas fresh-cut fruits, despite only representing 2% of total fruit sales, resulted in a turnover of EUR 33 million (4% of fresh-cut F&V sales), showing an increase of 35% compared to the previous year [21]. Furthermore, the increase in sales of fresh-cut fruits in the last year was three times higher than the increase recorded for fresh-cut vegetables [21], suggesting that in the future, the fresh-cut fruit market will grow further and new opportunities could arise for agricultural enterprises [22–25]. Therefore, it is interesting to understand the characteristics of consumers who are feeding the trend of fresh-cut fruit consumption.

Research has recognized that consumers' convenience orientation is not only related to saving time. Sociodemographic factors and psychometric variables seem to play important roles in understanding consumer demand [26]. Among various approaches used to analyze consumers' behaviors, values and lifestyles have been recognized by research as being reliable psychological constructs in understanding the decision-making process of buying food [27,28]. A valuable measure for analyzing consumer demand in the food domain is the food-related lifestyles (FRLs) construct developed by Brunzø and Grunert [29]. FRLs have been adopted in numerous studies in different countries and used to describe various aspects of self-reported food-related behavior [26,30]. However, to the best of our knowledge, few studies have explored the use of FRLs in relation to consumers' food convenience orientation [31,32], and no study has been performed on consumers' FRLs in the domain of fresh-cut fruits in Italy. Moreover, it is not clear whether the demand for fresh-cut fruit is also characterized by people living health-oriented lifestyles. According to scientific literature, in fact, in recent years, consumers seem to have become increasingly attentive to aspects related to health and environmental sustainability, leading to an important sustainable and socially responsible consumption trend [33,34]. To bridge this gap, this study aims to segment Italian consumers of fresh-cut fruits using the FRLs tool in order to reveal whether and to what extent this fast-growing sector of the Italian agro-food industry is also driven by health-oriented lifestyles. The hypothesis underlining the study is that consumers' convenience orientation is also driven by the desire to live healthy and sustainable lifestyles.

Our findings may have a dual purpose. On the one hand, we aim to enrich the body of literature on consumers' convenience orientation. On the other hand, these findings could help food enterprises develop new products through the identification of specific groups of consumers, their preferences, and their values, which is also valuable for designing marketing strategies [35,36]. Moreover, the knowledge of consumers' lifestyles can help international organizations and governments better address health issues linked

to production and consumption systems in order to achieve more efficient consumption of resources and to achieve social and environmental sustainability [33,34].

The remaining part of the paper is developed as follows. In the next section, the role of lifestyles on consumers' food decision-making process is introduced, followed by the Materials and Methods section and then the Results section. After that, a discussion on the main results of the study in light of relevant literature is developed. Conclusions and implications are presented at the end of the manuscript.

Studies on Food-Related Lifestyles of Consumers

In consumer research, individuals' lifestyles have been shown to play an important role in explaining consumer behavior [37,38]. According to Grunert et al. [39], the lifestyle as a cognitive construct is linked to the personal values concept. In the food domain, the food-related lifestyles (FRLs) tool links food to consumers' achievement of life values. In other words, FRLs are a person-related construct that complements the most popular constructs used to explain the food decision-making process, such as attitudes and beliefs related to products and personality traits [36]. Grunert et al. [38] defined FRLs "as the system of cognitive categories, scripts, and their associations, which relate a set of products to a set of values" (p. 3), and categorized them as an intermediate-level construct between product perception and human values. The FRLs tool describes, in fact, different ways in which people use food to achieve the values of life and represents one of the most elaborate tools for segmenting consumers [37]. The FRLs approach was developed by Brunsø and Grunert [29], who identified five FRL cognitive constructs: ways of shopping, quality aspects of food, cooking methods, consumption situations, and purchasing motives. These five constructs were expressed by 69 attitudinal items measured on a seven-point Likert scale, from "completely disagree" (1) to "completely agree" (7). These 69 items were categorized into 23 dimensions (composed of three items each). The first FRL construct deals with consumer behavior in purchasing situations; it describes how individuals purchase food products, whether their decision-making is characterized by impulse buying or by reasoned actions, the kind of shop at which they buy food, and whether they read labels or trust expert or friend opinions. Quality aspects is the second FRL element and it concerns food attributes that consumers can identify in a specific product, such as whether it is healthy, natural, fresh, and tasty. The cooking methods element includes information on how food is transformed into meals and the time required for preparation, whether it is a spontaneous process that can fit into daily activities, and the reasons that push consumers to cook. The consumption situations element includes the number of daily meals consumed and their distribution and tries to understand the importance of eating outside of the home. The purchasing motives element links food-related activities to a consumer's values by describing the importance that a meal can have and what is expected of it, as well as the importance of social aspects, security, and traditions associated with food.

The FRLs approach is among the most widely validated tools for international segmentation in the food domain, although it appears to be better adapted to Western cultures than other cultures [30].

One of the first segmentations in European countries was proposed by Grunert et al. [38]. They showed, in terms of their relationship with food, that consumers could be segmented into at least five targets: "careless food consumers" [38] (p.220), that is, consumers who have little interest in cooking and give convenience products high importance; "adventurous food consumers," consumers who are very involved in shopping and cooking and have strong interest in health, taste, freshness, and organically produced foods; "conservative food consumers," consumers who are adverse to innovations and are highly price-sensitive; "rational food consumers," a group of consumers who love meal planning and who have a strong interest in product information; and finally, the "uninvolved" target, which includes consumers who are generally indifferent to food and have little involvement in cooking. Along the same line, other segmentations have been carried out with other European countries, including Great Britain [32,37], Poland [40],

Spain [41], and the US [42,43], and the same consumer target groups were identified in reference to the purchasing of different product categories (e.g., snacks, lamb meat, local and organic foods). In a recent study in Spain using the FRLs tool, Montero-Vincente et al. [26] distinguished fresh fruit consumers into four clusters. The first, named "total indifference," represented consumers with no interest in innovation, nutrition, or consumption. The second cluster, called "little time to cook," revealed the consumer target group with the largest consumption of fresh fruits and with a high level of interest in nutrition and health as well as a high inclination to undergo extra domestic consumption. The third group, named "cooks and preference for natural products," included consumers with a medium–high consumption of fresh fruits who cooked at home and who were interested in natural products and the price–quality ratio. The last target group, called "unconcerned," included consumers with the lowest level of fruit consumption and the least interest in natural products compared with other targets.

Within the scientific studies that have adopted the FRLs approach, a few studies have tried to segment consumers of ready-to-eat products [31,32]. In particular, a study conducted in Great Britain by Buckley et al. [32] distinguished six clusters of consumers according to their FRLs associated with convenience foods. The first target group of consumers was named "snacking food consumers" and included consumers who showed less enjoyment in meal preparation compared with other target groups. The other target groups of consumers were in line with those proposed by Grunert et al. [38], that is, "careless food consumers," who attributed less importance to food as a way of achieving their life values than most other target groups of consumers; "adventurous," including consumers of ready-to-eat products who were very interested in cooking and experiencing new ways of cooking compared with other groups; "conservative," represented by consumers who were more price-sensitive and less interested in novel food products; "rational," including consumers who were highly interested in product information and who were more greatly influenced by advertising in terms of their food purchase decisions than other consumer groups; and finally, "uninvolved," including consumers who showed the least interest in food and food-related activities.

To the best of our knowledge, no study has explored target consumer groups related to fresh-cut fruits. Further knowledge is needed to better profile consumers of fresh-cut fruits, which represents a fast-growing sector in the food market.

2. Materials and Methods

In order to reach the aim of the present study, a segmentation based on FRLs and sociodemographic variables was carried out with a convenience sample of Italian consumers who had purchased fresh-cut fruits during the last 12 months. Data were collected through an online survey carried out between February and May 2020 with 537 Italian consumers, of which 201 stated that they had purchased fresh-cut fruits in the last 12 months. Despite online surveys not providing a fully representative sample, we chose this technique, as it avoided direct interactions between the researcher and interviewee and guaranteed the safety of interactions during the COVID-19 pandemic [44].

The questionnaire was structured in three sections: In the first section, information about the frequency of fresh-cut fruit consumption, the place of purchase, and the occasions at which fresh-cut fruits were consumed was gathered. The second section contained 42 items related to 14 of the 23 dimensions of FRLs described by Brunsø and Grunert [29]. We chose to reduce the original number of FRLs dimensions, 69 items, to shorten the duration of the interview, as in an online setting, having a large number of questionnaire items may discourage participants from completing a survey [45,46]. Therefore, to characterize the main targets of fresh-cut fruit consumers, the FRL dimensions chosen were those that best aligned with the aim of the study, in particular, the importance of product information, attitude to advertising, specialty shops, price criteria, health, novelty, organic products, taste, freshness, interest in cooking, looking for new ways, convenience, planning, and security (Table 1). Finally, the last section of the questionnaire was constructed to collect

the sociodemographic characteristics of the participants, such as age, family size, education (expressed in four categories: primary school, lower secondary school, upper secondary school, and university degree or higher), and net monthly household income, measured in EUR.

Table 1. Food-Related Lifestyles dimensions, items used for Italian consumers of fresh-cut fruits, and dimension mean scores.

Dimensions	Items	Mean Scores	St. Deviation
Importance of product information	To me product information is of major importance. I want to know what the product contains. I compare labels to select the most nutritious food. I compare product information labels to decide which brand to try.	**4.8**	1.4
Attitudes to advertising	I have more confidence in food products that I have seen advertised than in unadvertised products. I am influenced by what people say about a food product. Information from advertising helps me make better buying decisions.	**3.7**	1.8
Specialty shops	I do not see any reason to shop in specialty food stores. (Reversed) I like buying food products in specialty food stores where I can get expert advice. I like to know what I am buying, so I often ask questions in stores where I shop for food.	**4.6**	1.3
Price criteria	I always check prices, even on small items. I notice when products I buy regularly change in price. I watch for ads in the newspaper for store specials and plan to take advantage of them when I go shopping.	**5.0**	1.4
Health	I prefer to buy natural products, i.e., products without preservatives. To me the naturalness of the food that I buy is an important quality. I try to avoid food products with additives.	**5.5**	1.3
Novelty	I love to try recipes from foreign countries. I like to try new foods that I have never tasted before. Well-known recipes are indeed the best. (Reversed)	**5.1**	1.5
Organic products	I always buy organically grown food products if I have the opportunity. I make a point of using natural or organic products. I don't mind paying a premium for organic products. (Reversed)	**2.8**	1.8
Taste	I find the taste of food products important. When cooking, I first and foremost consider the taste. It is more important to choose food products for their taste rather than for their nutritional value.	**4.6**	1.0
Freshness	I prefer fresh products to canned or frozen products. It is important to me that food products are fresh. I prefer to buy meat and vegetables fresh rather than pre-packed.	**5.8**	0.9
Interest in cooking	I like to have ample time in the kitchen. Cooking is a task that is best over and done with. I don't like spending too much time on cooking. (Reversed)	**3.5**	1.8
Looking for new ways	I like to try out new recipes. I look for ways to prepare unusual meals. Recipes and articles on food from other culinary traditions make me experiment in the kitchen.	**4.9**	1.4
Convenience	I use a lot of frozen foods in my cooking. We use a lot of ready-to-eat foods in our household. I use a lot of mixes, for instance baking mixes and instant soups.	**3.5**	1.5
Planning	What we are going to have for supper is very often a spontaneous decision. (Reversed) Cooking needs to be planned in advance. I always plan what we are going to eat a couple of days in advance.	**2.6**	0.9
Security	I dislike everything that might change my eating habits. I only buy and eat foods that are familiar to me. A familiar dish gives me a sense of security.	**4.1**	0.8

In order to carry out a segmentation of the sample of fresh-cut fruit consumers on the basis of FRLs, we calculated the score of the 14 FRL dimensions obtained by Brunsø and Grunert [29] through the mean of the scores that consumers gave to each item in each FRL dimension, after having appropriately reversed some item scores in order to make them uniform. The means of the scores related to the 14 FRL dimensions used in this study are reported in Table 1. For the segmentation, a cluster analysis was carried out; however, due to the limited number of observations (201 consumers), to simplify the interpretation of fresh-cut fruit consumer target groups on the basis of the 14 FRL dimensions and the sociodemographic variables, before the cluster analysis, a principal component analysis (PCA) with Varimex rotation was run. The purpose of the PCA was to reduce the amount of information contained in the 14 FRL dimensions into a smaller number of macro-dimensions or components. More precisely, the PCA analytically transforms a set of correlated variables into a smaller number of independent macro-variables, minimizing the loss of information.

The PCA can be expressed by the following general formula:

$$Y_i = w_{i1}X_i + w_{i2}X_2 + ... + w_{ip}X_p \quad (1)$$

where Y_i is the i-th new variable, $X_1, X_2, \ldots \ldots, X_p$ are the standardized original P variables and $w_{i1}, w_{i2}, \ldots, w_{ip}$, are the values of the loading weights associated to each of them.

Factor scores were also calculated for each principal component to express the contribution of each observation on the composition of the components. The factor scores were used for the subsequent cluster analysis, which was designed to group participants on the basis of the FRLs and sociodemographic characteristics, such that consumers in the same group were similar to each other and, similarly, consumers in different groups were different from each other. K-means is one method of cluster analysis that groups consumers by minimizing the Euclidean distances between them. The algorithm randomly assigns k initial centers defined by all n variables. It then iteratively assigns each observation to the nearest center by computing the new center for each cluster as the mean of the centroid of the variables. This process is repeated until a new iteration no longer reassigns any observations to a new cluster; therefore, the algorithm is considered to be convergent, and the final clusters constitute the clustering solution [47]. The choice of the number of clusters was supported by analyzing the clustering dendrogram.

3. Results

Of 537 Italian consumers surveyed, 201 declared that they had purchased fresh-cut fruits during the last 12 months (about 37% of all consumers surveyed on social networks). The data elaborations revealed three categories of consumption frequency: 23% of the 201 Italian consumers had purchased fresh-cut fruits less than twice in the past 12 months, about 35% had purchased them at least once a month, and about 28% consumed fresh-cut fruits often (at least once every 15 days). The remaining 14% of surveyed consumers said they did not remember their fresh-cut fruit consumption frequency in the last 12 months. Fresh-cut fruits were mainly purchased in supermarkets (38% of cases), bar-restaurants (32.5% of cases), and gourmet boutique shops (16.5% of cases). Other places of fresh-cut fruit purchases included greengrocers, snack vending machines, and canteens (for the remaining 13% of surveyed consumers). About 78% of the interviewees stated that they consumed fresh-cut fruits for meals away from home, whereas the other 22% consumed them as meals at home. The average age of the surveyed consumers was 49 years, ranging from 27 to 65 years. Most of the participants lived in families of three or four people (41% and 38% of cases, respectively), and the incidence of singles was about 15%. The educational level of the consumers interviewed was quite high: More than one-third of the survey participants (35.6%) had a secondary school diploma, and nearly one-third of them had university degrees (32.8%). The prevailing average net monthly income of families (in 47% of cases) was between EUR 2160 and 3860, ranging from EUR 540 to EUR 8000 (Table 2).

Table 2. Sociodemographic characteristics of the participants.

	No.	Percentage
Age		
27–39	60	29.8
40–49	65	32.1
50–59	54	27.1
60 or older	22	11.0
Household Size		
1 person	30	14.9
2–3 persons	103	51.3
4–5 persons	61	30.2
More than 5 persons	7	3.6
Education		
Primary school	3	1.6
Lower secondary school	28	14.1
Upper secondary school	71	35.5
University degree or higher	66	32.8
N/A	32	16
Net Monthly Household Income		
<EUR 540	1	0.6
EUR 540–2159	17	8.5
EUR 2160–3860	94	47.0
EUR 3861–5561	47	23.2
EUR 5562–8000	11	5.6
N/A	30	15.1

The application of the PCA allowed us to reduce the initial number of FRL dimensions (14) and sociodemographic variables (4) into six principal components, which accounted for 68% of the total variance (Table 3). The first principal component, which accounted for about 21% of the total variance, was named the "critical consumption." It was characterized by FRL dimensions that outlined the features of a consumption trend defined in the literature as critical consumption, namely, an interest in organic and natural products, health aspects of food, product information, and buying in specialty shops.

Table 3. Results of PCA with a Varimax rotation.

Principal Components/ Macro-Dimensions	Dimensions	Factors Loading
Critical consumption	Organic products	0.921
	Health	0.921
	Freshness	0.742
	Importance of product information	0.683
	Specialty shop	0.522
Convenience consumption	Convenience	0.772
	Attitudes to advertising	0.752
	Interest in cooking	−0.706
Neophiliac consumption	Looking for new ways	0.846
	Novelty	0.839
	Security	−0.495
Pragmatic consumption	Taste	0.680
	Planning	0.585
	Price criteria	0.531
Age and Income	Age (continuous variable)	−0.583
	Income (categorical variable)	−0.554
Educational level and Family size	Education (categorical variable)	0.728
	Family size (categorical variable)	−0.709

The second principal component accounted for about 12% of the total variance. Although foods in the category of F&V fresh-cut products were chosen for their intrinsic convenience characteristic, this component was named "convenience consumption," as there are FRL dimensions characterizing consumers with extensive use of frozen foods and ready-made soups and low interest in cooking who are highly influenced by advertising. The third principal component was called "neophiliac consumption," as it was positively characterized by consumers looking for new methods of food consumption and novelty dimensions, emphasizing those with interest in new recipes and unusual meals. Moreover, this component, which accounted for about 11% of the total variance, was negatively characterized by the security dimension, highlighting a propensity towards new food experiences that could also change eating habits.

The fourth principal component extracted was named "pragmatic consumption" and was positively characterized by taste, planning, and price criteria dimensions. In other words, this component, accounting for about 9% of the total variance, was characterized by items emphasizing the importance of food taste, planning cooking, and the importance of price in buying decisions. The fifth principal component extracted, accounting for 8.7% of the total variance, was called "age and income," and it was negatively characterized by the age and income of participants—the younger participants were, the lower their net monthly household income was, and vice versa. The sixth and last component extracted was named "education and family size," and it was characterized by sociodemographic variables highlighting the educational levels and family sizes of participants, indicating that among the participants, those with high educational levels had families with fewer members.

Target Groups of Fresh-Cut Fruit Consumers

As previously emphasized, to find the targets of fresh-cut fruit consumers, a cluster analysis using the K-means technique was performed with 201 Italian consumers who had purchased fresh-cut fruits during the last 12 months. After exploration of the cluster dendrogram, four consumer clusters were identified whose final centers of clusters are reported in Table 4.

Table 4. Final centers of the clusters.

Principal Components	Consumer Targets			
	Neophiliacs (18.9%)	**Uninvolved (34.7%)**	**Value Seeking (28.7%)**	**Health Oriented (17.7%)**
Critical consumption	−0.11461	0.08052	−1.10679	0.84397
Convenience consumption	−0.66067	0.99250	0.48203	−0.41389
Neophiliac consumption	0.65696	0.14651	−0.23914	−0.72298
Pragmatic consumption	−0.20955	−0.68436	0.76042	0.29234
Age and Income	−0.28179	−0.03575	−0.03474	0.55982
Education and Family size	−0.21745	−0.36555	0.50561	−0.08673

In particular, the first cluster, composed of 18.9% of the consumers participating in the survey, was characterized by individuals with little inclination to use frozen foods and ready-made soups and who showed some interest in cooking. Similarly, these consumers also showed neophiliac consumption, that is, a high interest in new products and recipes as well as unusual meals. They were named "neophiliacs" because they seemed to approach fresh-cut fruits as a way to experience new products and new ways of making meals. The second target group of consumers participating in the survey, representing the largest group of consumers surveyed (34.7%), was called "uninvolved." This group was characterized

by FRL dimensions indicating that these consumers extensively used frozen foods and ready-to-eat soups, had little inclination to plan meals, were strongly influenced by the advertising of a product, and had poor attitudes to cooking. The third target group of consumers identified (28.7% of participants) were named "value-seeking consumers." These consumers attached great importance to the taste of food and its price and liked to plan meals in advance. Furthermore, this group of consumers did not attach importance to organic foods, the presence of preservatives and additives in food, or to the freshness of food or product information. This group was characterized by consumers with a high educational level and living in a family with more members. The last target group of fresh-cut fruits consumers, representing the smallest group of consumers (17.7%), was called "health oriented," as it was characterized by consumers who attached great importance to organic foods, the freshness and healthiness of food, and product information. They were found to often purchase food in specialty shops and were less inclined to try new recipes or to change eating habits. This segment was characterized by older participants with higher net monthly household incomes than other segments.

4. Discussion

The findings of our study identified four target groups of fresh-cut fruit consumers with distinct food-related lifestyles: neophiliacs, value seeking, health oriented, and uninvolved.

The largest cluster was the "uninvolved" consumers, a group of consumers characterized by a lack of interest towards food and food-related activities, who were found to be highly influenced by the advertising of a food product. It was not a surprise to identify this target group of consumers as being among the major users of fresh-cut fruits, which are, by convention, easy to consume and do not require effort for their preparation. This target group of consumers was also identified by Buckley et al. [32] in their study on consumer convenience orientations in Great Britain, highlighting that uninvolved food consumers are the biggest users of ready meals [32]. In line with other studies, uninvolved consumers had no confidence in their cooking skills and therefore turned to ready-made foods as a meal solution [37,38,41–43]. These consumers had little involvement in meal planning, and their food consumption was often a last-minute decision. The low level of interest in food makes these consumers highly influenced by advertising, which directs their emotions and food choices [48,49]. However, no specific sociodemographic variable was found to characterize this group, suggesting that this target group includes Italian consumers of all age groups, education levels, family members, and income brackets. This is in contrast to what has been shown by other studies, in which uninvolved consumers were classified as having specific sociodemographic characteristics. In fact, they were described as being young and less educated [32], and in some cases with medium–high incomes [50,51] and living in multi-member families [52].

The value-seeking target group representing the second cluster (28.7% of consumers surveyed) was characterized by consumers pushed by a pragmatic approach to consumption. They loved to plan meals and paid attention to price, quality, and sensory traits. Similar to Yeo et al.'s study [53] with Korean consumers, in this cluster, price is an important criterion for choosing food as well as quality and sensory traits [42]. However, unlike these two previous studies, our group of consumers did not seem to consider product information and its freshness as decisive parameters for buying convenience products. They were looking for a reasonable compromise between quality and convenience. This was also shown in other studies regarding F&V [54]. This is in line with a target group of consumers that emerged in a recent study by Fang and Lee [55], in which consumers were found to be very sensitive to the price/quality ratio and taste but not to health and ecological products. Moreover, this target group is comparable to that identified by Zakowska [40] among Polish food consumers, which attributed great importance to taste, safety, and price and did not care about product labels. Regarding sociodemographic variables, consumers

grouped into this cluster, in line with Yeo et al. [53], showed high education levels, although neither income nor age seemed to affect their attitudes towards fresh-cut fruits.

The remaining respondents were almost evenly divided between neophiliacs (18.9%) and health-oriented targets (17.7%). Neophiliacs were characterized by wanting to discover new products and taste new foods. They seemed to perceive new food products in a positive light and wanted to experience them [56]. Moreover, this target group of consumers was found to confer little importance to health and environmental issues [57,58]. It is also interesting to note that neophiliacs were not found to be exclusively younger consumers, unlike in other studies [59,60].

Conversely, the health-oriented target group was essentially characterized by critical consumption behavior, including the consumption of organic products and healthy foods. These consumers were, in fact, not only concerned with the freshness of products, but also considered the consequences of their consumption practices on their health and the environment, highlighting the growing consumer interest in sustainable and socially responsible issues [33,34,61]. For this reason, consumers in this group preferred to buy foods in specialty shops in order to get advice on their decision-making processes, and they were found to attribute significant importance to product information. Health-oriented consumers were also identified in other studies analyzing consumers' perceptions of environmentally friendly and healthy products. For these consumers, in fact, health and environmental issues are key determining factors in their food decision making processes [62,63]. For this reason, they prefer to shop in specialty stores to be supported in their purchasing decisions and attach great importance to product information. For these consumers, a key factor for food enterprises is having an adequate and effective marketing strategy. This was widely discussed by Nyilasy et al. [64], who showed how effective green advertising positively affects consumers' perception towards a food product, helping to increase food enterprise competitiveness.

In line with other studies in the food domain [31,65,66], the health-oriented consumers identified in the present study were older participants with higher net monthly household incomes than consumers in other target groups.

However, despite this being the first study to analyze consumer demand for fresh-cut fruit, some limitations of the study need to be considered when interpreting the results. The exploratory nature of the study and the convenience sample used did not allow us to describe the demand for fresh-cut fruit in Italy in a conclusive way. A further limitation is linked to the timing of the data collection—in the middle of the COVID-19 pandemic. As shown by the literature [67], the COVID-19 pandemic has impacted food choices around the world and has probably also affected the convenience orientation of consumers. Therefore, further research needs to be carried out in order to understand the consumer lifestyles that characterize the convenience orientation of consumers more clearly.

5. Conclusions

In Italy, the fresh-cut fruit sector has experienced fast growth, with a 35% increase in the turnover of products in 2019 compared to the previous year. This study tried, through an explorative analysis on consumers' FRLs, to shed light on consumer demands for fresh-cut fruit in Italy by understanding whether and to what extent this demand also includes health-oriented consumers.

Our findings reveal that the largest target group of Italian consumers of fresh-cut fruits is uninvolved consumers, who have little inclination to plan meals and who do not pay particular attention to the information contained on the label. Their attention to advertising is very high, suggesting that for these consumers, marketing communication through advertising or influencers may represent a successful marketing tool to help enterprises be competitive in the fresh-cut fruit market.

Conversely, health-oriented consumers represent the smallest consumer target group found among Italian consumers of fresh-cut fruit. However, although it is not yet a prevalent target group of consumers, health-oriented consumers may represent a very interesting

challenge for agri-food industries, considering the growing demand for healthy eating. This is also observable by the growing consumption of functional, natural, and organic foods that has occurred in the agri-food sector in recent years. This trend suggests that the presence of health-oriented consumers in the domain of convenience food could grow further in the near future and that new opportunities could arise for agricultural enterprises.

These findings may have a dual purpose. On the one hand, they enrich the body of literature on consumer convenience orientation by highlighting that this approach to consumption is also characterized by consumers who are aware of the health consequences of their food choices. On the other hand, these findings may help food enterprises to design new products and marketing strategies in order to better satisfy consumers' needs and expectations by differentiating their offerings and being more competitive in the market.

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Review

Understanding Attitudes towards Reducing Meat Consumption for Environmental Reasons. A Qualitative Synthesis Review

Ruben Sanchez-Sabate [1,*], Yasna Badilla-Briones [2] and Joan Sabaté [3]

[1] Centro de Excelencia en Psicología Económica y del Consumo (CEPEC), Núcleo Científico y Tecnológico en Ciencias Sociales y Humanidades, Universidad de La Frontera, Temuco 4811230, Chile
[2] Departamento de Psicología, Facultad de Educación, Ciencias Sociales y Humanidades, Universidad de La Frontera, Temuco 4811230, Chile; yasna.badilla@ufrontera.cl
[3] School of Public Health. Loma Linda University, Loma Linda, CA 92350, USA; jsabate@llu.edu
* Correspondence: ruben.sanchez@ufrontera.cl

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Abstract: Meat-based diets are the norm in Western societies. This is a problem because meat production is a major contributor to global warming and environmental degradation. Despite the urgency to reduce meat consumption, quantitative studies have shown that there is only a small minority of consumers aware of the meat environmental impact, willing to halt or reduce meat intake for ecological reasons, or who have already stopped or reduced meat consumption because of environmental concerns. We conducted a qualitative synthesis reviewing studies that looked at attitudes towards changing meat consumption. Our focus was on the behavioral change process: Awareness, willingness, and change, aiming to enhance the current understanding of people's attitudes towards reducing meat consumption due to environmental concerns. The studies reviewed show that consumer awareness is hindered by beliefs about food, meat, and personal behavior. Nutrition, health, and taste were found to be both enablers and barriers with regard to willingness. Vegetarians and vegans perceive the environment as simply another reason, among others, to maintain a meatless diet. Based on these results, we offer recommendations for future dietary public health interventions, and for future research endeavors on this topic. This review employed a meta-aggregative approach and partially followed the Joanna Briggs Institute methodology for systematic reviews of qualitative evidence.

Keywords: consumer attitudes; meat consumption; environment; sustainability; meatless diets; meat avoidance; dietary behavior change; global warming; climate change

1. Introduction

Meat consumption is a major contributor to global warming and environmental degradation [1–5]. The livestock industry pollutes and depletes fresh water, contributes to the loss of biodiversity, and is a major source of anthropogenic greenhouse gas emissions [1]. Since the worldwide demand for meat is increasing due to rising incomes, growing populations, and other sociocultural factors [1,6,7], the health and well-being of the global population are every day at greater risk. A recent assessment estimates that climate change will increase future risks of armed conflict [8], while the recently published EAT-*Lancet* report "Food in the Anthropocene" [9] warns that unless red meat consumption is significantly reduced, it will be impossible to feed, in a healthy and sustainable manner, an estimated global population of 10 billion people by 2050. The latest Intergovernmental Panel on Climate Change (IPCC) special report stated that, given the current scientific evidence, there is a high degree of confidence in the potential of reducing animal-based product consumption to achieve significant mitigation of climate change [10].

The double food and environmental pyramid by the Barilla Center showcases at a glance this link between nutritional and environmental aspects of food [11].

Meat-based diets are the norm in Western societies. In countries like the United States and the United Kingdom, vegetarians account for less than 5% of their respective populations [12]. Rationalizations of meat consumption in the West are synthesized in the 4Ns: Meat is natural—it is what our biology has come to crave in the evolutionary process, eating meat is normal—it is a sociocultural practice and expectation in civilized societies, meat is necessary for humans to be healthy, and meat is nice—animal protein is tasty [13]. Consumption habits, culinary traditions, and what sociologists call cultural repertoires (culturally available unarticulated instructions loaded with values and understandings that guide people's actions) are also important factors to explain meat intake [14,15]. Given all these socio-cultural factors, it is clear that changing the current Western meat consumption pattern is challenging [16].

The Transtheoretical Model (TTM) of health behavior change [17] describes the behavioral change process as a three-stage progression that comprises awareness (precontemplation), willingness (contemplation and preparation), and change (action, maintenance, and termination). This process of change can only occur with the adoption of a positive attitude based on reasons and motivations [17]. Since climate change and environmental sustainability are pressing reasons or motivations to reduce meat intake [9], a growing body of research is looking at the influence of environmental concerns in Westerners' meat consumption. Systematic reviews of the quantitative evidence only have shown that environmental motives have a weak influence on meat consumption attitudes [18,19]. People are rarely aware of the meat environmental toll. They underestimate its impact compared with other behaviors or activities. Only a minority seem willing to alter meat consumption because of the environment, but even they would rather adopt other strategies to counter climate change. Consequently, only a small minority has altered its meat-eating patterns because of the environment, a motive more appealing to vegans and flexitarians than vegetarians. Those most aware and positively influenced by environmental concerns are female, young, and meat-reducers.

Quantitative studies generally provide little or no information on why a person is aware, or willing, or why they made a change in meat consumption habits because of the environment. Previous systematic reviews on this topic have acknowledged some of these limitations. For example, they have called for more in-depth studies on willingness [18], and for exploring the cultural and social factors attached to meat that impact willingness and dietary change [19]. Still, many more questions can be asked to qualitative evidence. Why are consumers not aware that meat consumption degrades the environment? Is it because they simply have not been educated on the topic? Could it be instead that their beliefs, perceptions, reasons or motivations conflict with the scientific evidence on meat consumption and the environment? Do they actually understand what environmentally-friendly food is? Similar questions can be raised regarding willingness. Is the low willingness to alter meat consumption for environmental reasons attributable only to their low awareness? Do environmental motives affect in any way the 4Ns (natural, normal, necessary, nice)? Is there something that can be done to increase willingness beyond educating people on the meat environmental impact either in a rational or emotional fashion? Regarding those who have changed their meat dietary patterns because of the environment, it is necessary to know how consumers understand their behavioral change. Do they see it as a must or as simply another way to help the environment? Why did non-ecologically oriented people alter their meat consumption because of the environment?

Syntheses of qualitative evidence have proved useful to complement and better interpret quantitative systematic reviews [20]. By qualitative review we mean "the synthesis or amalgamation of individual qualitative research reports (commonly called "primary research reports") that relate to a specific topic or focus in order to arrive at a new or enhanced understanding about the phenomenon under study" [21]. The value of "enhanced understanding" that qualitative evidence synthesis can provide is already widely recognized across the natural and social sciences within the evidence-based approach [20,22]. The Cochrane Collaboration Qualitative Methods Group, the Health Development

Agency, The Economic and Social Research Council, and The Joanna Briggs Institute have made significant efforts to facilitate the use of qualitative evidence synthesis in disciplines such as public health and education, among others [20,23]. The efforts of these institutions are driven by the fact that qualitative evidence syntheses have the potential to contribute both to the scientific community and different kinds of institutions. Qualitative evidence synthesis may, indeed, serve to inform the creation of research instruments by identifying the significant characteristics of a phenomenon, as well as to develop actionable knowledge that can inform both policy and practice [20].

The purpose of this qualitative evidence synthesis is to enhance our understanding of attitudes towards reducing meat consumption because of environmental concerns. We expect to get a better grasp on the nature of individual and group awareness, willingness and actual change of dietary habits to protecting the planet. Hoping to inform both future dietary public health interventions in adopting healthy and sustainable diets, and future research endeavors on this topic, we have looked at what qualitative studies have to say regarding the already named stages of the behavioral change process: Awareness, willingness, and change. Our research question was: What are the enablers and barriers to increase awareness, willingness, and change when consumers are prompted to reduce meat consumption because of environmental concerns? A preliminary search of PROSPERO, MEDLINE, the Cochrane Database of Systematic Reviews, the JBI Database of Systematic Reviews and Implementation Reports was conducted and no current or ongoing qualitative evidence syntheses on this topic were identified.

2. Materials and Methods

2.1. Search Strategy

The articles considered for this qualitative evidence synthesis were identified through a literature search of the Web of Science (WOS) Core Collection conducted in March 2018. The search was aimed at finding studies on people's attitudes towards meat consumption in relation to planetary health. For each subtopic (awareness, willingness, and change), a separate query was conducted. Strings and search terms used to retrieve relevant literature are detailed in Table 1.

Table 1. Search strings and terms.

Term	Operator	Term	Operator	Term
AWARENESS				
consumer attitudes	AND	Meat	AND	climate change
				GHG emissions
consumer perceptions				global near/2 warming
people attitudes		livestock		environment
people perceptions				water near/3 use
				land near/3 use
WILLINGNESS				
consumer willingness	AND	"plant-based" near/3 diet	AND	climate change
		vegetarian diet		GHG emissions
		vegan diet		global near/2 warming
people willingness		meatless diet		environment
				water near/3 use
		"less meat"		land near/3 use

Table 1. *Cont.*

Term	Operator	Term	Operator	Term
		CHANGE		
"Plant-based" near/3 diet	AND	reason	AND	environment
vegetarian near/3 diet				
vegan near/3 diet				climate change
meatless near/3 diet				
"less meat" near/3 consumption		motivation		global warming
vegetarians				
vegans				

A single and separate query with one term of each column was created. A total of 48 search queries for awareness were created. A total of 60 search queries for willingness were created, a total of 42 search queries for change were created.

Two authors conducted the screening process independently in order to reduce bias. For each subtopic, a three-step procedure was performed. First, titles, abstracts, and keywords were screened. Relevant articles on either awareness, willingness, and/or change were imported to Zotero reference manager. Second, saved references were read in full with a twofold purpose: (1) To make sure that they met the inclusion criteria (Figure 1) and (2) to identify in their cited references section new articles not yielded by the WOS search. Third, these first two steps were repeated until citation redundancy was achieved. When a reference was declared eligible by one reviewer only, the two reviewers reached an agreement on its inclusion or exclusion. Flow charts of this process can be found in Appendix A.

INCLUSION CRITERIA:

- Qualitative studies
- Government studies/reports.
- Full-text papers in English or Spanish published in peer-reviewed journals.
- Focus on:
  - Consumer Awareness of meat consumption and production environmental impact
  - Consumer Willingness to stop or reduce meat consumption because of its environmental impact
  - Consumer environmental reasons or motivations to have adopted a plant-based diet or have reduced / avoided meat consumption.

EXCLUSION CRITERIA:

- Quantitative studies
- Opinion papers, outlook, concept papers, books or book chapters.
- Not related to consumer attitudes or behavior (e.g. environmental impact of meat production).
- Studies that only consider one type of meat (e.g. beef, lamb, poultry…).

Figure 1. Eligibility criteria.

2.2. The Meta-Aggregative Approach

There are many methods for conducting qualitative evidence synthesis [21]. All of them entail various degrees of interpretation and aggregation, but in each method, either interpretation or

aggregation is more prominent than the other [21]. This review uses a meta-aggregative approach, a method "designed to model the Cochrane process of systematic reviews summarizing results of quantitative studies while being sensitive to the nature of qualitative research and its traditions" [21]. The focus of this approach is the practical consequences of the generalizations that can be drawn from the summary of common and competing findings. In other words, this method aims to produce the knowledge necessary to recommend actions in the field of study [21]. In the present case, our goal is to produce knowledge to make future diet-oriented public health intervention programs more effective, as well as to inform future research on consumers' attitudes towards meat intake reduction.

The process of meta-aggregation conducted followed, with minor variations, the Joanna Briggs Institute (JBI) methodology for systematic reviews of qualitative evidence [23]. It was conducted with the assistance of the JBI software called System for the Unified Management, Assessment, and Review of Information (SUMARI), which was designed to assist researchers and practitioners in conducting systematic reviews [24]. The JBI methodology includes developing a research question, conducting a literature search, doing a critical appraisal of selected studies, extracting the findings, categorizing them and, finally, generating synthesized findings [25]. The JBI SUMARI critical appraisal instrument evaluates the coherence between the theory, the methodology, the research question, and the representation of data and its interpretation, as well as identifying how the researchers' values and beliefs might influence the study. Research ethical procedures are also evaluated [23]. It was decided that, since a small number of studies were identified, all the studies would be included regardless of their quality. Even so, all selected studies were assessed by one of the authors (see Appendix B). The JBI protocol also recommends contacting authors of papers reviewed in order to ask for clarification when necessary. For this review, no further clarification was deemed necessary.

2.3. Data Extraction

Data extraction from the selected papers was carried out by two independent reviewers using the JBI-SUMARI extraction instrument [23] (see Appendix A). Extracted data included details about the population, context, geographical location, study methods, and the phenomena of interest relevant to the review questions. Findings and their illustrations were extracted by one reviewer only, since the meta-aggregative approach does not require two independent reviewers for this procedure. At this stage, the reviewer must stay as close as possible to the themes listed by the original authors and avoid interpretation of them [21]. A finding is defined as "a verbatim extract of the author's analytic interpretation of their results or data". An illustration is defined as "a direct quotation of a participant's voice, field-work observation or other supporting data from the paper" [23].

The JBI method requires the assignment of a credibility level for each finding depending on weather illustrations are provided in support of findings, and on how clearly an illustration supports a finding. Thus, "unequivocal" findings are clearly supported by the accompanying illustrations, "credible" findings come with an illustration lacking clear association with it, and "unsupported" findings do not provide supporting illustrations [23]. In the present review, however, only two levels of credibility are considered: "unequivocal" (U) for findings that come with illustrations and "credible" (C) for findings without illustrations. Two reasons justify this methodological decision. First, journal editors generally restrict the number of words per article, forcing authors to leave out illustration data. Secondly, while the JBI method allows the consideration of unpublished results [23], this review only considered published studies indexed by the Web of Science. Thus, it is assumed the papers included in this review went through a peer-review process that checked the credibility of the findings.

2.4. Data Synthesis

Qualitative research findings were pooled using JBI SUMARI with the meta-aggregation approach [23]. This involved the aggregation or synthesis of findings to generate a set of statements that represent that aggregation, through assembling the findings and categorizing these findings on the basis of similarity in meaning. These categories were then subjected to a synthesis in order to

produce a single comprehensive set of synthesized findings. These findings, then, should broaden our understanding of the relationship between environmental concerns and meat consumption and thus, inform future diet-oriented public health interventions and research efforts. Categories are defined as "a brief description of a key concept arising from the aggregation of two or more like findings and is accompanied by an explanatory statement that conveys the whole, inclusive meaning of a group of similar findings." [23]. A synthesized finding is "an overarching description of a group of categorized findings" [23]. This data synthesis process was conducted by two reviewers.

3. Results

3.1. Studies Included and their Characteristics

Following the inclusion criteria (Figure 1), a total of 10 studies were identified on either awareness of the meat impact on the planet, and/or willingness to stop or reduce meat consumption for environmental reasons, and/or consumers who have already altered their meat intake for ecological concerns. The number of studies identified and considered in this review is the minimum recommended to conduct a meta-synthesis [26].

The articles on awareness and/or willingness share a common phenomenon of interest, namely, people's perceptions of, and potential dietary response to the meat environmental impact. Their samples include a total of 328 participants, from teenagers to elders, defined as meat eaters. Very few vegetarians took part in a couple of studies. Reviewed papers on motivations that brought actual change focus only on vegetarians and vegans. We did not find any study that explored the reasons and motivations for consumers becoming flexitarians or simply reducing their meat consumption due to concerns for the environment. Four out of the five papers on dietary change explored the contexts and motivations for either becoming a vegetarian/vegan or keeping a meatless diet. The fifth article explored possible emotional relationships between vegetarianism and death. We considered it relevant because the research process included an inquiry on the reasons for adopting a vegetarian/vegan diet. These investigations on dietary change had a total of 301 vegetarian/vegan and former vegetarian participants aged from 14 to 85 years old. See Appendix A for the characteristics of the included studies.

Regarding methodology, a clear majority of the reviewed studies employed thematic analysis. Two of them worked with grounded theory. Focus groups were the most common way to obtain data. Three research projects interviewed or surveyed participants over the internet. The geographic context of the studies was very limited. All articles but one studied English-speaking populations mainly from the United Kingdom and Oceania. Only four articles mentioned some kind of covariates effects. Since reported covariates vary, or their effects are contradictory across studies, it was not possible to extract patterns of influence worthy of reporting. Overall, reviewed studies are of medium to high quality (see Appendix B).

3.2. Awareness

Figures A1 and A2 (see Appendix B) show the aggregative process from general findings extracted from four papers to synthesized findings on people's awareness of the environmental impact of meat production and consumption. Extracted findings and illustrations are reported in Appendix C.

Figure A1 presents the findings and categories that sustain the first synthetized finding on awareness: Consumers do not bear in mind that food in itself has an environmental dimension. Extracted findings show that consumers believe that unsustainable food has to do with food production and distribution activities like deforestation, pollution, transport, and excessive packaging [27–30], for example, but not with the type of food in itself, be it animal or vegetable. In fact, we found evidence that consumers are confused or simply ignorant when it comes to defining environmentally friendly foods [28]. This is consistent with findings about consumers not thinking of the environment when making food purchase decisions [27,28,30]. Therefore, we classified all these findings into three categories: (1) Consumers attribute food environmental impact to food systems activities only, (2) lack

of clarity among consumers on what ecological food is, and (3) in the same way that consumers consider price and healthiness, among others, food environmental impact is not a food property for them. These three categories have in common an understanding or conceptualization of food as detached from the environment.

If the first synthetized finding on awareness has to do with food in general, the second, presented in Figure A2, is exclusively about meat: Consumers' perceptions of meat consumption are a barrier for them to acknowledge or accept that reducing meat intake would alleviate negative impacts on the environment. In other words, consumers do not seem ready to fully integrate the idea that a sustainable diet must have little or no meat. Extracted findings show that people believe it to be irrelevant, or they disagree that reducing their own meat intake would significantly impact the environment [29]. Some consumers associate the meat environmental impact with cattle methane gas and deforestation only [27,29], making no link between meat consumption and climate change [27–30]. In general, they have a romanticized image or conception of meat, imagining animals freely grazing in the field and not in packed stables typical of intensive farming [28]. Still, some people are sensitive to animal welfare issues [28]. These findings were classified into three categories: (1) Disbelief that altering personal meat consumption can alleviate climate change, (2) meat environmental impact restricted to methane gas and deforestation, and (3) consumers have an overall good perception of meat.

3.3. Willingness

Four papers on people's willingness to reduce meat consumption because of the environment were identified and reviewed. Extracted findings and illustrations can be found in Appendix C. Figures A3–A6 (see Appendix B) show the aggregative process from general findings to a total of four synthesized findings.

The first synthesized finding is that environmental reasons and motives can be an enabler for reducing meat consumption to a certain extent. Extracted findings indicate that environmental concerns can prompt consumers to minor reductions in meat intake [31]. Some people, though, believe more scientific evidence is needed on the environmental impact of meat before they would make a dietary decision [29]. These findings were classified into two very similar categories summarized here in a sentence: Environmental concerns may motivate reductions in meat intake but not significantly alter meat-eating patterns.

The second synthesized finding is that sociocultural, culinary, and physiological reasons are barriers for consumers to reduce meat consumption on environmental concerns. Under the category "barriers to a large meat intake reduction," we grouped extracted findings that show that consumers argue social reasons, tradition, and lack of culinary skills to resist a substantial reduction of meat in their diets [30]. In fact, some consumers perceived a 70% meat reduction to be the same as becoming vegetarians, something they were not willing to do [30]. Extracted findings from papers that simply asked consumers about their willingness to reduce their meat intake without specifying the amount were grouped under the category "barriers to an indeterminate meat intake reduction". Again, sociocultural [27,29,31] and culinary [29,31] reasons were barriers. Dietary habits also prompt resistance to meat intake reduction [27,29,31]. Other findings have to do with physiological reasons [27,29,31], like achieving satiety and the pleasure of eating meat. These two barriers might be reinforced by the finding that consumers believe that a proper meal must have meat [30]. Consumers also may refuse to curtail meat consumption to mitigate climate change because they say that, driven by other reasons, they have already reduced their meat consumption [29]. Other consumers may resist a reduction in meat consumption for no reason whatsoever [27], or they choose to change other behaviors to help the environment instead of altering their intake of meat [29].

The third synthesized finding captures the ambiguous potential of health, nutrition, taste, and economic reasons to act as both enablers or barriers in consumers' willingness to reduce meat consumption because of the environment. Extracted findings show that some consumers may perceive a reduction of meat as healthy and nutritionally sound [29,31], while others as unhealthy

and nutritionally unsound [27,29–31]. In the same way, some consumers argued the lack of palatable alternatives to meat as a resistant factor to changing meat consumption [27,29–31], while others, faced with pictures of tasty looking vegetarian dishes by the research team, were inclined to eat less meat [31]. Extracted findings regarding the influence of economic reasons show that pricey meat prompts lower consumption of it [29–31]. However, consumers associate the lack of meat in their main daily meals with poverty [30].

The fourth synthetized finding is that consumers demand nutritional and culinary education in order to adopt a low or meatless diet to alleviate harm to the environment. People have difficulties imagining an alternative diet with low or no meat to their current dietary patterns [29–31]. Having understood the pressure of environmental concerns, they demand nutritional and culinary education to adopt a sustainable diet [30]. Consumers do not appreciate dietary interventions focused on what not to eat. They would rather listen to advice on how to lead a healthy and tasty low or meatless diet [30].

3.4. Change

A total of five articles were identified and reviewed regarding meat reduction or avoidance due to environmental concerns. All reviewed articles studied vegetarians and/or vegans. No qualitative evidence has been found regarding people who simply reduced their meat intake because of the environment. Extracted findings and illustrations can be found in Appendix C. Figures A7 and A8 (see Appendix B) show the aggregative process from general findings to a total of two synthesized findings.

The first synthesized finding states that environmental concerns can be both a trigger for adopting [32–34], and reinforcement for sustaining [34–36], a meatless diet. Even though only for a minority, there are consumers for whom environmental reasons were the initial motivation to become vegetarian. In some cases, environmental motivations prompted vegetarians to go vegan [35]. Other extracted findings were grouped under the category "environmental concerns as part of a non-ecological web of motivations to adopt or sustain a vegetarian diet". These findings show that care for the environment is another reason to justify a vegetarian diet already adopted because of health or ethical reasons, or one of many reasons to avoid animal products. One paper reported that some consumers argued that the environmental inefficiency of meat production contributed to world hunger, making the adoption of a vegetarian diet a human rights issue [36].

The second synthesized finding is that consumers involved in environmentalism or that simply love nature consider a meatless diet just another behavior to care for the environment. Extracted findings show that love for nature can prompt consumers to become vegetarian [33]. Other consumers see a meatless diet as a way to reinforce their commitment to life on Earth [34]. People may also adopt a vegetarian diet as a consequence of their environmentally friendly lifestyle [35]. However, one study on reasons for leaving vegetarianism showed that among ex-vegetarians, the majority had originally adopted a vegetarian diet because of the environment. It seems that with time, they opted for other ways to alleviate the environmental impacts, such as eating limited amounts of meat or only organic meat [32].

4. Discussion

In this qualitative evidence synthesis, we looked at three groups of behavior stages of change regarding meat consumption: (1) Awareness, which refers to subjects in the precontemplation stage, (2) willingness, which refers to individuals in the contemplation and preparation stages, and (3) change, which includes people in the action, maintenance, and termination stages [17]. Below, we discuss how the reviewed qualitative evidence complements the quantitative studies systematically reviewed on awareness, willingness, and change [19].

Quantitative research on awareness has shown that aware consumers are a minority, that they underestimate or ignore the potential of reducing meat consumption to mitigate climate change, and that consumers ignore that a meatless diet is more environmentally friendly than one including

meat [19]. Reviewed qualitative evidence reaffirms these findings, and synthesized findings add profundity to them. As long as consumers perceive food as detached from the environment, it is going to be hard for them to, first, make sense of the fact that food in itself, apart from transport and packaging, has an environmental impact, and, second, start distinguishing foods according to their environmental impact. This is clearly a barrier to increase awareness, and it may help explain why sustainability messages in favor of meat reduction are difficult for consumers to understand [37]. A second barrier is that consumers have an overall positive image of meat that does not seem to be affected by scientific evidence regarding the environmental degradation caused by meat production. In other words, the values consumers attach to meat trump the value of environmental protection and the value to mitigate climate change. All this indicates that the problem is not (only) a matter of knowledge but a matter of internal dispositions and mental frameworks that could make it hard for consumers to learn and accept scientific evidence regarding the meat environmental impact. De Boer and Aiking [37] have recently proposed several communication strategies based on the psychological theory of frames that may help bridge mental frameworks against meat intake reduction.

Quantitative studies on willingness have shown that consumers willing to reduce their meat intake to alleviate the environment are a minority. Among suggested strategies to curb climate change, meat curtailment is the least preferred [19]. The reviewed qualitative evidence reaffirms these findings and sheds further light. In general, there is a strong resistance to alter meat consumption because sociocultural, culinary, and physiological reasons trump environmental motives. This finding is consistent with the experience of actual meat-reducers. A qualitative study conducted in the UK demonstrated that meat reduction is conditioned by determinants beyond consumers' ethical stance towards the environment or animal welfare. Social pressure and understandings of nutrition constrain consumers' meat-reducing practices [38]. This might explain why consumers would rather adopt any other strategy to counter climate change before eating less meat: People have many strong reasons to continue eating meat. However, the reviewed qualitative evidence indicates that there are several important reasons, like health, nutrition, and taste, that can be allies of environmental motives in increasing consumers' willingness to reduce meat intake. Consumers who have an already positive image of low-meat diets may find in environmental protection a trigger to make a dietary change. This could mean that out of the aforementioned 4Ns, the Ns for necessity (need to eat meat to be healthy) and nice (meat tastes good) have the potential to become strong allies of meat intake reduction if consumers understand that planetary health is essentially linked to human health, and if consumers are helped to generate positive taste expectations for plant-based meals, as the results of this review show and another review suggested [39]. In this sense, probably the most useful finding is what could be consumers' fundamental reason for unwillingness to alter their meat consumption: Their acknowledged lack of nutritional and culinary knowledge that hinders them from being able to imagine an alternative way of eating with little or no meat. This barrier has also been identified by a review on "capability, opportunity, and motivation" to reduce meat intake and adopt plant-based diets [39], and by a review of influence factors on meat reduction [40]. Given the fact that consumers demand nutritional and culinary education, increasing willingness might be less a matter of strong reasons to resist meat intake reduction and more a matter of knowledge and practical skills to actually adopt an appealing low or meatless diet. Stoll-Kleemann and Schmidt [40] have also argued for the need to stop underestimating the importance of providing food-related skills (i.e., how to cook, know where to find affordable and tasty meat-free food) in getting consumers to reduce meat intake.

Quantitative evidence on change has shown that environmental concerns are the main reason to adopt a meatless diet for only a minority among the general population. The influence of environmental motives to drive change is more prevalent among meat-reducers or flexitarians than among vegetarians or vegans [19]. In light of quantitative and qualitative evidence on willingness, these results are a logical consequence. They are also consistent with the fact that the most prevalent reasons to become vegetarian [35,36,41–43] or reduce meat consumption [44] are health and animal welfare.

The reviewed qualitative evidence on change studied only vegetarians and vegans, and not meat-reducers or flexitarians. Still, it may prove useful to explain why environmental protection is a more prevalent primary driver among meat-reducers or flexitarians than among vegetarians and vegans when it comes to change. Qualitative evidence shows that for the majority of vegetarians and vegans, environmental concerns are a secondary or subsidiary reason to health or animal welfare motives. For them, the environment is less a motive to change and more a reason to sustain and further justify their meatless diet. In the case of flexitarians, the lack of qualitative evidence on change [38,45] makes it difficult to understand how environmental concerns influence their dietary choices. Based on current evidence on flexitarian awareness and willingness, however, we hypothesize that environmental concerns have a similar degree of influence in both vegetarians/vegans and flexitarians. In other words, we suggest that both groups of people value the environment arguably the same. The reason why environmental concerns are more prevalent drivers for change among flexitarians than vegetarians may have to do with attributed value to animal welfare and the understanding of what constitutes a healthy diet. While many vegetarians and vegans place a high value on animal welfare to the point of adopting a countercultural diet in the Western context, flexitarians would give a low value to such ethical concerns. Regarding health, vegetarians associate it to a meatless diet while flexitarians to a diet with meat, as the reviewed qualitative evidence and other quantitative evidence [46] has shown. This would support the idea that flexitarians, indifferent to animal welfare and convinced that a certain amount of meat is indispensable to meet human nutritional needs, may find in environmental protection the only driver to eat less meat. Both a review on the psychology of vegetarianism that also considered the literature on flexitarians, and another review on influence factors for reducing meat consumption reinforce this hypothesis [40,47].

A general recommendation for future research on awareness, willingness, and change is to address the geographical and cultural limitations of the reviewed studies. As noted above, they were conducted in North America, the United Kingdom, Australia, and New Zealand only. Since quantitative evidence has already shown that willingness is significantly higher in southern European countries than in northern ones [48], qualitative research is necessary in order to understand why that is the case. Moreover, since meat consumption is increasing in the low and medium-income countries of Asia and Latin America [1,6], qualitative research in these countries is urgent in order to stop such increase before meat consumption reaches the level of the high-income countries. Another limitation of the reviewed qualitative evidence is that cultural and ethnic factors were rarely taken into account in the research design and sample selection. Given that quantitative evidence has shown that there are differences in willingness across ethnicities inhabiting the same country [49], qualitative studies could further illuminate the role of different cultures in awareness, willingness, and change. Finally, since several reviewed studies are a few years old, and environmental concerns have received abundant media attention in the last two years, consumer attitudes towards meat consumption because of the environment might have changed.

Recommendations

The findings of this review suggest the following recommendations for future public health dietary interventions, and for future research on awareness, willingness, and change.

Public health interventions on awareness:

- Prepare consumers to understand that meat has an environmental impact by (1) informing that food, in general, has an environmental dimension, (2) addressing the positive image of meat consumption among consumers (strategies need to be found in order to persuade consumers that meat is not as good as they believe, (3) addressing skepticism towards the effectiveness of personal dietary change.

Scientific research on awareness:

- Investigate consumers' information sources. It would be necessary to compare information sources and credibility attributed to them for consumers already aware and not yet aware.
- Research how to overcome consumers' beliefs and perceptions (barriers) that make it difficult for them to acknowledge the environmental impact of meat.

Public health interventions on willingness:

- Consumers need to feel nutritionally safe and enjoy their meals. Nutritional and culinary education on meatless diets may increase consumers' willingness to reduce their meat consumption.

Scientific research on willingness:

- Quantitative studies have shown that when prior information about the environmental impact of meat is given, willingness to reduce meat consumption increases. However, this could be attributed to social desirability. It would be necessary to observe if prior nutritional and culinary education would be more effective than prior information in increasing people's willingness to reduce meat consumption.
- Since health/nutritional, economic, and taste reasons can be both enablers and barriers depending on who is asked, it is necessary to find out the social covariates that correlate with these reasons as enablers and barriers to reduce meat consumption.

Public health interventions on change:

- Inform consumers that a meatless diet is not simply just another behavior to alleviate climate change. Research has shown that it is probably the most effective personal behavior [50,51].
- Link personal and animal health to planetary health (since personal health and animal welfare are the most prevalent motives to become vegetarian).

Scientific research on change:

- Conduct qualitative investigations on meat-reducers and flexitarians.

5. Conclusions

The few qualitative research studies on consumers' attitudes towards meat consumption in relation to planetary health has proven useful to deepen our understanding of people's awareness of environmental impact of meat consumption, of consumers' willingness to eat less meat to alleviate the negative impacts on the environment, and of dietary change motivated by environmental concerns. Awareness is hindered by certain consumers' beliefs on food, meat, and personal behavior. Thus, public health interventions aimed at increasing awareness should rely less on disseminating information and more on fact-based persuasive communication strategies. Willingness is easily hindered by different reasons and motivations. Therefore, satisfying consumer demands for nutritional and culinary education may significantly increase people's willingness to help the environment by reducing meat consumption. Change is especially understudied because there is no qualitative evidence on flexitarians. Environmental vegetarians and vegans need further education in order to be aware that giving up meat is not just another behavior to help the environment but the most impactful individual practice.

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Appendix A. Characteristics of Included Studies - Interpretive and Critical Research Form [23].

Table A1. People's awareness of the environmental impact of meat production and consumption.

Study	Methods for Data Collection and Analysis	Country	Phenomena of Interest	Setting/Context/Culture	Participant Characteristics and Sample Size	Description of Main Results
Campbell J, Macdiarmid J, Douglas F. 2016. [27]	Focus groups. Grounded Theory, thematic analysis.	Scotland	Young people's perceptions of the environmental impact of the food system and their willingness or openness to the idea of reducing meat consumption for the sake of the environment. Awareness of the environmental impact of the food system.	North East Scotland Schools in rural and urban areas	14 focus groups (n = 103). Ages: 12–15 yrs. old. All socioeconomic groups.	"[there was] awareness of the environmental impact of the food system, which was commonly associated with excessive food packaging, the transportation of foods from other countries, environmental damage of littering, deforestation and factory pollution. Meat was rarely mentioned as a contributor, but when prompted some participants mentioned methane gas produced by cows and deforestation." "environmental concerns are a low priority in food selection decisions with taste and enjoyment, price, desire for satiety and health properties the more salient issues."
Hoek A, Pearson D, James S, Lawrence M, Friel S. 2017. [28]	Qualitative Web-based interview. Semi-structured virtual face-to-face in-depth interviews. Projective techniques	Australia	The subjective experiences and perceptions of consumers regarding healthy and environmentally friendly food behaviors. 1) Choose and describe three food products. 2) Open question regarding the following statement and others: Do not eat too many animal-derived products and eat more plant-based foods	Participants were recruited via a professional market research agency from their opt-in consumer research panel	29 participants with different degrees of involvement with healthy and environmentally friendly food behaviors	1) Environment or sustainability-related food quality aspects were never mentioned spontaneously in the first phase of the interview, except for one highly involved male participant. 2) Knowledge and awareness about the impact on the environment of animal-derived products were generally low.

Table A1. *Cont.*

Study	Methods for Data Collection and Analysis	Country	Phenomena of Interest	Setting/Context/Culture	Participant Characteristics and Sample Size	Description of Main Results
Macdiarmid JI, Douglas F, Campbell J. 2016. [29]	Grounded Theory; Thematic analysis; Focus groups.	Scotland	Public awareness of the environmental impact of food. Show agreement or disagreement with: "some people think what we eat is contributing to climate change" and second "some people think that eating less meat would be good for the environment".	Rural and urban setting in Scotland	87 participants. Age: > 24. 46% Men. Mixed sex. From high and low socio-economic areas	A lack of awareness of the association between meat consumption and climate change. Environmental impact of food associated with food system processes. Mixed response to the statement: "some people think that eating less meat would be good for the environment". Perceptions of personal meat consumption playing a minimal role in the global context of climate change.
O'Keefe L, McLachlan C, Gough C, Mander S, Bows-Larkin A. 2016. [30]	6 focus groups. Iterative coding. Practice theory.	England	Consumer responses to potential changes in food-related practices to mitigate and adapt to climate change. Discussion around "Eating less meat"	Greater Manchester area	N = 40 (21 males) general population.	Initial discussions with respondents indicated that climate change and sustainability did not feature in the current meanings associated with food or in purchasing decisions. When asked to reduce meat consumption by 20%, only a minority discussed the environmental impact of eating meat.

Table A2. People willingness to stop or reduce meat consumption because of its environmental impact.

Study	Methods for Data Collection and Analysis	Country	Phenomena of Interest	Setting/ Context/Culture	Participant Characteristics and Sample Size	Description of Main Results
Campbell J, Macdiarmid J, Douglas F. 2016. [27]	Focus groups. Grounded Theory, thematic analysis.	Scotland	Young people's perceptions of the environmental impact of the food system and their willingness or openness to the idea of reducing meat consumption for the sake of the environment. Reducing meat consumption for environmental benefit	North East Scotland Schools in rural and urban areas	14 focus groups (n = 103). Ages: 12–15 yrs. old. All socioeconomic groups.	A general resistance based on health and social reasons was found to reducing meat consumption for environmental benefit.
O'Keefe L, McLachlan C, Gough C, Mander S, Bows-Larkin A. 2016. [30]	6 focus groups. Iterative coding. Practice theory.	England	Consumer responses to potential changes in food-related practices to mitigate and adapt to climate change. Discussion around "Eating less meat"	Greater Manchester area	N = 40 (21 males) general population.	Only a minority discussed the environmental impact of eating meat, when asked to reduce meat consumption in a 20%
Macdiarmid JI, Douglas F, Campbell J. 2016. [29]	Grounded Theory. Thematic analysis. Focus groups.	Scotland	Public awareness of the environmental impact of food. -1) 'Would you be willing to reduce the amount of meat you eat? 2) Why (yes or not)?	Rural and urban setting in Scotland	87 participants. Age: > 24. 46% Men. Mixed sex. From high and low socio-economic areas	Majority said no because meat is pleasurable, or they already eat few of it, or because they have already reduced meat consumption. Those ready to reduce meat consumption would rather do it because of health benefits. Skepticism towards scientific evidence that meat reduction is good for the environment.
Tucker CA. 2014. [31]	Focus groups. Frame thematic analysis. Sociodemographic and other quantifiable data statistically analyzed.	New Zealand	How individuals might respond to various meat consumption reduction strategies. Reducing meat consumption for environmental benefit.	Geographycally varied range of participants	N = 69 (32 males) (42.6% aged 36–65) (65.2% ate meat at least four times a week)	69.7% saw favorably for New Zealanders to adopt meat curtailment strategies in order to address environmental issues. Only ten participants named the environmental benefits of reducing meat consumption. The majority referred to economic, taste, and health reasons.

Table A3. Environmental vegans and vegetarians.

Study	Methods for Data Collection and Analysis	Country	Phenomena of Interest	Setting/ Context/Culture	Participant Characteristics and Sample Size	Description of Main Results
Beardsworth A, Keil E. 1991. [36]	Semi-structured interviews. Thematic analysis.	United Kingdom	The motivations, beliefs, and attitudes of practicing vegetarians. Identify the single most important motive for vegetarianism or veganism.	Not specified	N = 76 self-defined as vegetarians or vegans and not members of ethnic groups in which some form of vegetarianism is customary practice. Age = 16 or older. (Majority 26–35 years old). Substantial proportion of participants were professional and white-collar workers.	Ecological concerns, related to arguments about the environmental aspects of animal husbandry, were indicated as a principal motive by just one respondent.
Fox N, Ward K. 2008. [35]	Online ethnographic research in participants from an international message board. Open-ended survey plus follow-up interviews. Data analyzed thematically using framework analysis.	International	The motivations of vegetarians. Open-ended questions designed to elicit participants' motivations for vegetarianism, attitudes to meat-eating, health and animal welfare, and related life-style choices.	Online Westerners	International, mainly from North America, UK and Australasia. N = 33 questionnaire N = 18 follow-up e-mail interviews. 70% = females Age = 14–53 yrs. old. Median = 26 Vegans and vegetarians.	Only 1 respondent had become vegan for explicitly environmental motivations. For both health and ethical vegetarians, environmental concerns had become important, even though they were not the initial motivation for their dietary choices.
Menzies K, Sheeshka J. 2012. [32]	Semistructured interviews. Type of analysis: accurate description.	Canada	The experience, reasons, and contexts associated with leaving vegetarianism. Reasons for vegetarianism.	University Campus	N = 15 vegetarians (9 women) and 19 exvegetarians (14 women). Ages 18–35 Mean age: 24 Mainly university students.	7/15 vegetarians because of animal/environmental concerns 16/19 ex-vegetarians because of animal/environmental concerns. Overwhelmingly, among the ex-vegetarians, the moral concern that led them to become vegetarian was a commitment to the welfare of animals and the environment. Ex-vegetarians came to believe that ways other than avoiding meat were available to support animal and environmental welfare, such as eating limited quantities of meat or only "organically farmed" meat.

Table A3. *Cont.*

Study	Methods for Data Collection and Analysis	Country	Phenomena of Interest	Setting/ Context/Culture	Participant Characteristics and Sample Size	Description of Main Results
Potts A, White M. 2008. [33]	Open-ended questionnaires sent via email or post. Thematic analysis.	New Zealand	Key antecedents to becoming vegetarian, early personal impressions on human-animal relationships, and the experience of being a vegetarian kiwi. List influences and antecedents for avoiding meat, and/or other animal-derived products.	93% of participants lived in urban environments, although 34% had grown up on or around farms	N = 155 (35 men) Women aged 14–85 (mean age = 39; median age = 39); Men aged 19–71 (mean age = 45; median age = 44). 38% of participants (44 women and 16 men) classified as vegan; 37% as ovo-lacto vegetarians (42 women and 15 men); 7.5% as ovo-vegetarians (9 women and 3 men); 7.5% as lacto-vegetarians (10 women and 2 men); 5% as pescatarians (7 women and 1 man); and 8 as meat-eaters (all women).	Environmental reasons were listed by a total of 13 participants.
Testoni I, Ghellar T, Rodelli M, De Cataldo L, Zamperini A. 2017. [34]	Individual face-to-face interviews. Phenomenological Analysis and grounded ethnographic method.	Italy	Whether vegetarianism is symbolically mediated by disgust and whether this emotion ostensibly prevents us from being afraid of death. Reasons for adopting a vegetarian or vegan diet.	Northern and Central Italy. Formal and informal meetings (food-related gatherings, spiritual and prayer meetings).	N = 22 (12 women) Vegetarians 55% Vegans 45%	Ecological concerns were not the reason for refusing meat. However, this reason appeared in all narrations assuming a tripartite form: as 1) a way to help protect the planet, 2) a way to achieve environmental equilibrium, and 3) as part of affective and philosophical reasons evoking transcendence and spirituality.

Appendix B

Table A4. Critical appraisal results.

Citation	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
Beardsworth A, Keil E. 1991. [36]	N/A	Y	Y	Y	Y	N	N	Y	U	Y
Campbell J, Macdiarmid J, Douglas F. 2016. [27]	Y	Y	Y	Y	Y	N	N	N/A	N/A	N/A
Fox N, Ward K. 2008. [35]	N/A	Y	Y	Y	Y	N	N	Y	U	Y
Hoek A, Pearson D, James S, Lawrence M, Friel S. 2017. [28]	Y	Y	Y	Y	Y	U	N	Y	Y	Y
Macdiarmid JI, Douglas F, Campbell J. 2016. [29]	Y	Y	Y	Y	Y	N	N	Y	Y	Y
Menzies K, Sheeshka J. 2012. [32]	N/A	Y	Y	Y	Y	Y	Y	Y	Y	Y
O'Keefe L, McLachlan C, Gough C, Mander S, Bows-Larkin A. 2016. [30]	Y	Y	Y	Y	Y	N	N	N/A	U	Y
Potts A, White M. 2008. [33]	N/A	Y	Y	Y	Y	N	N	Y	U	Y
Testoni I, Ghellar T, Rodelli M, De Cataldo L, Zamperini A. 2017. [34]	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Tucker CA. 2014. [31]	N/A	Y	Y	Y	Y	N	N	Y	N	Y

Table A5. Critical appraisal instrument [23].

Question	Yes	No	Unclear	N/A
1. Is there congruity between the stated philosophical perspective and the research methodology?				
2. Is there congruity between the research methodology and the research question or objectives?				
3. Is there congruity between the research methodology and the methods used to collect data?				
4. Is there congruity between the research methodology and the representation and analysis of data?				
5. Is there congruity between the research methodology and the interpretation of results?				
6. Is there a statement locating the researcher culturally or theoretically?				
7. Is the influence of the researcher on the research, and vice-versa, addressed?				
8. Are participants, and their voices, adequately represented?				
9. Is the research ethical according to current criteria or, for recent studies, and is there evidence of ethical approval by an appropriate body?				
10. Do the conclusions drawn in the research report flow from the analysis, or interpretation, of the data?				
INCLUDE _____ EXCLUDE_____				

Appendix C. List of Study Findings with Illustrations

Table A6. People's awareness of the environmental impact of meat production and consumption.

	Study: Campbell 2016 [27] - Awareness
Finding	Awareness of the environmental impact of the food system [understood as] packaging, transportation, littering, deforestation and factory pollution. (C)
Finding	Meat rarely mentioned as a contributor [. . .] prompted participants mentioned methane gas produced by cows and deforestation. (C)
Finding	Environmental concerns are a low priority in food selection (C)
	Study: Hoek 2017 [28] -Awareness
Finding	Environment or sustainability-related food quality aspects never mentioned spontaneously [. . .] except for one highly involved male participant. (C)
Finding	Taste, price, brand, convenience, familiarity, and habit usually came first, with health aspects mentioned as secondary key quality attributes. (C)
Finding	Environmentally friendly was associated with [. . .] "organic" and "free-range", and [. . .] to packaging (less of it, [. . .] being recycled/recyclable). (C)
Finding	[Hard] for participants to come up with words or products for environmentally friendly than for health (C)
Finding	Some participants confused this [environmentally friendly] with ethical aspects, which are not necessarily related to environmental impact, such as animal friendliness. (U)
Illustration	Low involved female, age 61: . . . Well I'm sort of environmentally, I look towards our poor little creatures, our chickens and how, if they're barn-laid or caged, and I just think those poor little animals. And yeah, I gotta tend to agree, I do pay a little bit for eggs and that. Just I suppose that's peace of mind, more so than you get anything else.
Finding	Knowledge and awareness about the impact on the environment of animal-derived products were generally low. It was regarded as somewhat higher or different from plant foods, but participants could not describe in detail how, except for a few higher involved participants. (U)
Illustration	Interviewer: Do you think there that animal products have the same impact on the environment as plant foods? Medium involved male, age 64: Not exactly the same, but they're going to have an impact on the environment in a different way. If you've got cattle grazing there . . . they have to eat the grass, but whether that changes the environment that much I don't know much.
Finding	Meat production was not associated with the food industry and intensive production processes, but discussed more along the lines of small scale farming with cows and sheep grazing in the field, although some did reflect on animal welfare issues. (U)
Illustration	Medium involved male, age 64: Not exactly the same, but they're going to have an impact on the environment in a different way. If you've got cattle grazing there . . . they have to eat the grass, but whether that changes the environment that much I don't know much.

Table A6. *Cont.*

Study: Macdiarmid 2016 [29] - Awareness	
Finding	Discussants typically described food packaging […], transportation of food […] and production and processing of food […] in relation to the environmental impact of food. (C)
Finding	The environmental impact of meat production or its contribution to climate change was rarely spontaneously mentioned, (C)
Finding	Those who agreed with the statement ["some people think that eating less meat would be good for the environment"] were inclined to associate eating meat with deforestation and methane produced by cattle, (C)
Finding	Perceptions of personal meat consumption playing a minimal role in the global context. It was viewed by some that personally eating less meat would make very little difference to climate change mitigation. Within this theme two sub-themes emerged; i. personally unable to make a difference (me vs. others), and ii. bigger environmental issues (it is bigger than food). (U)
Illustration	"no, you know, you say well does not having a steak today help because it takes thousands of other people to do the same thing and how do you convince them? No I don't think I would change either, it's selfish but … " (M, LD, U) "it's all to do with the population as well, in certain countries like India and obviously China, as well and they're having an impact." (M, HD, U)
Finding	The statement ["some people think that eating less meat would be good for the environment"] produced an emotive response evident by body language where participants strongly disagreed with the statement. Some […] expressed skepticism about the scientific evidence or were simply unconvinced by the argument, Others believed that compared with other behaviors meat consumption was trivial or that regardless of the impact meat was an essential component of our diet, for health reasons and tradition. A few participants had not considered the link between food/meat and the environment before coming to the group and said that they would want more evidence before they would accept the statement. (U)
Illustration	As illustrated by one woman, "Because I dunnae [don't] see where their arguments is coming from [eating less meat]. Nobody's convinced me otherwise"(W,HD,U). "If someone said meat is poor for the environment I would ask for a heck of a lot of information and material to convince me that that is a big issues, certainly compared to the rest of things in the world." (M, LD, R)
Study: O'Keefe 2016 [30] - Awareness	
Finding	During "warm-up" discussions participants were asked about current shopping influences. The dominant issues across all groups were food prices and affordability, sustainability issues were not mentioned unless prompted by the researcher. (C)
Finding	Participants were asked what the term "sustainability" meant to them, the only issue common to all groups was food miles. It should be noted that none of the groups mentioned "climate change" directly in this prompted discussion on sustainability. (C)

Table A7. People's willingness to stop or reduce meat consumption because of its environmental impact.

	Study: Campbell 2016 [27] - Willingness
Finding	[Resistance to meat reduction because of the environment . . .] Participants expressed concern that reducing meat intake may be detrimental to human health as a result in not getting enough nutrients, especially protein. (C)
Finding	[Resistance to meat reduction because of the environment . . .] They did not want to eat less meat due to the pleasure [of eating meat]. (C)
Finding	[Resistance to meat reduction because of the environment . . .] They did not want to eat less meat due to the [. . .] central place meat represented in their daily diet. (C)
Finding	[Resistance to meat reduction because of the environment . . .] not wanting to eat differently from family or friends. (C)
Finding	[Resistance to meat reduction because of the environment . . .] being concerned about the lack of palatable alternatives (C)
Finding	[Resistance to meat reduction because of the environment . . .] they did not eat much meat anyway and there was no need to cut down. (C)
	Study: O'Keefe 2016 [30] - Willingness
Finding	[Price] Animal welfare issues were often mentioned alongside price and quality in discussions around respondents' current reasons for reducing [20%] meat consumption. (U)
Illustration	"I've stopped buying meat because of the price, but also because of the way that it gets from being alive to on your plate. I'm not sure I'm particularly comfortable with that".
Finding	Only a minority may reduce 20% meat consumption motivated by environmental reasons (U)
Illustration	Only a minority discussed the emissions implications (i.e., environmental impact) of eating meat: "Meat has the highest carbon emissions by such, you know, a high level. And meat: "Meat has the highest carbon emissions by such, you know, a high level."
Finding	Predicted reluctance by other family members was perceived as one of the biggest barriers to this 70% reduction. [Social reasons] (U)
Illustration	Females considered men in their families would find both a 20% and 70% reduction in meat consumption problematic: "I'd be happy to eat less meat but my husband likes to have meat on every dinner". Males, however, expressed similar levels of personal willingness to reduce meat consumption.
Finding	Parents reported they would be happy to reduce [70%] meat consumption for themselves but not for their children, due to their perceptions of the role of meat in satisfying nutritional needs. (U)
Illustration	I prefer them to eat meat cause when they do they're more full and I know they're getting a proper meal inside them.
Finding	Participants discussed barriers to making the 70% reduction which included the need to develop new competences, expressed as a lack of awareness of reduced-meat recipes and the perceived effort involved in making vegetarian meals. (C)
Finding	[Lack of meat associated with being poor as resistance to a 70% meat intake reduction] (U)
Illustration	... introducing additional meanings associated with meat consumption: "They'd say, 'Mum, are you poor? Where is our meat?

Table A7. *Cont.*

Finding	Participants spoke of having grown up with traditional "meat and two veg" meals. [as resistance to 70% meat reduction] (U)
Illustration	Participants spoke of having grown up with traditional "meat and two veg" meals.
Finding	Participants [. . .] felt unsure of how to incorporate satisfying meat-free meals into their diet concerned that reducing meat to such an extent [70%] would result in boring and repetitive meal times (U)
Illustration	"So if someone who eats a lot of meat like myself who doesn't eat particularly a lot of veg, what would you eat then?"
Finding	Respondents stressed the need to be given positive messages on what could be eaten rather than simply being told not to eat meat [when asked for a 70% reduction]. (U)
Illustration	"If a campaign was like don't eat meat twice a week, I think a lot of people would go, 'So I starve for two days a week? You have to give people an alternative"
Finding	A 70% meat reduction was frequently referred to as a "vegetarian" diet by participants. (C)
Finding	[Animal Welfare] Animal welfare issues were often mentioned alongside price and quality in discussions around respondents' current reasons for reducing [20%] meat consumption. (U)
Illustration	"I've stopped buying meat because of the price, but also because of the way that it gets from being alive to on your plate. I'm not sure I'm particularly comfortable with that".
	Study: Macdiarmid 2016 [29] - Willingness
Finding	Three sub-themes emerged in the accounts of why people were not willing to eat less meat. i. Meat is pleasurable... (U)
Illustration	"It's nothing to do with [disliking] the vegetables, I just like meat." (M, HD, R).
Finding	Three sub-themes emerged in the accounts of why people were not willing to eat less meat. i. Meat is [...] social (C)
Finding	Three sub-themes emerged in the accounts of why people were not willing to eat less meat. i. Meat is [...] traditional. (C)
Finding	[Resistance to meat reduction because of the environment . . .] (e.g., a proper meal has to include meat, meat fills you up), (U)
Illustration	"it's not just me that's eating meat in my house. My husband's a bit of a 'it's not a meal unless it has meat in it'." (W, LD, U)
Finding	[Resistance to meat reduction because of the environment . . .] it is part of a healthy diet . . . (C)
Finding	Some participants claimed that they only ate small quantities of meat and therefore did not need to reduce their consumption. (U)
Illustration	"I think we eat the right amount, as well, we don't overindulge, we don't have meat every night or whatever, but when we do have it it's good, local, locally sourced as much as possible, but I wouldn't like to eat any less." (W, LD, R)
Finding	Those who claimed to have already reduced their meat intakes (particularly red meat) believed that they did not need to reduce it further. Reasons given for cutting down meat included health concerns, food scares (e.g., CJD, horse meat scandal), the high cost of meat, living with a partner who was vegetarian or changing dietary habits with aging. (C)

Table A7. *Cont.*

Finding	Some participants claimed that they only ate small quantities of meat and therefore did not need to reduce their consumption. (U)
Illustration	"I think we eat the right amount, as well, we don't overindulge, we don't have meat every night or whatever, but when we do have it it's good, local, locally sourced as much as possible, but I wouldn't like to eat any less." (W, LD, R)
Finding	Those who claimed to have already reduced their meat intakes (particularly red meat) believed that they did not need to reduce it further. Reasons given for cutting down meat included health concerns, food scares (e.g., CJD, horse meat scandal), the high cost of meat, living with a partner who was vegetarian or changing dietary habits with aging. (C)
Finding	The minority who said that they would consider eating less meat were more inclined to do this for health benefits rather than environmental gains. (C)
Finding	Would only be willing [to reduce meat consumption] if there was evidence to support it would be beneficial [for the environment]. (U)
Illustration	"I'd eat less but they'd have to prove to me that it was going to make a difference."
Finding	Some of those who thought they might be persuaded to cut down their meat consumption said that they would not know what to replace it with, which was seen as a potential barrier. (C)
Finding	Reluctance to reduce meat consumption persisted as a dominant theme throughout the discussions despite awareness of the potential environmental consequences. (U)
Illustration	"I am aware that ruminants cause a problem with methane, that wouldn't stop me eating meat." (M, LD, R).
Finding	Other non-food pro-environmental changes were described as preferable to eating less meat... (U)
Illustration	"I probably won't eat less meat. I'm aware of the environment I take other steps, fine I do my bit, recycling, driving less but I probably wouldn't change my diet." (M, HD, R)
	Study: Tucker 2014 [31] - Willingness
Finding	In terms of economics, most of the participants that commented noted the relatively (and increasingly) expensive cost of meat. [As a reason to reduce meat consumption] (U)
Illustration	"It's heaps cheaper to eat vegetarian. I've seen people on TV doing household budgets, saying that you don't have to have meat every night" (10m), and "I think meat is going to be unsustainable because the price will go up and will prompt people to eat less meat"
Finding	On the appeal of meatless or reduced-meat meals, participants commented on the way such meals (can) look, and also on the texture. (U)
Illustration	"I'd love to eat [the vegetarian meals pictured on the hand out] all the time – every night – for sure! Gorgeous!" (39f); and "I think taste for me is important, but it's also about texture. If you're going to buy a meat replacement, eggplant is so meaty and you don't really have to eat meat" (47f).
Finding	Comments related to health or nutritional reasons in favor of a reduced meat diet tended to either extoll the virtues of more vegetables and fruits in the diet, […] or point out the health issues associated with too much meat consumption – or consumption of unhealthy meat types. (U)

Table A7. *Cont.*

Illustration	"More fresh vegetables in your diet makes you feel better" (8m), In our household, it's health reasons for eating less meat because I have got diabetes. So I look now at less meat and lower fat and all that kind of stuff...you know it's a healthy diet and it's not like you're missing out on anything, it's just less...red meat and more of your lower GI carbs and things like that. (21f)
Finding	Environmentally, participant comments reflected concerns about the environmental implications of agricultural production (U)
Illustration	"I don't think the way we eat meat on this planet is sustainable for our health or the planet. [Meat production] is a pollutant to waterways and soil"
Finding	Opposition to reducing meat consumption was mainly expressed in relation to […] and due to economic reasons. (C)
Finding	The difficulties noted with a reduced (or meatless) diet were based on three main factors: first, the notion that meat is more convenient (and meatless meals less so): Second was that many people stated they did not know how to cook (appealing) meals without meat. (U)
Illustration	"That's all very well if you've...got the time on your hands to do it..." (39f); "Vegetarian food can be delicious, but it requires more time and knowledge" (62m)
Finding	A number of rationales were provided as to why meat is a necessity in the diet, including the need for animal-based healthy proteins, and why on the other hand a vegetarian diet could be bad. [...] Other reasons for opposition to a reduced meat diet included how humans are biologically meant to eat meat as omnivores, and that not eating meat can lead to ill health. (U)
Illustration	The vegetarian 'cheese on cheese' phenomenon, where everything has cheese slathered all over it...it's not good for them. [Research] says that if you eat some meat you probably would be okay [and not get] all these cancers that people get, but if you eat a lot of cheese, dairy, you are in big trouble. (41f)
Finding	Another often cited reason [to resist meat curtailment] was based on satiety (and often linked to protein as well) that growing young people, and those engaged in physical labor in particular, need to have animal-based foods to get and keep them feeling full. (U)
Illustration	If you've got a young family you've got to think that basically they're filling up with food for a certain length of time but not for long. It's a bit like Chinese food; Chinese food is nice but it doesn't last long. They've got to have protein to fill them, especially since they are growing, which comes back to needing meat. (20f)
Finding	Overall there was a firm view that it would be quite difficult to reduce meat consumption in New Zealand given that it is such an entrenched aspect of people's lives and upbringing. (U)
Illustration	"...it's probably quite engrained. We've been brought up with meat and there's not a lot of advertising for other ideas and it's so easy to slap something on the barbecue" (46f).

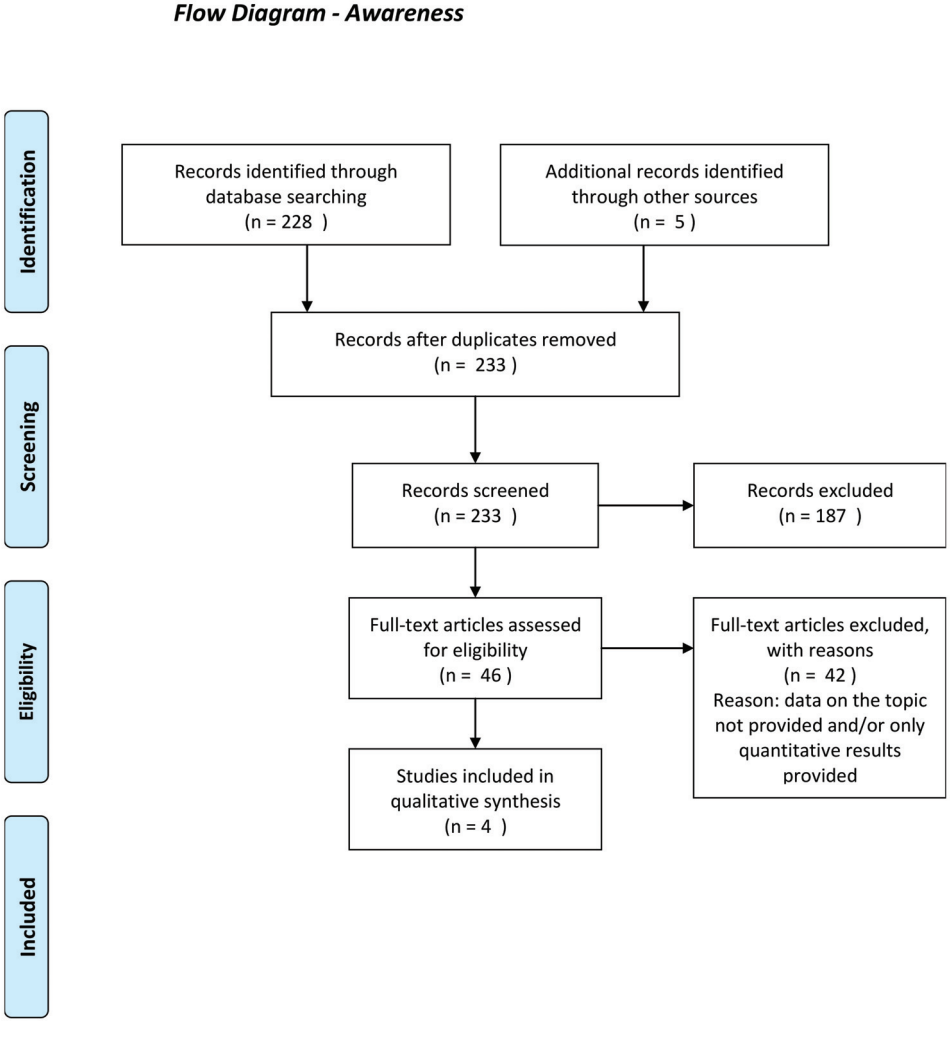
Table A8. Environmental vegans and vegetarians.

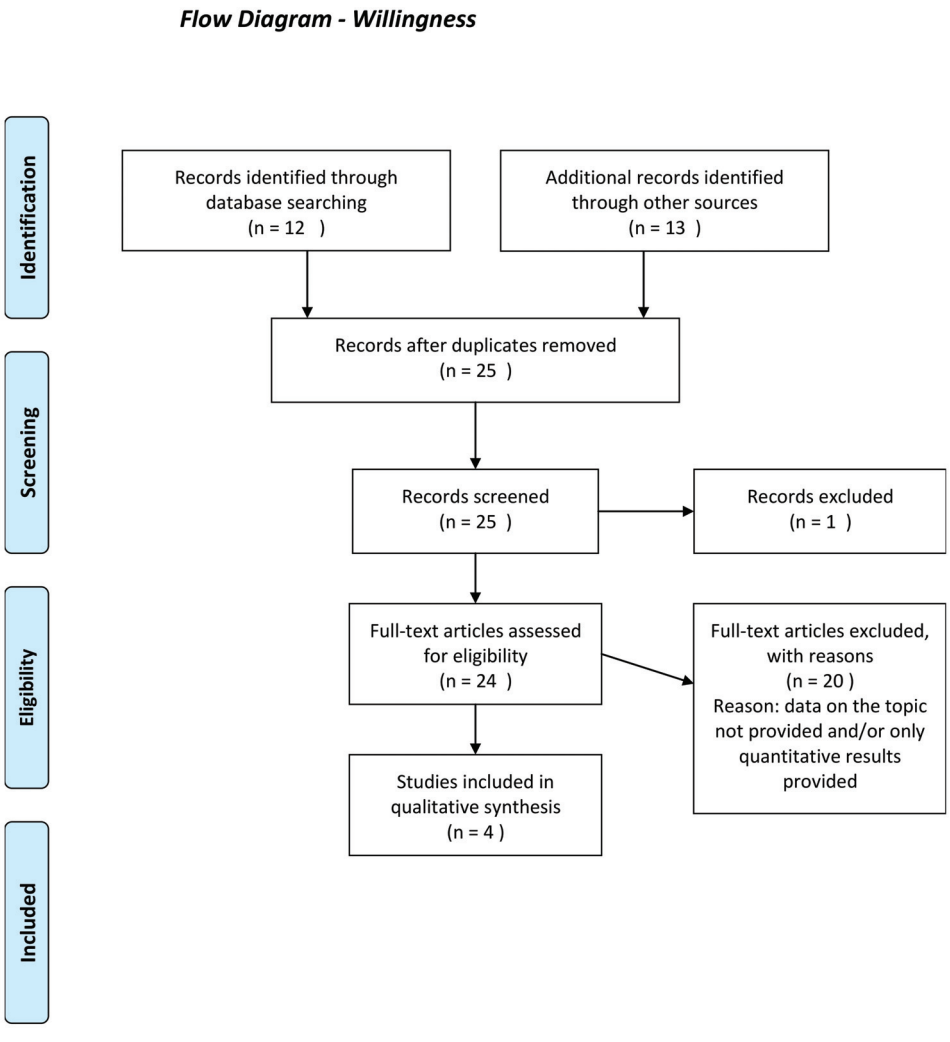
Study: Beardsworth 1991 [36] - Change	
Finding	Interestingly, the linkage between the idea of animal rights and human rights was made quite frequently, most often in the context of the argument that meat production for consumption in the West was an environmentally undesirable and inefficient mode of agricultural activity which condemned many Third World inhabitants to inadequate dietary standards. (C)
Finding	A typical pattern might involve an interviewee whose reasons for a move towards vegetarianism were primarily moral, but who was confident that s/he was also deriving health benefits from the dietary changes undertaken, and might also believe that a contribution, however small, was being made to the protection of the environment, or indeed, to the more equitable distribution of global food provision. (C)
Study: Fox 2008 [24] - Change	
Finding	Among our sample of 33 participants in the VegForum, only one respondent, 29-year-old Canadian Simon, had become vegan for explicitly environmental motivations. (U)
Illustration	Among our sample of 33 participants in the VegForum, only one respondent, 29-year-old Canadian Simon, had become vegan for explicitly environmental motivations, in order to 'do something to maintain the planet'.
Finding	These data suggest that for both health and ethical vegetarians, environmental concerns had become important, even though they were not the initial motivation for their dietary choices. (U)
Illustration	Sometimes concern with the wider environment emerged directly from a perspective related to the impact of meat consumption for human or animal health. "I try and only eat organic egg and milk products, for the animal and human population health and well being. Non-organic farming of animals are breeding grounds for antibiotic-resistant bacteria and viruses, which can spread to humans. As well as not being very nice for the animal. I try and be environmentally friendly as I can."
Finding	The 'environmentally-friendly' aspects of vegetarianism also often linked implicitly with a range of other non-diet behaviors concerning environmental protection. (U)
Illustration	I try and get organic food mostly and put a considerable amount of effort into being as environmentally friendly as possible: I recycle, try and cut down on waste, conserve energy, cycling instead of driving, etc. Most of my friends think I'm weird because in addition to the above I also refuse to eat anything with E numbers or hydrogenated oils and also boycott animal-testing companies.
Finding	Tim had been raised as a vegetarian, but said his move to veganism was a way to 'do more for the environment. I just want to be as green as I can' (U)
Illustration	Tim had been raised as a vegetarian, but said his move to veganism was a way to 'do more for the environment. I just want to be as green as I can'
Study: Menzies 2012 [32] - Change	
Finding	Most of the largely young adults embraced a vegetarian diet for ethical reasons, not health concerns. Among continuing vegetarians, the moral reasons for choosing vegetarianism were almost evenly split between a belief in animal rights [. . .] and animal/environmental concerns [. . .]. (C)
Finding	Overwhelmingly, among the ex-vegetarians, the moral concern that led them to become vegetarian was a commitment to the welfare of animals and the environment. Ex-vegetarians came to believe that ways other than avoiding meat were available to support animal and environmental welfare, such as eating limited quantities of meat or only "organically farmed" meat. (C)

Table A8. *Cont.*

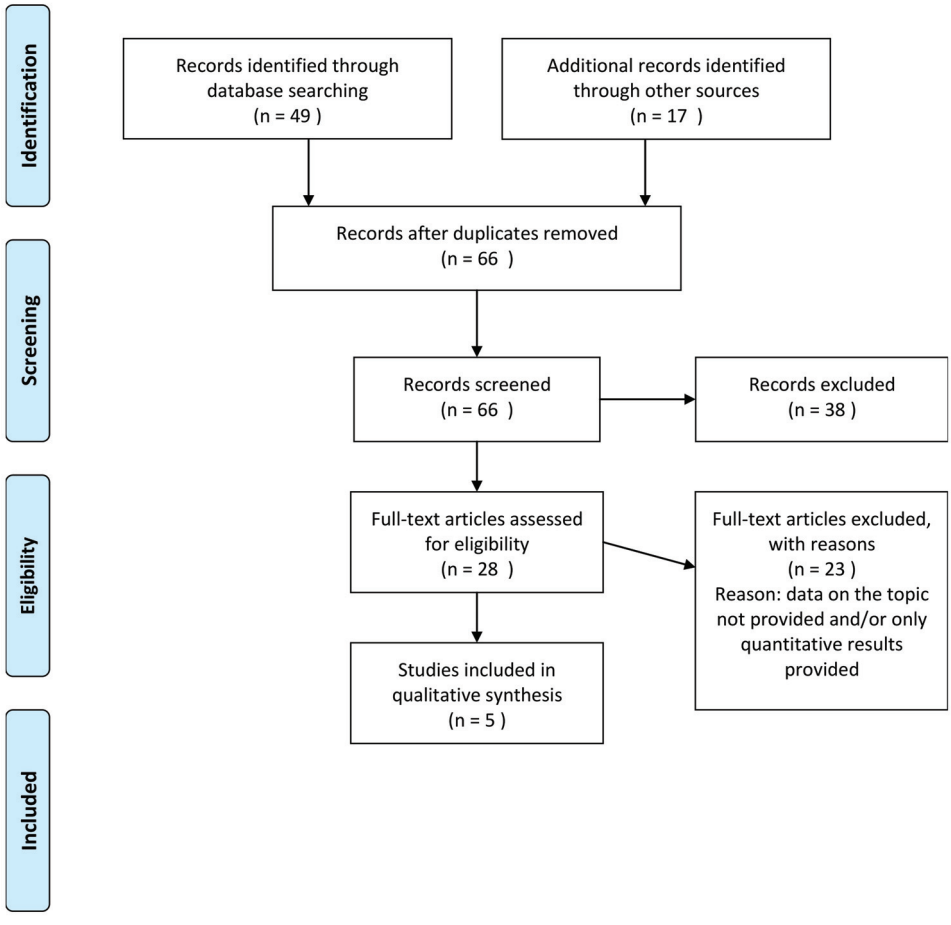
	Study: Potts 2008 [33] - Change
Finding	Participants listed ethical, spiritual, and environmental reasons for avoiding meat and/or other animal-derived products. [...] environmental reasons (8% women and 4% men). There was some overlap here, as several cited multiple motives. (C)
Finding	These participants established a link between vegetarianism and a love for nature that fostered their thinking about nonhuman sentience. (C)
	Study: Testoni 2017 [34] - Change
Finding	Among the 22 participants in this study, different initial motivations for vegetarianism were identified: […], environmentalism, […]. (C)
Finding	Even though we have not found that this was the reason for refusing meat, this reason [environmental and ecological impact of meat production] always appeared in all the narrations, [of why not eating meat]. (U)
Illustration	Even though we have not found that this was the reason for refusing meat, this reason [environmental and ecological impact of meat production] always appeared in all the narrations, [of why not eating meat].
Finding	Many participants, whose first explanations were personal health, also described a range of environmental commitments aimed at protecting the life of the Earth (U)
Illustration	Well, if we have a critical approach, it is far too evident; if we do not want tropical forests to be cut down, maybe, it would be better for the world not to eat meat, because we could feed much more people with field products than with meat.

Appendix D. Flow Charts of the Different Phases of the Qualitative Synthesis Review




Flow Diagram - Willingness
Identification
Screening
Eligibility
Included
Records identified through database searching (n = 12)
Additional records identified through other sources (n = 13)
Records after duplicates removed (n = 25)
Records screened (n = 25)
Records excluded (n = 1)
Full-text articles assessed for eligibility (n = 24)
Full-text articles excluded, with reasons (n = 20) Reason: data on the topic not provided and/or only quantitative results provided
Studies included in qualitative synthesis (n = 4)

Flow Diagram – Dietary change made



Appendix E. Meta-aggregative Flowcharts

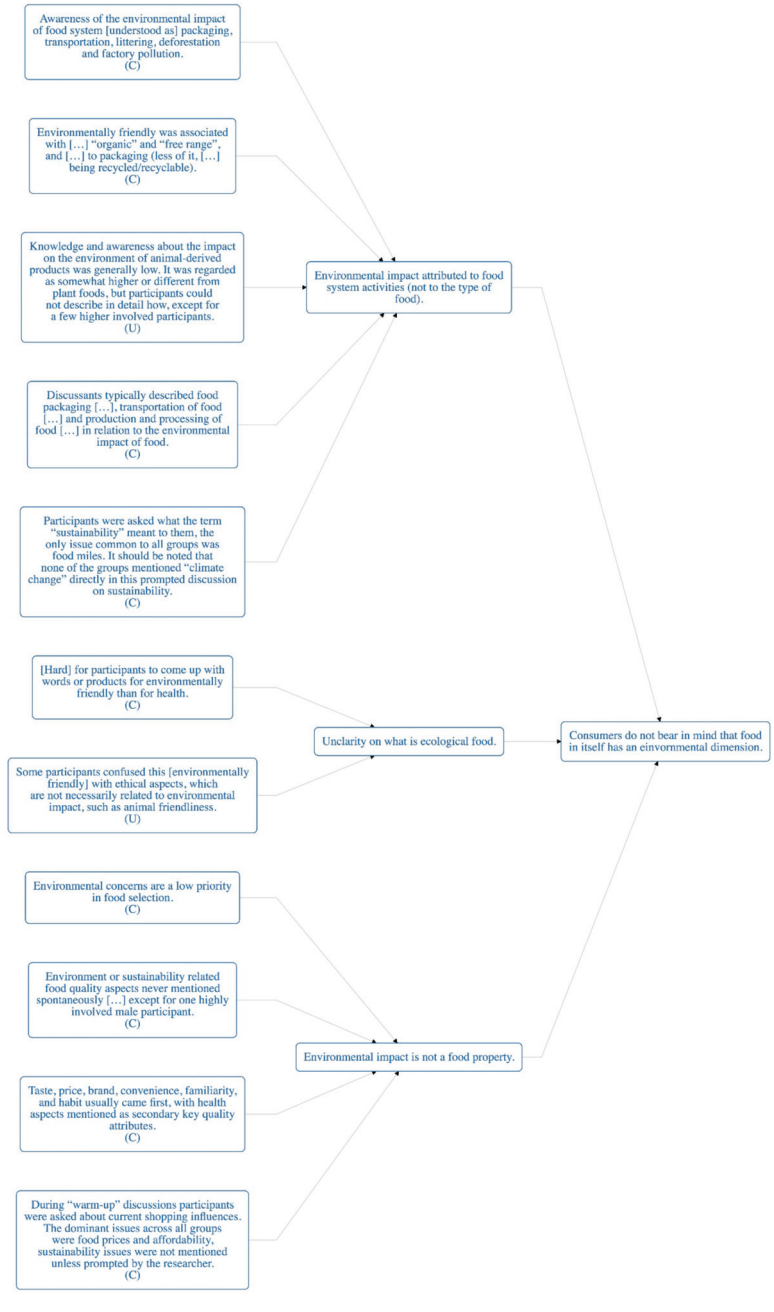


Figure A1. Meta-aggregative Flowchart for the first synthesized finding on awareness.

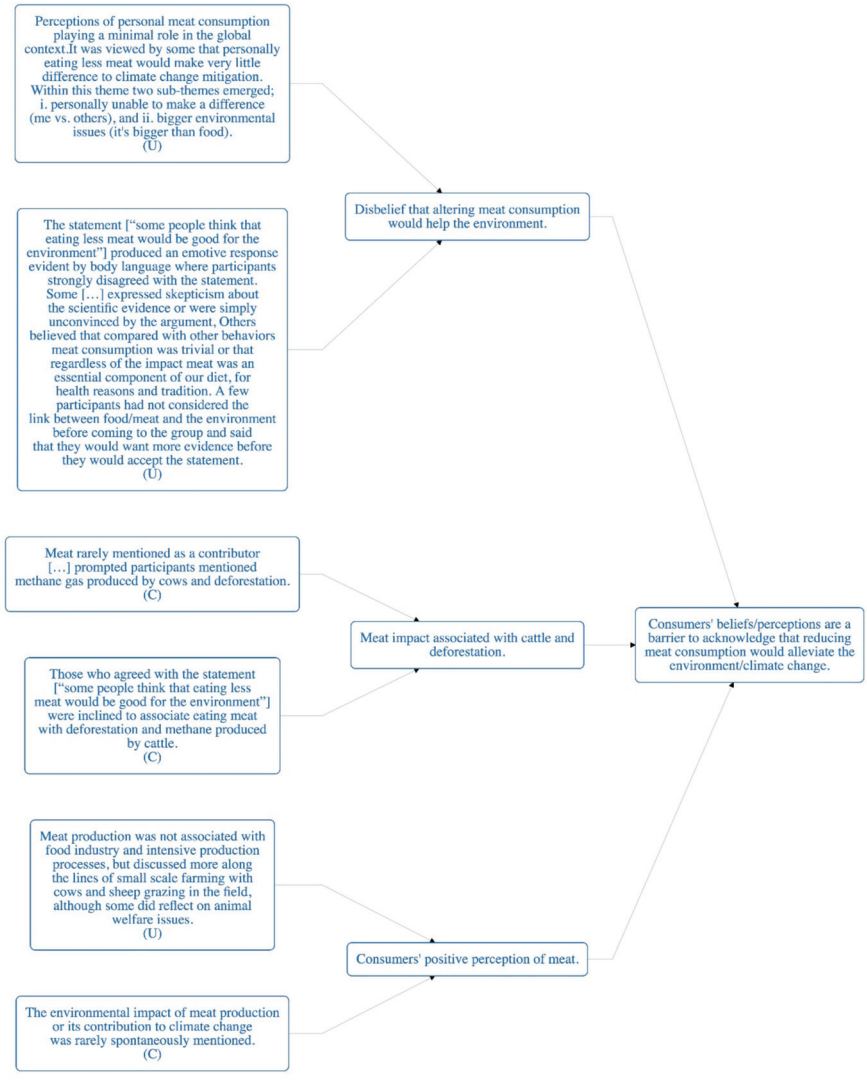


Figure A2. Meta-aggregative Flowchart for the second synthesized finding on awareness.

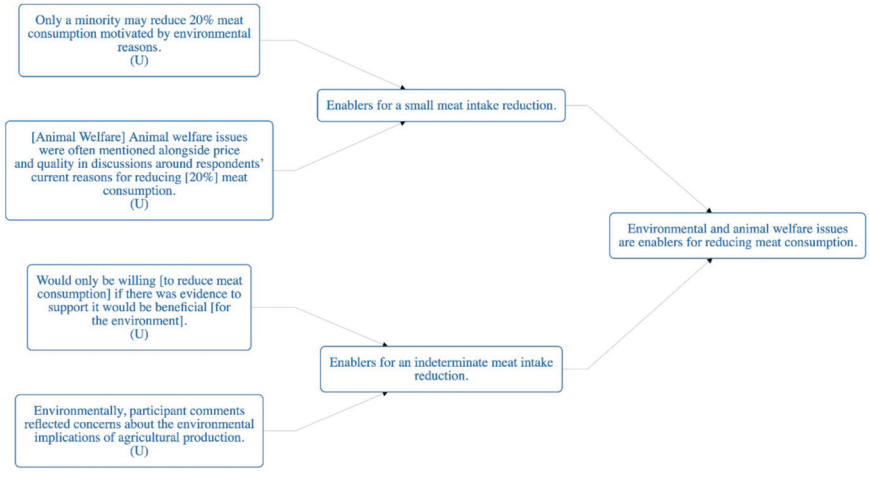


Figure A3. Meta-aggregative Flowchart for the first synthesized finding on willingness.

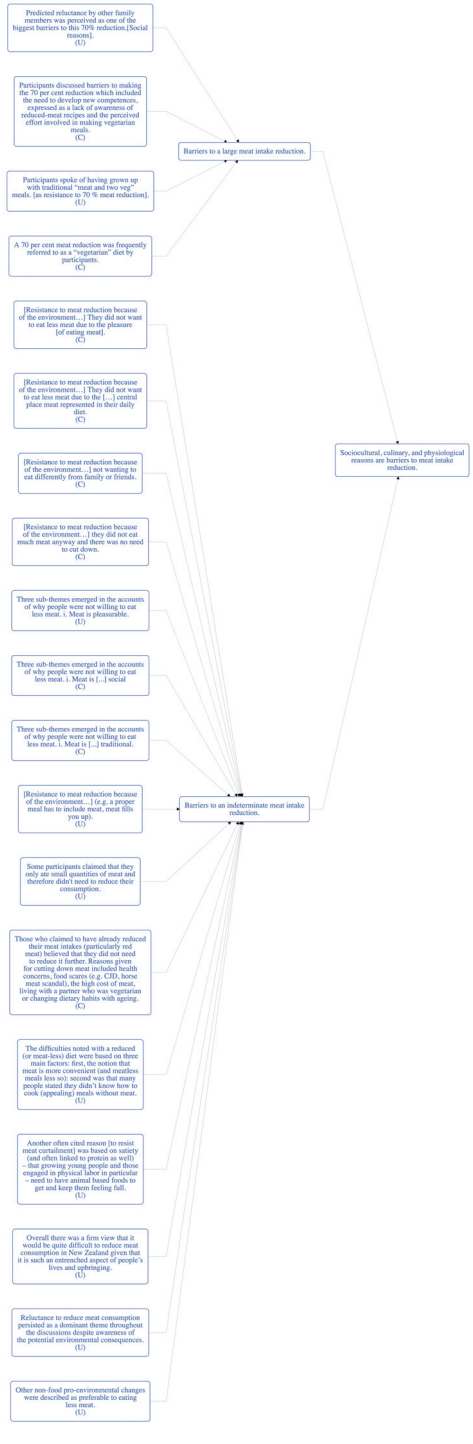


Figure A4. Meta-aggregative Flowchart for the second synthesized finding on willingness.

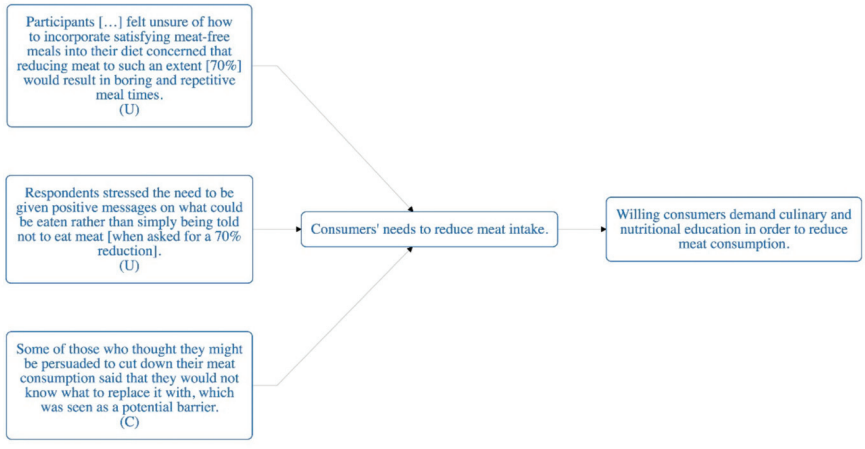


Figure A5. Meta-aggregative Flowchart for the third synthesized finding on willingness.

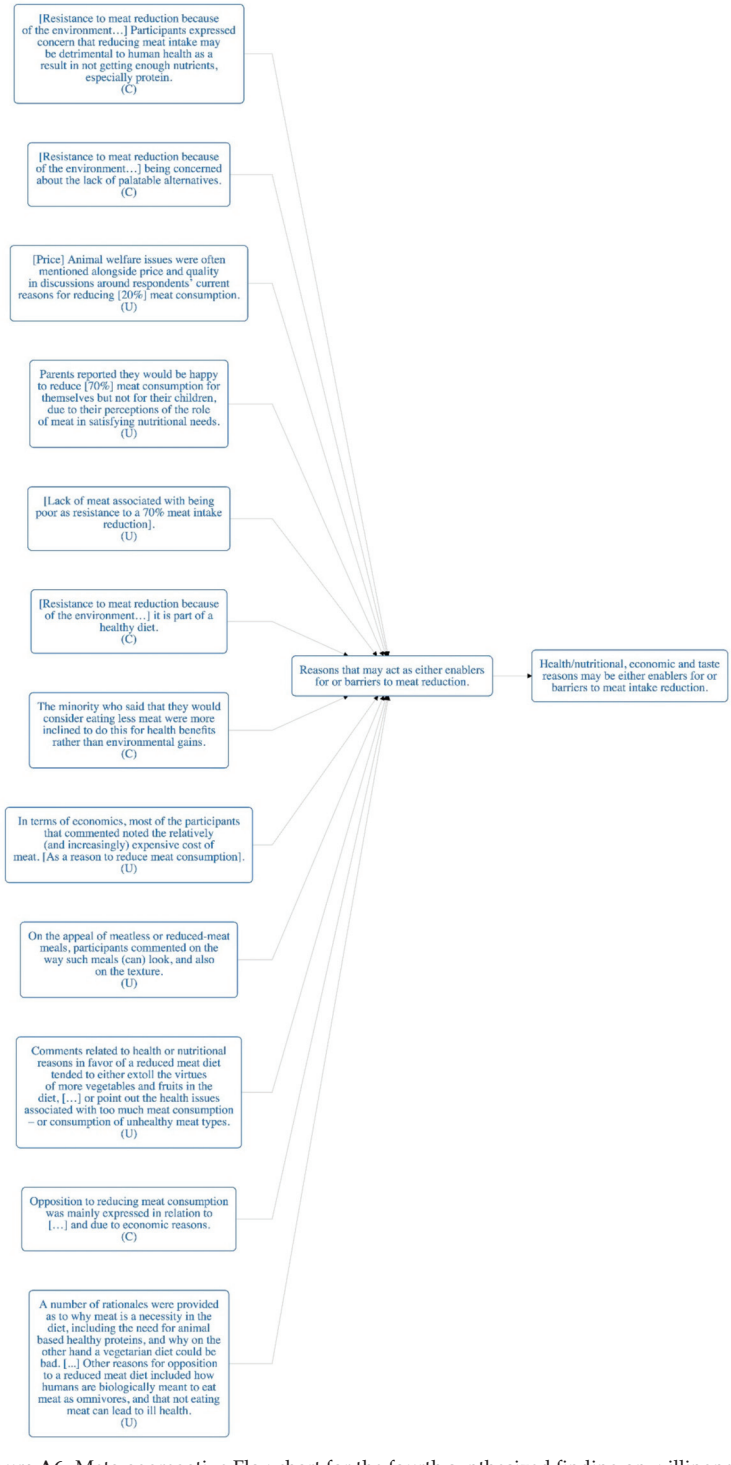


Figure A6. Meta-aggregative Flowchart for the fourth synthesized finding on willingness.

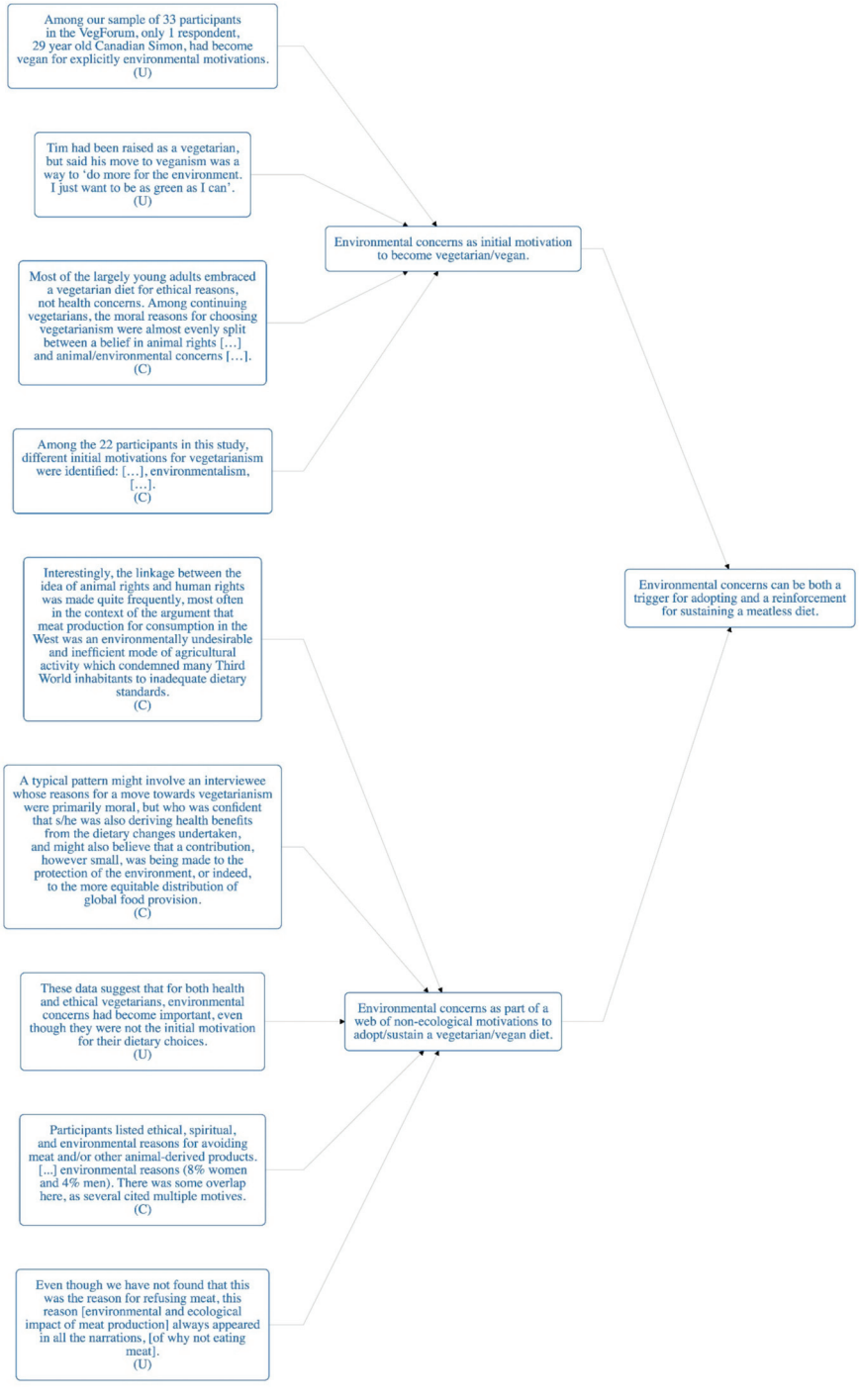


Figure A7. Meta-aggregative Flowchart for the first synthesized finding on change.

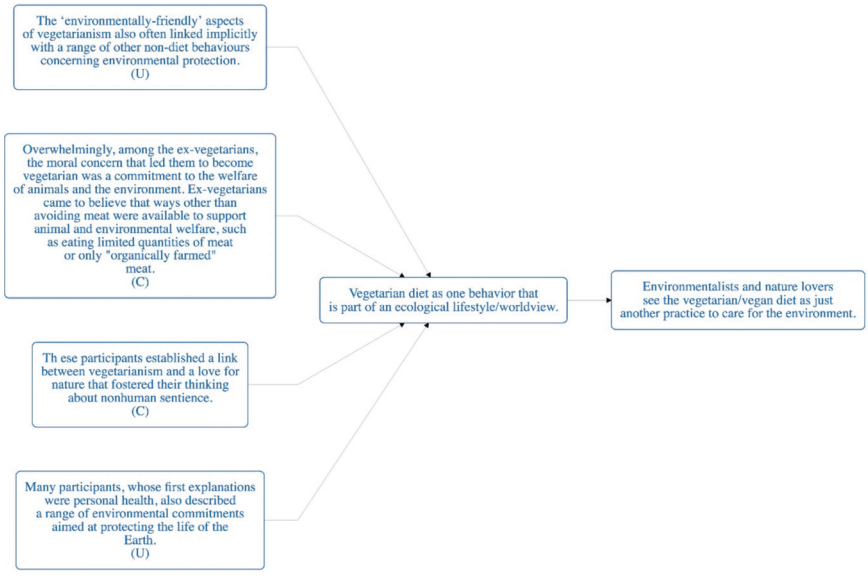


Figure A8. Meta-aggregative Flowchart for the second synthesized finding on change.

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Consumers Demand for Social Farming Products: An Analysis with Discrete Choice Experiments

Tiziano Tempesta [1], Daniel Vecchiato [1,*], Federico Nassivera [2] Maria Bugatti [1] and Biancamaria Torquati [3]

[1] Department of Land, Environment, Agriculture and Forestry, University of Padova, 35020 Legnaro (PD), Italy; tiziano.tempesta@unipd.it (T.T.); mariabugatti@libero.it (M.B.)
[2] Department of Agricultural, Food, Environmental and Animal Sciences, University of Udine, 33100 Udine, Italy; federico.nassivera@uniud.it
[3] Department of Agricultural, Food and Environmental Sciences, University of Perugia, 06123 Perugia, Italy; bianca.torquati@unipg.it
* Correspondence: daniel.vecchiato@unipd.it; Tel.: +39-049-827-2647

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Abstract: This paper analyses the demand for social farming (SF) products. In particular, we investigate the preferences of consumers who buy their products from large retailers, rather than from solidarity purchasing groups or other niche markets using a sample of 225 consumers. In this regard, a discrete choice experiment (DCE) was carried out to estimate the willingness to pay (WTP) a premium price for the purchase of a common product (i.e., eggs) from farms that employ disabled people. The attributes considered in our DCE design are the employment of disabled people and two additional attributes which may have ethical implications for the choices. The results indicate that consumers are interested in buying SF products, with about 74% of the sample willing to buy the eggs produced by social farms and the average WTP being equal to €1.36 for a pack of six eggs. Moreover, the average WTP for the use of labour of disabled people attribute amounted to €0.69 for a pack of six eggs.

Keywords: social farming; food; agriculture; consumer demand; disability; discrete choice experiment; eggs; sustainable agriculture

1. Introduction

In addition to the socio-economic contribution of agri-food production, societal expectations toward agriculture focus on its role in promoting and proposing activities aimed at bolstering environmental and landscape services such as water management, social care and cohesion [1]. The reason is that agriculture is still involved in the largest use of land by far [2] and that rural areas are increasingly shifting from being productive areas to what can be called consumptive areas [3] that need to perform social, recreational, and maintenance functions. Multifunctionality, as a core item in the common agricultural and rural development agenda, refers to the different functions that agriculture performs in society, functions that are not only oriented to the production of food and fibres, but also include, for instance, the creation of new job opportunities and the development of rural areas to attract other new customers of rural services [4]. These new opportunities for farms within the multifunctional paradigm are diversely detected, with the common target to reconsider their predominant orientation towards primary production and profit maximization and to rearrange the adoption of a more socially responsible pattern of production [5–9]. Therefore, multifunctionality can be the new unifying paradigm to bring post-modern agriculture in accord with the new societal demands [4]. Among the various multifunctional practices, social farming (SF) allows the farms to reach their scope of activities [10,11]. SF has appeared as a multifunctional innovative strategy [12] that contributes to social care through the production and processing of agricultural products by

incorporating direct social benefits in employment, training, and therapy or rehabilitating groups at risk of social emargination [13]. Following this logic, many European countries and regions have tried to promote SF among local communities to create and popularize innovative work practices [14].

The term "social farming" is also called care farming, farming for health, green care, and connective agriculture [15], and is used to describe farming activities when they are oriented toward the promotion of the rehabilitation and care of disadvantaged people and the integration of people with low job-holding capacity, i.e., people with psychophysical disabilities, convicts, drug addicts, minors, and immigrants. Besides rehabilitation and sheltered employment, other examples of SF services include therapy, lifelong education and other opportunities to contribute to enhance social inclusion [16–18]. SF is the result of a new, widespread positive perception of agricultural and rural resources, enhancing the interest in the beneficial effects of nature and agricultural activities on the social, physical, and mental wellbeing of people [19], thus linking elements of healthcare system to agriculture (social and therapeutic horticulture), landscape or nature conservation (eco-therapy), animal keeping (animal-assisted intervention), or animal husbandry (care farming) [20].

SF and its relevance is now emerging in Italy, as well as in other European Countries and other parts of the world [16,20–22]. It is paving the way for a new chance to diversify rural activities, to enhance the role of a renewed agriculture in society, and to strengthen the economic and social viability of farms and rural communities as a whole [10,23–26]. Although there is great interest for SF, social farms still suffer the need to find adequate funding [27]. Analysing social co-operatives, which represent one of the most relevant SF initiatives in Italy, Fazzi [17] pointed out their important involvement in the management of social health services outsourced and financed by local healthcare boards, and at the same time their need to have a profitable activity to reduce their risks of dependence on public funding only. Besides the public sector, new opportunities for social farms rely on, for example, the private demand for a social service, e.g., clients or client representatives that contact a care farm directly without connecting their needs to a public institution [27].

In recent years, a new phenomenon is spreading in many industrialised countries, where consumers reacted to the global standardisation and homologation of agricultural products [11] developing a special sensitivity to their ethical attributes. Such penomenon is the so-called critical consumption or the anti-consumerism movement. Among the ethical characteristics of products, "critical" consumers are very interested in issues such as environmental sustainability, social justice and inclusion, income distribution, economic diversification, and preservation of small and local firms [28]. The new needs of these consumers, not satisfied by the standard products, resulted in the development of new markets. These markets mainly rely on short value chains [29–32] or direct purchase from the producers. In this way the consumers can satisfy their need for local, typical, and very often organic products, characteristics that are a proxy for values such as sustainability, solidarity with small farmers, fair trade and personal health. The increasing interest about the ethical content of agricultural products, may also develop a notable opportunity for social farms, given that their products comply with the ethical requirements of these new consumers. In fact, the growing demand for these products suggests that the ethical content of the SF produce could be remunerated by the market [11,33].

Many studies highlighted that consumers are willing to pay a premium price for socially responsible products [34], namely, for products produced by companies that adopt production and organizational techniques capable of providing social benefits that are not incorporated in other goods, and therefore, do not bring any direct advantage to the buyer.

Analysing the studies that estimated the consumers' willingness to pay (WTP) for socially responsible products Tully and Winer [34] highlight that the social benefits usually considered in the literature concern the environment, animals, or other people. With regard to the benefits of other people, previous studies considered the WTP related to fair trade for products imported from tropical or sub-tropical countries such as coffee, chocolate, and bananas [34,35].

To our knowledge, only one study has analysed the demand and WTP for SF products [36]. However, in this study, people who buy food from alternative food networks (AFNs) were mainly

interviewed. In general, although these people currently constitute the reference market for SF in Italy, they have a greater sensitivity towards socially responsible products, thus being more attentive to the use of short supply chains and the consumption of organic and low environmental impact products. Nevertheless, we should notice that only a small fraction of Italian consumers buy food from AFNs, as the large majority of consumers usually buy food from supermarkets; thus, it would be useful to understand if and to what extent they are sensitive to the ethical and environmental aspects related to food production. In particular, the increase in the consumers' knowledge on SF could favour its diffusion in the future, increasing social benefits and at least partially reducing the costs borne by public structures for social inclusion of people with disabilities or other social disadvantages. Additionally, it should be noted that large-scale distribution has sometimes shown itself to be sensitive to the support of products with a high degree of ethical attributes, favouring and encouraging their sale.

The objective of this paper is to analyse the demand for SF products, but contrary to Torquati et al. [36] that focused on AFNs, we considered a sample of consumers who buy their products from large retailers. We want to test whether consumers not belonging to any specific niche market have a positive WTP for SF products. Therefore, a discrete choice experiment (DCE) was carried out to estimate the willingness to pay a premium price for the purchase of a common product (eggs) from farms that employ disabled people.

The attributes considered in our DCE design are the employment of disabled people and two additional attributes which may have ethical implications for the consumers' choices. The first is the possibility that the eggs are produced by organic farming, while the second considers the location of the producing farm, more precisely, if the producing farm is located near the place of purchase. The purchase of organic products can be promoted both by the benefits that can be obtained from it on a personal level (consumption of foods without chemical residues or with better organoleptic characteristics), and by the environmental benefits resulting from the adoption of more environmentally friendly production methods. The proximity of the production site enables the consumption of fresh products, and simultaneously, reduces the environmental impact of transporting goods.

The rest of the paper is organized as follows. Section 2 describes the methodology. In Section 3, we present the results, while in Section 4, we discuss the results and summarise the conclusions.

2. Material and Methods

2.1. Questionnaire Structure

To analyse the potential demand for eggs produced by companies that practice SF, we designed a questionnaire of four parts.

The first part presents the research and provides some information on SF. The interviewees were advised that during the interview they would be asked to indicate their preferences regarding the purchase of eggs produced by different methods, including the employment of disabled people, that is, companies that practice SF, organic farming respecting animal welfare, and production in farms located near or far from the place of purchase.

The second part was structured to collect information on the buying habits of the respondents. First, the interviewees were asked to indicate where they usually buy food (type of commercial structure and distance from home) and how often. Afterwards, the interviewees were asked to rate the importance of the following elements when buying food according to a five-point Likert scale (ranging from not relevant at all to highly relevant): the brand, price, organoleptic characteristics (taste, smell, etc.), produced by organic farming, quality certifications (protected designation of origin (PDO), protected geographical indication (PGI), etc.), processed products (products prepared or ready to use), health and hygienic safety, place of production (Italy or abroad), convenience (offers), and trust in the seller. Some questions were asked to verify the degree of SF knowledge and to identify which factors could favour the purchase of SF products. The third part included the DCE and the six choice sets that are described in the following paragraphs.

Finally, the socio-economic characteristics (gender, age, educational level, and employment position) were collected in the last part. Since people in Italy are very reluctant to provide data on family income, we asked them to judge their family standard of living which somehow provides a more accurate measure of the real well-being level of the family.

The questionnaire was initially tested on a small group of people to check the comprehensibility and duration before being administered to the interviewees. Following this preliminary analysis, changes were made to simplify some questions and provide a greater clarity in others.

2.2. The DCE Methodology

We applied DCE to estimate the consumers' preferences with regard to SF products. Given that the DCE approach is well known nowadays and widely applied in marketing, agribusiness, environmental valuation, health economics, and transportation studies, our presentation of DCE will not be exhaustive, providing only a broad overview of the methodology and introducing the reader to its specific terminology. We invite the readers not very familiar with such approach and interested in a deeper understanding to read Hensher et al. [37], Hauber et al. [38] or Ben-Akiva et al. [39]. The DCE is one of the stated preference methods used in economics [40], having its solid theoretical foundations in the Lancaster's consumer theory [41], where random utility models are applied [42,43]. The popularity of DCE is due to its ability to estimate both the value of a good/service as a whole and the implicit value of its attributes [44]. A further aspect that deserves attention is its applicability to ex-post and ex-ante valuations. In fact, given that the DCE presents a hypothetical scenario to respondents, it allows us to value future scenarios/products, thus performing ex-ante valuations.

Data are collected using either a paper-based or a digital questionnaire. The DCE goal is to analyse the respondents' preferences with regard to a hypothetical scenario/product. Respondents are presented with such hypothetical scenario and then requested to choose -often repeatedly- from a bundle of different options (such bundle is technically called the 'choice set') according to their preferences. The different choice options included in the choice set usually present the same good/service, characterised by a set of attributes, with the levels of such attributes varying in each choice option. For example, considering eggs, an attribute could be the 'egg size', and its levels could be 'small', 'medium', and 'big'.

A key aspect of the DCE preparation is the 'experimental design' [45], namely, the process that allows the researcher to build the choice sets that will be presented to respondents. The first phase of the 'experimental design' is the selection of the key attributes of the good/service presented to the respondents, with the levels of attributes being determined in this phase. To reduce all possible combinations of attributes and levels that will be presented to respondents, the researcher creates a subset of them using the 'experimental design' according to different statistical criteria (see Johnson et al. [45] for more details). The final subset of all potential choice sets is then included in the questionnaire and presented to the respondents, who are expected to choose their preferred alternative among those options presented in the choice sets. According to the random utility theory, each respondent assigns a certain utility to each choice option in the choice set and performs his/her choice maximizing his/her expected utility. Although it is not possible to measure the respondents' utility directly, the researcher can observe their choices. Thereby, the part-worth utilities of the attribute levels are estimated linking the probability of choice to the respondent utility function. Such estimates can be performed applying different models, including a popular model which is McFadden [46] conditional logit model, often referred to as the multinomial logit (MNL) model in the DCE literature. MNL models have been widely applied when studying the sample mean preferences, while the random parameter logit models (RPL) [47–49] and latent class models (LCM) [50] are applied to investigate heterogeneity across respondents. Although both models are suitable, they differ. RPL takes the preference heterogeneity into account in a continuous fashion, considering it random with a specific density function, whereas LCM can be considered a semiparametric variant of MNL [47], as the

probability of choosing an option is conditional on two aspects: the good characteristics and the individual belonging to a cluster of people with common preferences.

2.3. Attributes Selection and Experimental Design

As highlighted in the introduction, the purpose of the survey was to assess the consumers' WTP for a pack of six eggs produced using different production methods. In this regard, following Torquati et al. [36], four different attributes were considered:

1. type of labour used (only by "able-bodied" persons or includes persons with "disabilities");
2. place of production (close to or far from the place of purchase);
3. the production technique (conventional or organic);
4. the price for a pack of six eggs (2.4, 2.7, and 3€).

The lower price level for the attribute price (€2.4) was chosen based on the average price of the eggs sold in the supermarkets in the area where the interviews were conducted. Since the total number of profiles (choice options) derived from all the possible combinations of attributes and levels was too high ($2^3 \times 3^1 = 24$ profiles), through an experimental orthogonal design, 12 profiles were selected from which six choice sets were created, with each choice set being composed of two profiles and the opt-out (or no choice option). Figure 1 shows a choice set used in the DCE. Data were analysed using a RPL model [39,46,49], which has the advantage of considering the sample heterogeneity, treating it in a continuous fashion and allowing the estimation of the individual WTP for each attribute investigated. The RPL model examined, along with DCE attributes, both the socio-economic characteristics and motivational aspects of respondents for choosing the eggs. To measure the effect of individual characteristics on the demand for eggs, three interaction variables were included in the model: age over 60 years, high or medium-high living standards, and consumer attitudes with respect to the purchase of food products, with the latter obtained through a cluster analysis.

Attributes	**Buying: Option A**	**Buying: Option B**	**Not buying**
Type of worker	Not disabled worker labour	Not disabled worker labour and disabled workers	
Place of production	Anywhere	Close to the place of purchase	
Organic	Yes	No	
Price for a pack of six eggs (€)	3.00	2.40	
Your choice	☐	☐	☐

Figure 1. A choice card presented in the choice experiment.

The interviewees were characterised as belonging into two clusters by means of k-means cluster analysis performed on the scores given to the seven elements considered when buying food. The k-means cluster analysis was estimated using the SPSS statistical package, version 25. A dummy variable referring to the respondents that belong to the second cluster was interacted with the eggs' attributes in the utility function used in the RPL model. The following utility function (Equation (1)) was used to estimate the model:

$$U(x_i) = \sum \beta_i \cdot A_i + \sum \beta_{A_i \cdot AGE} \cdot A_i \cdot AGE + \sum \beta_{A_i \cdot HST} \cdot A_i \cdot HST + \sum \beta_{A_i \cdot CLUST} \cdot A_i \cdot CLUST + \beta_{price} \cdot PRICE + \beta_{OPTOUT} \cdot OPTOUT \quad (1)$$

where A represents all attributes except price, *AGE* is a dummy variable assuming the value 1 if the respondents have an age greater than 60 years, *HST* is a dummy variable assuming the value 1 if the respondents have a standard of living high or very high, *CLUST* is a dummy variable assuming the value 1 if the respondents belong to cluster number 2, *PRICE* is a continuous variable for the attribute price, and *OPTOUT* is a dummy variable that assumes value 1 when the choice option is 'Not Buying' (see Figure 1). All independent variables in the utility function, except for *PRICE* and *OPTOUT*, were effect coded. Using Equation (2), it is possible to estimate the average WTP for each attribute level as follows:

$$WTP_i = -\frac{2\beta_i}{\beta_{price}} \quad (2)$$

Looking at Equation (2), β_i was multiplied by 2 to take into account that the variables in the model were effect coded [51].

Data were analysed with the NLogit version 6 software. We applied RPL models to take into consideration preference heterogeneity. RPL models were estimated using 1000 Halton draws and the random parameters were assumed as normally distributed, incorporating into the model only interaction terms that had a significant result after an exploratory analysis. To derive the demand function it is important to consider the relationship between the premium price and the quantity sold. This enables producers to define a marketing strategy for their product, given that they know the market share that their product will have at each price level. To derive such information we analysed respondents heterogeneity by means of the RPL model, and in particular their individual WTP for the attribute levels considered in the DCE. From the individual WTPs we derived their complementary cumulative frequency distribution. The latter can be considered a proxy for the market demand function, under the assumption that respondents state their WTP for a single product unit. To evaluate the complementary cumulative frequency distribution, the following logistic function was estimated for each attribute (Equation (3)):

$$MarketShare = \frac{1}{\frac{1}{u} + b_0 \cdot b_1^{Price}} \quad (3)$$

where u is the upper bound of the market share (equal to 1), and *Price* corresponds to the individual WTP.

Once known, the complementary cumulative frequency distribution can help producers in optimising their marketing strategies choosing the price and quantity that maximise their profit, in accordance with their market power.

2.4. Data Collection

Data collection was carried out in the period from 10 October to 15 November 2017. A total of 225 questionnaires were collected by direct interviewing at the entrance or at the supermarkets of the municipality of Brescia, Italy. We could thus analyse the behaviour of the population as a whole and not of particular segments of demand. In fact, in Italy, people usually buy food at large retail chains. To avoid distortions, the interviews were carried out every day of the week, at different times of the day and in front of different supermarkets in the Brescia municipality to collect a highly representative sample of the consumers.

3. Results

3.1. Socio-Economic Characteristics of Respondents

The average age of respondents was 55 years, being higher than the national average (44 years), since generally the younger ones do not do the shopping. In fact, respondents younger than 20 years of age were only 5.3% of the sample, and those with an age between 21 and 30 years were 10.7%

(Table 1), whereas 44.0% were over 60 years of age. Regarding gender distribution, the sample was not distributed in a balanced way between males and females, with females constituting 71.6% of the sample. This imbalance is because women usually deal with food shopping in most Italian families.

Table 1. Socio-economic characteristics of the sample.

Variable	N.	%
Age		
<21	12	5.3
21–30	24	10.7
31–40	24	10.7
41–50	26	11.6
51–60	40	17.8
>60	99	44.0
Total	225	100
Education level		
Primary school	22	9.8
Middle school	40	17.8
Secondary school	97	43.1
University degree	66	29.3
Total	225	100
Employment status		
Employed	96	42.7
Unemployed	11	4.9
Housewife	21	9.3
Student	10	4.4
Retired	86	38.2
Other	1	0.4
Total	225	100
Number of family members		
1	62	27.6
2	79	35.1
3	38	16.9
4	29	12.9
5 or more	17	7.5
Total	225	100
Living standard		
Low	17	7.6
Medium low	77	34.2
Medium high	126	56.0
High	5	2.2
Total	225	100

With respect to the educational qualification, 9.8% of the interviewees had an elementary school certificate or no educational qualifications, 17.8% had a lower middle school certificate, 43.1% had a high school diploma, and 29.3% had a college degree. Compared to the average Italian situation, in the sample, people with a diploma were more likely to be represented than those with only a primary school certificate. Nevertheless, it should be noted that in urban and metropolitan areas, the population has higher educational qualifications than the average of the country.

Regarding the employment status, 42.7% said they were employed, 4.9% were unemployed, 9.3% were housewives, 4.4% were students, and 38.2% were retired.

Most respondents lived alone (27.6%) or with another person (35.1%), while a minority belonged to families with four or more members (20.4%). This datum could be associated with age, given that single-person families often constitute elderly people who live alone.

As noted above, considering the difficulty encountered in Italy in collecting information on the family income of respondents, to have at least an indication of the economic status of the sample, people were asked to assess their standard of living. Most respondents (56.0%) considered it medium-high, while 34% considered it low-medium, 7.5% low, and only 2.2% high (Table 1). Therefore, in the majority of cases, the interviewees considered themselves quite well-off; however, it can be assumed that for psychological and privacy reasons, there has been a tendency not to declare themselves belonging to either of the two extreme categories.

3.2. Buying Habits of Respondents

The majority of respondents (94.7%) shopped in supermarkets, 16.9% in stores, and 11.6% in discount stores, with the percentage of those attending local markets (8.4%) or members of solidarity purchasing groups (5.8%) being much lower (Table 2). This last figure is confirmed by the fact that only 1.6% stated that they are members of consumer associations. In most cases, the place where the shopping is done is less than 1 km from home (68.0%), while only 6.2% buy food in shops located more than 5 km from home (Table 2). Since the interviewees live in an urban area, it can be assumed that, due to their buying habits, they could hardly consider the opportunity to buy food directly at the place of production. In these cases, the purchase of social agriculture products could take place only if they were also offered for sale in large-scale distribution or local markets located in urban areas.

Table 2. Interviewees buying habits.

Variable	N.	%
Place of shopping food *		
Supermarkets	213	94.7
Other stores	38	16.9
Local markets	19	8.4
Farms	10	4.4
Discount stores	26	11.6
Solidarity purchasing groups	13	5.8
Internet	1	0.4
Distance from home of the food shopping place		
Less than 1 km	153	68.0
From 1 to 5 km	58	25.8
Form 5 to 10 km	11	4.9
More than 10 km	3	1.3
Total	225	100
Eggs purchase frequency		
Once a week	98	43.6
Once every two weeks	71	31.6
Once every three weeks	15	6.7
Once a month	32	14.2
Less than once a month	9	4 .0
Total	225	100

* Multiple choice question.

Considering the purpose of this study, it is beneficial to understand the behaviour of the interviewees regarding the purchase of eggs. As reported in Table 2, 43.6% of respondents buy eggs once a week, 31.6% once every two weeks, and only 4.0% do not buy eggs regularly (less than once a month), indicating that eggs are a common ingredient of the respondents' diet.

67.6% of respondents said they buy organic products; however, this does not mean that they consume exclusively organic products, but that these products are bought occasionally. This is confirmed by the fact that 53.8% stated that they sometimes bought organic eggs. This observation is important because it suggests that the interviewees are aware of the good under investigation.

Although 120 respondents (53.3%) stated that they had already heard about SF, this knowledge seems to relate more to the existence of the phenomenon rather than to the real meaning of SF in normative terms. In other words, we can assume that the knowledge of SF is quite superficial because it is based mainly on hearsay and not on direct experience. In fact, with reference to the Italian context, in a study conducted by Nassivera et al. [52], only 22% of respondents stated that they had an adequate knowledge of SF. With reference to the factors most considered during food shopping, we can see (Table 3) that the greatest importance is attributed to health and hygienic safety (4.04), followed by sales discount (3.70), Italian production (3.66), organoleptic characteristics (3.60), and price (3.45). On the contrary, processed food (2.02), the brand (2.52), and organic production (2.57) are of little importance. This last datum somehow contradicts the statements concerning the purchase of organic products, but is derived to a large extent from the presence of two categories of interviewees within the sample who attribute a markedly different importance to organic food.

Starting from the scores given by the interviewees to the factors considered in the purchase of food, using a cluster analysis, the interviewees were divided into two clusters with quite distinct characteristics (Table 4). Only in the case of the purchase of processed products, the members of the two groups seemed to have similar preferences. Conversely, in all other cases, average scores differed at least with a 95% probability. To get a more precise idea of the greatest differences between the two groups, the Cohen's d coefficient was calculated.

Table 3. Average scores of the factors affecting the food purchase by the interviewees.

Factors	N.	Mean †	Mean Standard Error	95% Conf. Int. *	
				Inf. **	Sup. **
Product health safety and hygiene	225	4.04	0.054	3.934	4.146
Sales discounts	225	3.70	0.063	3.579	3.825
Italian product	225	3.66	0.074	3.518	3.806
Organoleptic characteristics (taste, flavour, etc.)	225	3.60	0.055	3.493	3.707
Price	225	3.45	0.060	3.332	3.566
Trust in the producer	225	3.29	0.062	3.167	3.411
Quality certifications (PDO, GPI, etc.)	225	2.78	0.080	2.625	2.940
Organic	225	2.56	0.078	2.407	2.713
Brand	225	2.52	0.064	2.399	2.650
In-product services (processed food, ready to use)	225	2.02	0.072	1.881	2.163

† Based on a five point Likert scale ranging from 1 (not relevant at all) to 5 (highly relevant). * Conf. Int. = Confidence Interval. ** Inf. = Inferior limit; Sup. = Superior limit.

Table 4. Average scores of the factors affecting the food purchase of the interviewees belonging to Cluster 1 and Cluster 2.

Factors	Cluster 1 (N = 104)	Cluster 2 (N = 121)	Means' Difference	Sign. *	Cohen's d
Brand	2.663	2.400	0.263	0.0436	0.2714
Price	3.077	3.769	−0.692	0.0000	−0.8353
Organoleptic characteristics (taste, flavour, etc.)	3.798	3.430	0.368	0.0007	0.4609
Organic	3.346	1.884	1.462	0.0000	1.6010
Quality certifications (PDO, GPI, etc.)	3.625	2.058	1.567	0.0000	1.7024
In-product services (processed food, ready to use)	2.087	1.967	0.120	0.4085	0.1107
Product health safety and hygiene	4.375	3.752	0.623	0.0000	0.8257
Italian product	4.212	3.190	1.021	0.0000	1.0428
Sales discount	3.519	3.860	−0.340	0.0067	−0.3662
Trust in the producer	3.548	3.066	0.482	0.0001	0.5346

* Sign. = Significance.

Based on the values assumed by Cohen's d, it should be noted that people belonging to the first cluster (N = 104) when doing food shopping give a much higher importance to organic farming products, the presence of labels or quality cues that certify the origin of the product (PDO, PGI, etc.), Italian production, and health security. However, they tend to attach less importance to price. Conversely, the second cluster (N = 121) includes subjects who are less attentive to the problems connected to the environmental impact of production techniques or have less confidence in quality certification marks. However, they pay more attention to the price and the presence of sales discount. The members of the two clusters differ in a statistically significant way (Pearson's Chi-squared probability < 0.05) with respect to some socio-economic and behavioural characteristics. The members of the first cluster have a higher educational qualification, belong to a greater extent to cultural or environmental associations, buy more organic products or fair trade certificated, declare themselves to a greater extent to be aware of the meaning of SF, and have a higher frequency of shopping in specialized shops or farm markets. To understand which factors could increase the sales of SF, the interviewees were asked to indicate which elements, not actually present, could make them consider in the future the possibility of buying SF products. Most respondents (56.0%) stated that more information about SF could help them consider buying these products, 52.9% believed that a greater availability of products would help the purchase, while for 42.7%, price policies would be important, namely, it would be useful if the SF products had a price similar to others. Finally, 33.8% underlined that the certification of such products could favour their purchase, guaranteeing consumers the origin of the product. With regard to the attention paid to the ethical aspects of consumption, it is interesting to note that 45.7% stated that they had purchased fair trade products in the past.

3.3. The DCE Results

The DCE estimated model has a good interpretative capacity (McFadden's Pseudo R-squared: 0.50) according to the standards of these models [37]. The attributes considered in the model have a significant degree of heterogeneity, indicating that the interviewees attribute different degrees of importance to these characteristics of the product under analysis. All estimated parameters (Table 5) proved significant at the 95% level, except for the coefficient of the interaction term: disabled workers $\times$ belonging to cluster 2 ($p = 0.051$).

The WTPs of the coefficients not interacted correspond to the premium price that the interviewees who have a low standard of living, belong to cluster 1, and are aged less than 60 years, are willing to pay. The members of this group were on average willing to pay €0.83 more for the eggs produced in farms that also employ disabled people, €0.50 for products made near the place of purchase, and €1.10 for organic eggs. Age presents a positive correlation only for the social agriculture attribute level (disabled workers), while it does not seem to have any effect on the WTP for organic and local products. The WTP of people who declared a medium-high or high standard of living, which constitute 58.2% of the sample, was considerably higher for all the attributes considered. Further, their average WTP for eggs produced by SF was €1.71, for local products €0.85, and for organic products €2.00. The average WTP of the members of the second cluster for each of these characteristics was always very low and ranged from €0.10 to €0.16.

The effect of age is significant only for the eggs produced by the employment of disabled people. People over 60 were willing to spend €1.63 more on average than younger people. Considering the sample as a whole, the average WTP for eggs produced by SF is equal to 1.36 €/pack of six eggs (95% confidence interval (CI) is 1.09€–1.63€); for organic productions, it is 1.13 €/pack of six eggs (95% CI is 0.93€–1.33€); and for local productions, it is equal to 0.49 €/pack of six eggs (95% CI is 0.45–0.53). Considering the average price of €2.4 for a pack of 6 eggs (free-range poultry farming) in the survey area, the premium price would tend to be 56% for eggs from SF, 47% for organic eggs, and 20% for local products. These percentages are comparable to those obtained by Loke et al. [53] in a study that used the hedonic price method to analyse the factors affecting the price of eggs in Hawaii (organic + 64%; local + 40%).

However, it should be noted that the standard deviation of the estimated coefficients is much higher for eggs produced by SF (s.d. = 2.70) than for the organic products (s.d. = 2.03) and local production (s.d. = 0.47). This highlights that for the SF products, there is a greater uncertainty among consumers, probably, because they are not familiar with them.

The analysis of individual WTPs estimated with the RPL model (Figure 2) shows that the WTP complementary cumulative frequency distribution function for eggs produced using disabled labour and organic farming is very different from that of products produced near the site of purchase. First, the percentage of those who are willing to pay a minimum premium price for organic or SF products is considerably lower relative to the place of production. Furthermore, 26% of respondents are not willing to pay any amount for SF products, with 23% having a negative WTP for organic products. The percentage of those who are not willing to pay more for products produced near the place of purchase is just over 8%. It can also be seen that the WTP complementary cumulative frequency distribution function for this attribute has a much greater slope. From Figure 2, it can be observed that the percentage of people willing to pay a premium price higher than €0.30 for a pack of six eggs is always greater for both organic and SF products compared to the proximity of the place of production. For example, while more than half of respondents would be willing to pay 1 € more for eggs produced by SF and for organic products, this percentage drops to just over 6% in the case of local products.

Table 5. DCE model's results.

	Coeff. †		WTP	WTP 95% Conf. Int.	
			Average	Inf.	Sup.
Random Parameters (latent heterogeneity) ‡					
Disabled workers	1.0075	**	0.8379	0.4513	1.2246
Place of production close to the place of purchase	0.6060	***	0.5040	0.3591	0.6489
Organic	1.3267	***	1.1034	0.7874	1.4195
Non-Random Parameters					
Optout	1.4739	***			
Price	−2.4047	***			
Heterogeneity in mean parameters					
Disabled workers × living standard medium high or high	1.0567	**	0.8789	0.5152	1.2426
Disabled workers × cluster 2 belonging	−0.8387	*	−0.6976	−1.0572	−0.3380
Disabled workers × interviewees older than 60 years	0.9554	**	0.7947	0.4186	1.1707
Place of production close to the place of purchase × living standard medium high or high	0.4253	**	0.3538	0.2121	0.4954
Place of production close to the place of purchase × cluster 2 belonging	−0.4801	***	−0.3993	−0.5416	−0.2571
Organic × living standard medium high or high	1.0874	***	0.9044	0.5993	1.2095
Organic × cluster 2 belonging	−1.1231	***	−0.9341	−1.2418	−0.6264
Derived standard deviation of random parameters distributions					
Disabled workers	2.7020	***			
Place of production close to the place of purchase	0.4733	***			
Organic	2.0301	***			
N. respondents	225				
N. observations	1350				
Loglikelihood	−1483.1				
Halton draws	1000				
McFadden pseudo R-squared	0.503				

† Significance levels: *** significant at the 99% level; ** significant at the 95% level; * significant at the 90% level. ‡ Random parameters were assumed to be normally distributed.

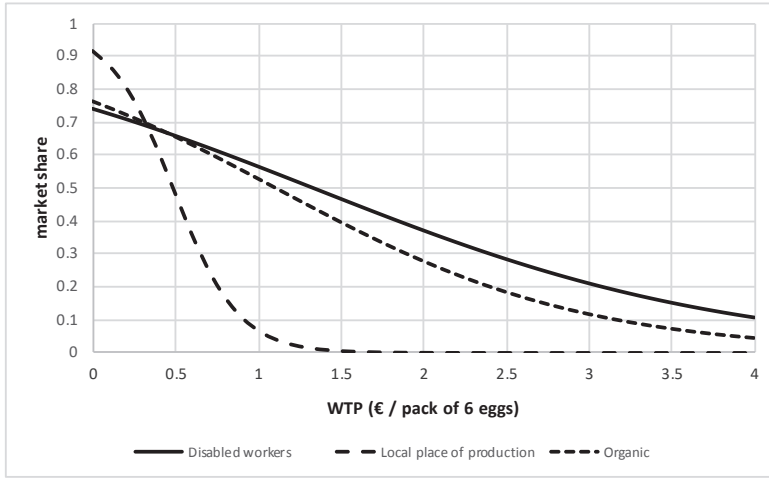

Figure 2. WTP complementary cumulative frequency distribution functions.

4. Discussion and Conclusions

Following De Pelsmacker et al. [54] and Doane [55], ethical consumerism can be defined as "the purchase of a product that concerns a certain ethical issue (human rights, labour conditions, animal well-being, environment, etc.) and is chosen freely by an individual consumer" [54]. According to Zander and Hamm [56], the ethical attributes considered in the purchase of food can be numerous, but, in general, they can be summarized as follows: animal welfare, good working conditions for farm workers, support for family farms, preservation of local cultural landscape, regional and local production, protection of biodiversity, fair prices to farmers, no air freighting, production in care farms, revival of traditional processing methods, and fair product prices.

Numerous studies have been carried out in the past to analyse the consumer demand and WTP for these attributes; in particular, the studies in the fields of fair trade (fair prices and good working conditions) [35], organic production [57,58], animal welfare [59], and local production [60,61]. However, only a few studies have dealt with eggs [36,62–64] or SF products [36,52,56], with only one study estimating the WTP for food products produced by social farms.

Our results highlight that consumers are interested in buying SF products, with about 74% of the sample willing to buy the eggs produced by social farms with an average WTP equal to €1.36 (+56% considering an average price of €2.4) for a pack of six eggs. Torquati et al. [36] carried out a DCE to analyse the WTP of members of solidarity purchase groups in the case of eggs and zucchini produced by SF. With regard to eggs, two attributes were considered similar to those present in our survey, namely, the use of labour from disabled people and the proximity of the place of production to the consumption market. The average WTP for the use of labour from disabled people attribute amounted to €0.69 for a pack of six eggs, while the WTP for purchasing products produced near the place of purchase was €0.51. These numbers are in some respect comparable to those estimated in this survey. Thus, the average WTP of the consumers interviewed is similar to that of the members of the solidarity purchase groups considered by Torquati et al. [36].

For a correct interpretation of our results, we have to consider the possibility that other ethical attributes may influence consumer behaviour. In this regard, Zander and Hamm [56] examined the effect of additional ethical attributes of organic food on the consumers' purchase decisions. Using an information-display-matrix approach, they found that "being produced in a care farm" is one of the ethical attributes less considered when buying organic products. Conversely, the most important attributes were animal welfare, regional production, and setting fair prices to farmers. However, it should be emphasized that, in Italy, organic farms must implement animal welfare

policies; therefore, the organic attribute largely covers animal welfare. Our findings indicate that the respondents attribute the same importance to animal welfare and SF.

Our study has shown the presence of a remarkable variability in the attitudes of the interviewees regarding all three attributes considered. This variability is related to some socio-economic characteristics of the respondents (age and standard of living) and the factors generally considered in the purchase of food products. On the one hand, a higher standard of living corresponds to a higher WTP for all attributes considered; on the other hand, belonging to cluster 2 reduces it. It should be remembered that the most important factor considered by members of cluster 2 when purchasing food is the price of the product, which tends to assume a higher importance than its organoleptic characteristics. For this group, the presence of labels that are somehow a proxy for the quality of the product (PDO, PGI, or organic) is of a little importance. Therefore, we can conclude that for about half of the interviewees the ethical factors play a marginal role in addressing the purchase choices of food products.

Our research also indicates the presence of a considerable segmentation in the demand for eggs with regard to some ethical attributes (organic and animal welfare). Similar results were found in previous literature; for example, Gerini et al. [62], with reference to Norway, who have shown that only consumers who purchase organic products with high frequency are willing to pay a premium price for organic eggs or those produced in compliance with animal welfare standards. Mesias et al. [65] in a study carried out in Spain identified the presence of four groups of consumers for whom the breeding method has a distinctly different effect with regard to the propensity to purchase eggs. Andersen [63] pointed out that the WTP for organic eggs is greater for people with higher incomes or who live in urban areas.

Even in the case of other foods and other ethical attributes, numerous studies have highlighted the presence of many factors that determine the market segmentation. For example, Feldmann and Hamm [60] reviewed the studies that analysed the effect of the place of production on food demand, finding that the importance of the place of production (origin) depends on demographics, knowledge, context, attitudes, and behaviour. With reference to demographics, old wealthy people, living in rural areas have more supportive attitudes towards local food. Attitudes and opinions on local productions also seem to be particularly important. Hemmerling et al. [58] pointed out that there are numerous factors that can influence WTP for organic production, with many studies demonstrating that the WTP for organic products increases with income and educational level, whereas the age and family size seem to have an inverse effect.

Our results indicate that the SF products could be bought by a fair number of consumers, even if the actual size of the market segment may depend on numerous factors, not explicitly tested in our study and that should be taken into consideration in future research.

First, many studies in the past have pointed out a considerable discrepancy between the purchase intentions expressed by consumers and their real behaviour [66]. The presence of this intention-behaviour gap may depend on both individual factors and organizational and structural factors [67]. Thus, we must first emphasise that consumers are often guided by their habits in purchasing decisions. Second, consumers are much more attentive to the price in real life than in the case of surveys that refer to purely hypothetical situations. In addition, taste plays an important role in the real consumption of food, as it can significantly change the importance of credence attributes in purchasing decisions [68]. Therefore, ultimately, the demand analysis based on declared preferences may overestimate the actual WTP for people and their actual propensity to purchase [69].

Second, we should note the considerable discrepancy between the quantity of ethical products placed on the market and their potential demand. The low availability of these products on the shelves means that they are generally not considered in the consumer-shopping basket, which most of the time ignores their existence. For example, in a fair trade coffee experiment, Hainmueller et al. [70] observed that the addition of the fair trade label increased sales by 15%. Hence, it should not be overlooked that the SF production constitutes a credence attribute, and therefore, a certification by an independent

third party is necessary to attest the characteristics of the product. In the absence of such certification or in the presence of a lack of knowledge of certification procedures by consumers, they may be reluctant to purchase SF and other ethical products.

In conclusion, despite the limitations mentioned above, it can be assumed that, similar to other ethical attributes, social farms' production can be an attribute appreciated by consumers. Nevertheless, according to the interviewees opinions, two factors emerge as critical in ensuring the future development of SF, namely, an adequate certification system and a proper communication of the added value of SF products.

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Abbreviations

The following abbreviations are used in this manuscript:

AFNs	alternative food networks
CI	confidence interval
DCE	discrete choice experiment
LCM	latent class model
MNL	multinomial logit model
PDO	protected designation of origin
PGI	protected geographical indication
RPL	random parameter logit model
SF	social farming
WTP	willingness to pay

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sustainability

MDPI

Review

Sustainability in the Beverage Industry: A Research Agenda from the Demand Side

Carla Rodriguez-Sanchez and Ricardo Sellers-Rubio *

Department of Marketing, Faculty of Economics, University of Alicante, Crta San Vicente del Raspeig, San Vicente del Raspeig, 03690 Alicante, Spain; carla.rodriguez@ua.es
* Correspondence: ricardo.sellers@ua.es

Abstract: Sustainability has become one of the most important challenges for the beverage industry over the last few decades. In fact, many producers have implemented environmental, social, or economic aspects of sustainability at several stages of their production process. One of the reasons that might explain this interest in sustainability is that consumers are changing their behavior to integrate sustainable and environmental considerations into their purchase behavior. Accordingly, some consumers' purchasing decisions are based not only on how well products satisfy their needs but also on how these products affect the environment or society at large. Within this context, designing appropriate interventions to fostering sustainable consumption requires deeper knowledge about its underlying determinants. In this paper, we focus on some of the most important challenges that might drive future research within this area.

Keywords: sustainability; beverages; consumer

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1. Introduction

The most accepted concept of sustainability defines it through the three overlapping principles of environmentally sound, economically feasible, and socially equitable production. Sustainable production comprises business practices that are sensitive to the environment (environmentally sound), responsive to the needs and interests of society at large (socially equitable), and economically feasible to implement and maintain (economically feasible) [1]. However, and despite its popularity, this term is frequently associated by producers and consumers with the environmental aspects of production only, neglecting other important issues, and every producer might have a different understanding of this term.

Within the beverage industry, sustainability can be considered as a strategy to differentiate firms or products in order to meet some market segment demands. In fact, many firms claim socially or environmentally friendly orientations when producing and marketing beverages, integrating sustainability into their communication strategy to reinforce their brand and market positioning. Presently, consumers not only make decisions based on how well products satisfy their needs but also how these products influence society at large. Consequently, many consumers have integrated sustainable and environmental considerations into their lifestyle choices. Through the adoption of sustainable practices, firms could obtain a competitive advantage and increase sales with clear product differentiation.

However, sustainability is also a needed strategy to guarantee the future development of the beverage sector. According to [2], most environmental consumption impacts are related to a few product categories. In fact, 70–80% of total impacts from domestic consumption relate to food and drink, housing (e.g., domestic energy use), and transport (e.g., leisure and holiday travel). Particularly, food and drink consumption have a significant eco-footprint due to, among other factors, the use of land, energy, water, and chemicals in production as well as pollution during the distribution system [3]. In this sense, the

challenge of sustainable development is to meet current demands without ruining future generations and the planet in the long term [4].

Accordingly, academic research has paid special attention to sustainable consumption in this industry, which may encompass a plethora of behaviors from consumer purchase of eco-friendly products to water use at home [5,6]. In the same line, [4,7] run systematic reviews aimed to analyze articles dealing with new trends in sustainable consumption practices. Most of the studies focus their attention on the food industry [8,9], while few studies analyze the beverage category, with the only exception of wine, which has received great interest among researchers [10]. Furthermore, as beer is the most consumed alcoholic beverage in the world [11], several authors have focused their attention on this beverage, identifying the rise of some trends (e.g., craft beer) regarding sustainability. For example, consumers' increasing attention to health-issues impulses breweries to expand their assortment to introduce non-alcoholic drinks in the market [11]. Moreover, craft beer consumption has been perceived by consumers as more sustainable [12]. In the same vein, some authors have focused their attention on organic food and beverages, given the increasing interest of consumers in this category [13]. Indeed, according to the forecasts from some international market research studies [14], the organic beverage market is estimated to reach $181.78 billion by 2023 from $99.76 billion in 2018.

Furthermore, designing appropriate interventions to fostering sustainable consumption requires deeper knowledge about the underlying determinants of consumer behavior [15]. The analysis of the drivers influencing sustainable consumption has been studied over the last decades from different disciplines such as environmental psychology [16] or (social) marketing [17]. Besides, the analysis of sustainable consumption from the demand side has been almost exclusively focused on the environmental dimension of the concept of sustainability. While environmental psychology has mainly focused on studying pro-environmental behaviors such as water/energy saving or recycling, it has been in the field of marketing where green purchase behavior has played a prominent role. Focusing on understanding the determinants of consumers' green purchase decisions, social marketers, public managers, and policymakers may be able to influence consumers' environmental mindset and behavior in the long term [18]. In fact, the beverage industry has incorporated several strategies to achieve a cost-effective transition to a circular economy and to combat climate-change-related risks to their operations. In this sense, [19] identified four types of managerial practices related to Circular Economy (CE) adoption at the product level that could be applied in the beverage industry: (i) Energy efficiency and usage of renewable sources of energy; (ii) Product and process optimization for resource efficiency; (iii) Product design for circularity; and (iv) Exploitation of waste as a resource.

In any case, sustainable beverage purchase behavior is still not well understood in academia, especially if we consider the concept of sustainable consumption as a whole [17]. In this paper, we focus on some of the challenges that may drive future research on this area. Particularly, we focus our attention on alcoholic (wine and beer) and non-alcoholic beverages (water, milk, and juices), as they represent a huge market share among sustainable beverages.

2. From Green to Sustainable Consumption

When an individual makes a purchase decision there is a possibility that it contributes to a more or less sustainable consumption pattern, since all purchasing actions have ethical, waste, resource, and community impact implications. Green purchase behavior refers to "purchasing and consuming products that are benign toward the environment" [20] (p. 190), which might contribute to a sustainable consumption pattern [21]. Green purchase behavior is seen as a complex form of consumption both intellectually and morally as well as in practice. As [22] points out, when individuals consider buying in an environmentally responsible way, they face an increasingly complex decision-making process. On the one hand, this type of behavior involves difficult motivational conflicts because there is usually a conflict between the self-interested benefits of consumers and environmental protection

related to collective goals. On the other hand, there are normally external barriers to green purchase, which arise from the political, economic, or cultural circumstances in the market and society [22]. For example, eco-friendly products are frequently seen as an expensive option and making sustainable consumer choices involves a fair amount of effort such as garnering information [23]. In addition, many consumers do not consider environmental aspects as a primary element when they make a purchase decision. In such situations, only when they perceive that the product achieves a certain level of product performance, "green" characteristics of the product may determine product choice [18]. In addition, research has shown that there is now a "typical" green consumer that is involved with environmental issues in all sorts of purchasing situations, especially when it comes to different contexts/environments [24] and/or (high/low) purchase product involvement [25]. Consequently, designing strategies to achieve a behavioral change toward sustainability becomes a challenging task.

However, as [17] highlights, sustainable consumption implies not only choosing "green" products but also reducing consumption and considering the full consumption cycle. While prior research in the beverage sector has mainly focused on understanding consumers' initial product choices, far less attention has been given to the reduction of consumption and the full consumption cycle (e.g., product usage or disposal), due presumably to the fact that reusing or recycling available products has lower environmental benefits than changing purchasing behavior [26].

Regarding the reduction of consumption from an environmental point of view, only a few studies about bottled water usage and intentions to reduce its consumption have been carried out so far [27,28]. Even though bottled water consumption may be considered in the beverage sector one of the products that are contributing the most to several environmental problems such as pollution, water wastage, and climate change [27]. In addition, regarding the full consumption cycle, it should be also taken into account that the beverage product life cycle is short. In this way, while for durable goods (e.g., household appliances, clothes . . .) consumers' post choice behaviors such as product usage (e.g., product maintenance) or product life extension (e.g., re-use) have an important impact on the sustainability of consumption, for commodity goods, disposal (e.g., recycling) is crucial. For example, [18] finds a high correlation between eco-friendly purchase and disposal decisions, being the environmental awareness of consumers a predominant predictor of disposal decisions. In any case, the available academic studies on beverage disposal are scarce to date and further research may shed light on this regard.

Given the imperative of sustainable consumption in the beverage sector, it is critical to understand what factors contribute to this type of behavior. Most of the studies focused on explaining sustainable consumption in this sector have analyzed these determinants independently on the beverage category (e.g., juice, wine, beer, milk, and so on) since the factors that influence purchasing decisions of each category may be different and therefore also the role of environmental issues in the purchase choice. For example, as [10] point out, consumer's wine choice is more complex than other products because it is one of the most differentiated products on the market. Wine consumers must deal with a large amount of information on wine labels (e.g., country of origin, region of products, grape variety, or brand) that are important drivers for purchase decisions. Besides, due to sustainable wine production (i.e., wine with sustainability characteristics), current certifications indicate new characteristics for consumers to be evaluated, making the purchasing decision even more complex. Furthermore, compared to other alcoholic beverages, wine is perceived as being more natural, reflecting a sense of agricultural seasonality and linked closely to a rural way of life [13], which are elements highly linked to the concept of sustainability. Hence, research to date has mainly focused on identifying how sustainability characteristics influence wine purchase decisions and other beverages have been virtually neglected. Nevertheless, it must be pointed out that studies on sustainable beer consumption have significantly increased over the last years [29,30]. In fact, beer is the most consumed

alcoholic beverage in the world [11], and sustainability might constitute an important trigger to foster beer consumption.

3. Research Trends on Sustainability in the Beverage Industry

Several studies have analyzed the factors influencing the purchase of sustainable beverages from different perspectives: (i) the willingness to pay a premium price for sustainable products; (ii) the packaging of sustainable products; (iii) the distribution of sustainable products and fair trade; and (iv) Factors influencing the purchase of sustainable beverages.

3.1. Willingnes-to-Pay for Sustainable Beverages

Most of the studies to date have mainly addressed sustainable beverage consumption analyzing intentions of willingness to pay (WTP) premiums for organic products. Accordingly, a recent review of the literature on this topic concludes that further work needs to be done in a real market context using, for example, household panel data [10]. This has relevance for studies on environmental issues since it is well known that there is usually an inconsistency or gap between intention to purchase eco-friendly products and actual purchase behavior [31]. In addition, regarding the characteristics of sustainable products, literature has focused primarily on production as a key element when consumers make their green purchase decisions. Thus, there has been a great deal of research lately on consumer preference and WTP for organic wine [13]; organic beer [29]; organic milk [32], or organic fruit juice. Importantly, it seems that there is still some confusion among consumers with the "organic" term and, in some cases, they consider organic products not to be environmentally friendly [23]. Most consumers associate "organic" only with being chemical-free and they are unfamiliar with organic farming standards and practices. Therefore, it comes as no surprise that personal health has been shown as a more important driver for organic food and beverage purchase by consumers than concerns for the environment [33].

3.2. Sustainable Packaging

Packaging is of special concern to some type of beverages such as juice, water, or beer, as they are the main beverage contributions to the packaging fraction [34]. However, as far as we know, only very few studies have addressed packaging as an important element for green purchasing decisions in the beverage sector [18]. From a consumer perspective, the use of packaging in commodity products transcends beyond its functional role (e.g., conserving the quality and freshness). In fact, consumers also consider the design, the image, and ease of packaging to correctly identify the product [35]. In this sense, [36] examines the factors that influence consumers' product purchasing behavior and their recycling behavior with respect to sustainable packaging. Their results evidence that variables such as gender, environmental awareness, or attitude towards green purchasing are factors that differentiate consumers that consider environmentally friendly packaging important and consumers that consider packaging as unimportant when making product purchase decisions. Therefore, environmental strategies should intend to make the most of this product attribute, and research in the beverage sector should be focused on which features of sustainable packaging are the most preferred by consumers rather than how this packaging is disposed of.

3.3. Distribution and Fair Trade

Regarding the distribution of beverages, increased attention has been given recently to local products as local food and drinks shoppers are driven by environmental (short supply chains) as well as community (economic and social) concerns [37]. A paradox between organic vs. local products may arise at this point as [23] wonders: "what is better for the planet buying organic quinoa grown in Peru or a non-organic alternative produced locally? My guess, would be the latter". Although further research is needed to understand consumer's opinion in this regard, the current discussion suggests that when

organic food is not produced locally, it loses authenticity. Thus, for many consumers, food miles rather than organic labels are the representation of sustainability [38]. However, it is worth mentioning that local food production seems to be more related to the social (e.g., the creation of a consumer-farmer relationship based on trust) and the economic (e.g., economic benefits for regional economies) dimensions of sustainability than the environmental one [39]. Even some studies [40] raise doubts about local food to be better for the environment than non-local food. Either way, only a few studies have been carried out to date on consumer perception about locally produced products, with the exception of wine [41,42].

Besides, buying fairly traded products is another way to consume sustainably. Fair Trade is defined as: "an initiative for small farmers and wage workers in the South, who have been restrained in their economical and/or social development by the conditions of trade ('disadvantaged')" [43] (p. 2). So, this type of trade relations focuses on the social and economic dimensions of sustainability. Fairtrade beverage purchasing is growing in the last years. For example, according to [44] data, Fairtrade alcohol was the biggest growth of all the monitored sectors in the UK, with shoppers spending 34% more on this over 2017. However, academic studies focus on consumers' perceptions; preferences and willingness-to-pay for Fairtrade drinks are almost non-existent. Future research should therefore gain a deeper understanding of consumers' attitudes and their buying habits regarding this type of product.

3.4. Determining Factors of Sustainable Consumption

Several studies have shown that the purchase of sustainable beverages (or green purchase behavior) can be influenced by a plethora of factors. These factors can be categorized into the following underlying causes [16]: (i) personal capabilities, (ii) psychological determinants (e.g., attitudes, beliefs or norms), and (iii) contextual forces and habits. The following explanation, however, should be treated with caution since, as aforementioned, studies usually ask for purchase intentions (e.g., WTP) in unrealistic scenarios and results can be overestimated regarding actual behavior. Furthermore, wine has been the main subject of previous studies, so it cannot always be extrapolated to other beverage products.

3.4.1. Personal Capabilities

In general, previous studies [42,45,46] have shown that the typical organic drink consumer is female, highly educated, upper-middle-class income, and lives in urban areas. In the case of purchasing local wine, it seems to be different. Ref. [47] found that men paid more for wine with a lower distance traveled than women in Germany, and [42] shows that people living in a rural area were more prone to buy local wine in the US. Regarding age, studies revealed mixed results. For example, while [48,49] find that younger consumers had higher attitudes toward sustainable wine, [46,50] find older people to have higher WTP and probability for buying wine with sustainability characteristics respectively. Furthermore, some other studies have not found any differences in terms of sociodemographic factors for intention to buy organic milk [51] or for WTP for organic wine [41]. In summary, it seems there are conflicting results regarding the impact of personal capabilities on sustainable beverages purchase. This highlights the need for further research.

Furthermore, it should be highlighted that sensory acceptance constitutes one of the main choice criteria for consumers [52], which is forcefully reliant on cultural backgrounds, as well as previous sensory exposure to a specific food product [53]. Besides, the market for functional, natural, and non-alcoholic beverages is steadily increasing all over the world [54], because of the increasing consumer awareness of the importance of healthy nutrition.

3.4.2. Psychological Determinants

A well-established theoretical framework that has often been applied in food and drink studies to analyze the psychological determinants of sustainable consumption is the

Theory of Planned Behavior [55]. According to this theory, the most immediate predictor of behavior is an intention to engage in the behavior (i.e., a motivation or plan) and intentions are, in turn, predicted by attitudes (i.e., mental disposition and feeling about the environment), perceived behavioral control (i.e., ability to perform the behavior) and subjective norms (i.e., social pressure). Focusing on attitudes, studies on wine with sustainability features and organic milk reveal a close relation between attitudes and purchase behavior [56,57]. However, food organic research has also shown that although individuals declare to have high positive attitudes toward the environment or organic products, it does not necessarily translate into actual purchase behavior [58]. In the environmental literature, this is generally known as the "attitude-behavior gap" and it has been found not only for green purchase behaviors but also for other pro-environmental behaviors [59]. Among the reasons that might explain this inconsistency, environmental researchers suggest the use of constellations of behaviors (i.e., index), the overestimation of attitudes in survey studies due to social desirability, the measurement of general environmental attitudes instead of specific attitudes to the behavior and the intensity of attitudes [11,49]. Future studies in the beverage sector should consider these aspects.

Another theory widely used in organic food and drink literature has been the Norm Activation Model (NAM) [60]. This model states that pro-environmental behavior (e.g., purchasing organic beverages) depends mainly on the activation of personal norms, which reflect feelings of moral obligation to behave in a certain manner. For example, [61] find that people with strong personal ecological norms used "organic production" and the "EU-BIO-Label" as additional criteria during their milk decision purchase. Moreover, as an extension of the NAM model, [16] proposed the Value-Belief-Norm theory of environmentalism (VBN), which states that pro-environmental personal norms are influenced by values (i.e., general goals that serve as guiding principles in life) and beliefs. As [10] review points out, environmental values and beliefs on environmental protection are important motivators for buying sustainable wine. Additionally, values reflecting the need for living a hedonistic life have been also found to be an important precursor of belief systems that influence the purchase of organic wines [62]. Apart from the variables included in these models, other psychological factors such as trust, knowledge, or self-identity have been used in past studies to explain organic beverage purchases. Trusts in the retailer selling [63] and in winery [64] are considered important factors influencing consumers' behavioral intentions to purchase organic wine. The same result was found for organic milk purchase behavior when trust in farmers is analyzed [53]. In this last study conducted in Italy, it was also found that self-identity as a green consumer influenced consumers' intentions to buy organic milk. Furthermore, studies reveal that knowledge can play a significant role in motivating the purchase of organic food [37]. However, while consumer environmental knowledge seems to influence the willingness to buy environmentally friendly wines [65], greater knowledge about wine culture seems to be related to a lower willingness to pay a premium value [66].

3.4.3. Contextual Factors and Habits

Although the above psychological factors play an important role in understanding sustainable purchase decisions in the beverage sector, contextual factors and habits might constraint or incentive this relationship. Among the contextual factors studied in the past, the price has been observed to be one of the main characteristics of the product when a consumer buys organic wine or milk [13,49,67]. The influence of price on buying behavior may be positive when high prices signal quality and status for consumers, or negative when high prices mean that a sacrifice must be made [68]. In this sense, research has shown that price is perceived as a barrier toward organic milk purchase, especially for consumers with budget constraints, and consumers often overestimate the price level of this type of milk when there is a lack of knowledge about it [68]. In the case of sustainable wine, some studies reveal that the higher the increase in price, the lower the probability of purchase [41]. Although, other studies [69] show that medium-high priced wines with

sustainability characteristics are preferred over lower-priced wines when information is given to the consumer through organic certification labels. In addition, the origin of wine and availability (close to consumers' homes) are other contextual factors moderating the transformation of attitudes into purchase behavior [10]. The taste of wine or milk is also considered an important motivator during the decision-making process [61,70]. In the case of milk, interestingly, those consumers that think organic products are intensively tasted are less willing to pay a premium for organic milk [69]. Finally, being stuck in a routine (habits) of purchasing behavior seems to also play a major role in sustainable beverage purchasing decisions for both wine and milk [50,71].

As can be seen above, previous work has been limited to analyzing cognitive and contextual factors and there is virtually no research focused on the affective component of attitude and emotions related to sustainable beverage consumption. Notwithstanding the existence of authors suggesting that these factors may play an important role as drivers of involvement in organic food purchase [72]. Future studies on the emotion topic are therefore required in the sustainable beverage sector.

4. Conclusions

The goal of this paper has been to review some of the papers that address sustainability in the beverage sector from the demand side. A deeper understanding of the drivers that determine sustainable consumption is needed to foster sustainable practices in the beverage industry. Although several managerial practices have been identified in the beverage industry in the context of the circular economy [19], it is mandatory to identify the responsibility for sustainable practices among consumers and firms (e.g., packaging recycling).

Particularly, future research should gain a deeper understanding of consumers' attitudes and their buying habits regarding sustainable beverages. From personal characteristics to the effect of emotions, attitudes, and lifestyles, more research is needed to understand the drivers that motivate consumers to buy sustainable beverages. Furthermore, it would be very interesting to know not only how these variables drive consumers' behavior but also whether there are differences among different beverages within the industry, as the consumer might act differently depending on the product. Finally, previous work has been almost limited to the environmental dimension of sustainability to explain sustainable consumption in the beverage sector. Future research therefore should be more focused on the social and economic dimensions of sustainability for improving regional economies.

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Determinants of Consumers' Retention and Subjective Well-Being: A Sustainable Farmers' Market Perspective

Bi-Kun Tsai

Graduate Institute of Bio-Industry Management, National Chung Hsing University, Taichung City 40227, Taiwan; pktsai@dragon.nchu.edu.tw; Tel.: +886-4-2284-0849 (ext. 622)

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Abstract: Farmers' markets have received much attention in many countries, and the amount of research on farmers' markets is gradually increasing. The consumption process of consumers at farmers' markets include both economic and social aspects, but most past studies have only focused on a single aspect. The economic perspective mainly focuses on transaction issues such as purchase motives, quality, satisfaction, purchase behavior, and post-purchase behavior, whereas the social perspective focuses on the social relations and psychological feelings created when consumers go to markets. This study aimed to integrate the economic and social perspectives and analyze the relationships among product performance evaluation, relational capital, repurchase intention, and subjective well-being of consumers at farmers' markets after their purchase experiences. I chose three recurrent farmers' markets in Taiwan, obtained 358 valid samples, and performed structural equation modelling analysis. The results indicated that the economic product performance exerted a significant and positive influence on repurchase intention, but its influence on subjective well-being was not significant. In contrast, the social relational capital was found to be a positive and significant factor of both repurchase intention and subjective well-being. On the whole, relational capital is more important than product performance. The suggestions for practice were as follows. First, farmers' markets have economic and social value and are thus worth being promoted by government agencies. Second, the managers of farmers' markets should implement a set of management mechanisms to ensure product performance and also create a market atmosphere that facilitates social interactions between farmers and consumers.

Keywords: farmers' market; product performance; relational capital; repurchase intention; subjective well-being

1. Introduction

Under the influence of global agri-food systems, local production for local consumption has become an alternative route of agricultural development aside from mainstream agriculture in many countries [1], its methods including community-supported agriculture, farm-to-school programs, culinary tourism, and farmers' markets. Local production for local consumption aims to lower transportation costs. Farmers produce and sell their products themselves, reducing food miles and carbon footprints, thus being friendly to the environment. In this way, consumers can obtain fresh and safe local agricultural products. Shortening the distance between farmers and consumers also enables them to establish face-to-face channels of interaction and build mutual trust, which can consolidate interpersonal interactions and institutional norms and strengthen ties between consumers and local agriculture. Farmers' markets, which have advantages in site conditions and local products and possess community relations from the place of production to the dining table, are said to be crucial platforms in implementing local production for local consumption and have the ability to

create agricultural production-sales models that take both environmental protection and friendly relationships into account.

As an alternative method of agricultural development, farmers' markets are based on biodiversity, environmental protection, food system localization [2], reduction of food miles, and the concept of smallholding. Their focus is to provide farmers and consumers with the opportunity to communicate face to face and to offer fresh agricultural products containing local culture. Although researchers have yet to reach a consensus on whether localized food systems are more environmentally friendly than globalized or modernized food systems [3,4], studies have demonstrated that via re-spatialization and re-socialization [5,6], farmers' markets can reduce food miles and carbon footprints and thus contribute to environmental sustainability [7–9].

With the rising trends of alternative agriculture and the "real food" revolution [10], farmers' markets have proliferated in Northern America, Western Europe, and Asia, and they are aspiring to set themselves apart from highly professionalized, resource-intensive global agri-food systems, which modern supermarkets are representative of. Farmers' markets have actually been around for a long time. They have often formed at locations in cities or towns in the form of retail stores or stands and enabled farmers and consumers to make face-to-face transactions and get to know each other. The increase of modern, transnational chain supermarkets around the world have caused these traditional farmers' markets to gradually disappear. Gradually, consumers, who are at the end of the food supply chain, no longer knew where their food came from or what value concepts and local culture were held within the production processes of the food. Consequently, the social ties and mutual trust that were originally embedded within the production and consumption of local food faded away. The recent regeneration of farmers' markets represents a shift in consumer focus in three aspects: from the price and quantity of agricultural products to their value and quality, from synthetic food to authentic food, and from conspicuous consumption to conscious consumption [11].

Cook [12] asserted that consumption is closely connected to leisure. Although the farmers' markets in different countries may operate differently, most of them are not limited to face-to-face buyer-seller relationships in which the farmers sell directly to the consumers. Rather, they attach more value to the interactions and interpersonal connections between the farmers and the consumers. In these interaction processes, the farmers can personally explain the unique qualities of their agricultural products, the environment they are produced in, and the ways they can be eaten. Thus, consumer participation in farmers' markets include consumption-oriented economic interactions and leisure-oriented social interactions [13]. The former involves the economic perspective of the consumer purchase behavior at farmers' markets, which mostly focuses on three aspects. The first is purchase motives and preferences, such as freshness [12,14], quality [15,16], taste [17], price, and food safety [18,19]; the second is purchase behaviors and repurchase behaviors [20,21], and the spillover effects of consumption at the markets on local economy [22–24]. The latter meaning "leisure-oriented social interaction" refers to the social perspective of the purchase consumer behavior at farmers' markets. Less research has been done on this topic. Some studies have investigated issues associated with the social interactions between consumers and farmers or other consumers at farmers' markets, such as trust and social capital [11,25,26]; another study examined the influence of consumer participation in the market on family relationships, quality of life, and subjective well-being [27].

In short, the majority of past studies on the purchase consumer behavior in farmers' markets have focused on the economic perspective and discussed market transaction elements such as purchase motives, quality, satisfaction, purchase behavior, and post-purchase behavior. Less attention has been given to the social perspective, which includes the social relations and psychological feelings created when consumers go to markets and communicate face-to-face with farmers or encounter other consumers. Social capital can be divided into two forms: relational capital, which is the private good that individual members within an organization can invest in, accumulate, and use at their own discretion; and system capital, which is the collective good that the members within an organization invest in and accumulate together [28]. This study aims to integrate the two

aforementioned perspectives ("consumption-oriented economic interactions" and "leisure-oriented social interactions") and combine two economic constructs, namely, the market performance evaluation and repurchase intentions of consumers, and two social constructs, namely, the relational capital formed by consumers at farmers' markets and their subjective well-being, into a single research framework. In conclusion, the consumption processes at farmers' markets contain the characteristics of both purchase experiences and social experiences. In practice, more attention is often paid to purchase experiences, whereas social experiences are overlooked. Past studies involving farmers' markets have mostly focused on purchase motives, purchase behavior, market segmentation, and marketing strategies as well as on the prepurchase and post-purchase stages. The contribution of this study is that it extends research on farmers' markets to post-purchase behavior and psychological feelings, integrates economic and social perspectives, compiles relevant literature, and structurally analyzes the relationships among four crucial concepts: product performance evaluation, relational capital, repurchase intention, and subjective well-being of consumers. Specifically, the objectives included the following:

1. examining the correlation between product performance and relational capital,
2. determining the influences of product performance and relational capital on repurchase intention and subjective well-being, and
3. comparing the importance of product performance and relational capital to repurchase intention and subjective well-being.

This study makes the following contributions to research on consumers at farmers' markets. First, most of the past studies on purchase behavior at farmers' markets have focused on market segmentation or the purchase motives, preferences, and purchase intentions of consumers [16]. This study adopted product performance, a construct associated with the evaluation of product quality in farmers' markets, as the antecedent variable of consumer repurchase intention and subjective well-being to further academic understanding in this aspect. Next, despite the many studies regarding the influence of leisure activities on subjective well-being [29–31], research has yet to be done on the influence of consumption activities at farmers' markets on the subjective well-being of consumers. Finally, this study integrated the economic and social perspectives, examined the correlation between product performance and relational capital at farmers' markets, and investigated the influences of these two constructs on repurchase intention and subjective well-being. This paper is a pioneer in this respect.

2. Literature Review and Hypothesis Development

A farmers' market can be described as a recurrent market at a fixed location where farm products are sold by farmers themselves directly to the public [25,32]. Most of the vendors at farmers' markets are smallholders themselves and sell their products at farmers' markets to supplement their income, and the markets will often lay down criteria for farmers hoping to participate. The promotion of farmers' markets brings several substantial benefits, such as (1) reducing the distance between farmers and consumers so that they can build trust as well as steady production and supply; (2) decreasing food miles, marketing margins, and quality loss; (3) re-familiarizing the public with local agricultural products and boosting the local economy; and (4) increasing local food supply and the overall domestic food self-sufficiency rate. In addition to the benefits above, farmers' markets have various functions. One is serving as cultural attractions for agrileisure [27], and another is serving as incubators to provide training for agricultural entrepreneurs and develop networks and social ties that help farmers participating in the markets to improve product quality, marketing, and management effectiveness. Another function of farmers' markets is that they promote social well-being. They enable direct, face-to-face interactions, which enhances the social embeddedness between consumers and farmers. This social embeddedness improves local identity, community solidarity, family life satisfaction, and personal subjective well-being [13,33–35]. The purpose of this framework is to determine the

influence of the performance evaluation given by consumers to products at farmers' markets and the relational capital that they accumulate during social interactions on their repurchase intention and subjective well-being.

2.1. Product Performance

Consumption at a farmers' market can be divided into three stages: prepurchase, encounter, and post-purchase [36]. The prepurchase stage includes the following steps: awareness of need, information search, evaluation of alternatives, and purchase decision. In the encounter stage, where the consumer actually goes to the market to make purchases, the consumer can communicate and interact face to face with the farmers and other consumers. During this process, the consumer can get to know the production philosophies and agricultural products of the farmers and accumulate social capital via the social interactions in the process at the same time. In the post-purchase stage, the consumer evaluates service/product performance, which in turn impacts their future intentions/expectations, including word-of-mouth, repurchase intention, and subjective well-being [37,38]. The evaluation of product performance begins in the prepurchase stage, when the consumer begins to form expectations of the quality, safety, and superiority of agricultural products at the farmers' market. Later, the consumer then compares the expectations with the actual feelings of using/eating the agricultural products. Thus, in meaning, the evaluation of product performance is similar to product satisfaction. Product performance is therefore a crucial factor of repurchase intention and even subjective well-being.

2.2. Relational Capital

Based on the social embeddedness theory, Hinrichs [39] indicated that economic interactions and social interactions exist simultaneously within farmers' markets. The process of consumer transactions socially embedded with the interactions of farmers and physically embedded with the contexts of farmers' markets and local communities. Consumers generally go to farmers' markets with their friends and family [40]. At the same time, they have social interactions with farmers or other consumers while they make purchases at the market. Thus, relational capital forms during the purchase process. In this study, I define relational capital as "the valued number of resources an actor can employ and use through direct or indirect personal relations with other actors who control those resources and in which the actor is intentionally investing and which should eventually pay off" [28]. During the purchase encounters at farmers' markets, consumers engage in purchase behavior and economic interactions based on purchase motives, product information, and their experiences with certain sellers in the past.

Lyson et al. [41] indicated that from a neoclassical perspective, the economic meaning of farmers' markets may not be very important. However, from the community perspective, farmers' markets are venues where consumers can obtain high-quality agricultural products while establishing relational capital. They stated that " . . . [farmers' markets] can nurture local economic development, maintain diversity and quality in products, and provide opportunities for producers and consumers to come together to solidify bonds". Offer [42] pointed out that the reciprocal transactions between buyers and sellers at farmers' markets are "preferred when trade involves a personal interaction, and when goods and services are unique, expensive or have many dimensions of quality". Hunt [15] advocated that a correlation exists between the social interactions that consumers engage in at farmers' markets and the quality of the agricultural products that they purchase. He pointed out that the social interaction and information-sharing functions of farmers' markets enable consumers and producers to influence each other. Producers can get to know what quality requirements consumers have of agricultural products and improve their production methods accordingly, while consumers can acquire more information and purchase agricultural products of higher quality. Based on the above, consumers then form evaluations of product performance in the post-purchase stage. At the same time, consumers also have discussions with the friends and family accompanying them during the

purchase process as well as form and accumulate relational capital at the farmers' market from their social interactions with farmers [43]. Accordingly, the first hypothesis of this study is as follows:

H1. *A positive and significant correlation exists between the product performance evaluation and relational capital of consumers at farmers' markets.*

2.3. Repurchase Intention

I view repurchase intention as the probability that a consumer will revisit a seller or repurchase a product based on previous purchase behavior or experience in a farmers' market and after considering various factors [44,45]. Several marketing studies have demonstrated that the quality evaluation and satisfaction with regard to purchased products are antecedents of many loyal customer behaviors, such as repeat purchase, positive word-of-mouth, and the propensity to buy more. Thus, the evaluations that consumers make of product quality at farmers' markets are an important factor influencing their repurchase intention. Accordingly, I put forward the following hypothesis:

H2a. *The product performance evaluation of consumers at farmers' markets exerts a positive impact on their repurchase intention.*

In a study on customers at a farmers' market in Italy, Cassia et al. [46] discovered that the factors influencing customer satisfaction include tangible factors, such as product quality, comparative prices, and convenience, and the social capital factors that exist among customers, farmers, and territory. Research [47] has also found that the perceived social embeddedness of customers at an organic farmers' market exerted a positive influence on their repurchase intention. Conceptually speaking, both social capital and social embeddedness are closely associated with relational capital. Accordingly, I put forward the following hypothesis:

H2b. *The relational capital of consumers at farmers' markets exerts a positive impact on their repurchase intention.*

2.4. Subjective Well-Being

The experience, feeling, and understanding of well-being varies from person to person. Subjective well-being can be defined as a type of positive mental experience that an individual forms towards his or her own existence and progress and that is generated from the collective effects of factors such as objective conditions and satisfaction of needs [48]; it includes cognitive and affective aspects. The cognitive aspect equates subjective well-being with life satisfaction, and it is an overall evaluation based on the standards that an individual holds towards his or her quality of life. The affective aspect regards subjective well-being as the positive and negative evaluations that an individual has towards his or her current happiness and sense of value. As can be seen, well-being is a comprehensive concept combining an individual's life satisfaction, happiness, and sense of value. Similar concepts include satisfaction with life, quality of life, and happiness [49].

Numerous factors can influence subjective well-being, such as personality, self-efficacy, social relations, socioeconomic status, work, consumption, and leisure [50]. The purchase experiences at farmers' markets, which contain both consumption and leisure, are naturally a factor as well. Marketing research has shown that the primary task of salespeople is to convey superior value to customers so as to maintain and improve the well-being of customers and society [51]. Based on this definition, consumers should form favorable evaluations of product performance from the marketing activities of farmers at markets, which in turn influences their subjective well-being. However, health research [52] has indicated that personality, health, interpersonal network, and various domain satisfactions can explain 70–80% of subjective well-being. Still, literature regarding tourism has pointed out that the overall customer satisfaction of tourists (similar to the evaluation of tourism product performance) wields a positive influence on subjective well-being [53]. Based on the arguments above, I believe that the product performance perceived by consumers after making their purchases

at a farmers' market exerts a positive impact on their subjective well-being. I thus formulated the following hypothesis:

H3a. *The product performance evaluation of consumers at farmers' markets exerts a positive impact on their subjective well-being.*

Relatively more research exists on the influence of relational capital on subjective well-being. Studies show that some concepts similar to relational capital in meaning, such as social factors [46], social capital [54,55], and interpersonal trust [56], have an impact on subjective well-being. More specifically, social capital such as marriage, family, friends, and neighbors can offer individuals with timely and important social support, thereby bringing them joy, a sense of belonging, and self-esteem, which in turn enhances subjective well-being. Similarly, when consumers go to farmers' markets, the relational capital formed from their interactions with the friends and family accompanying them and their face-to-face interactions with the farmers will increase their subjective well-being. Accordingly, I put forward the following hypothesis:

H3b. *The relational capital of consumers at farmers' markets exerts a positive impact on their subjective well-being.*

Figure 1 exhibits the conceptual model of this study, presenting the relationships among the four constructs, namely, product performance, relational capital, repurchase intention, and subjective well-being, and the hypotheses that will be tested.

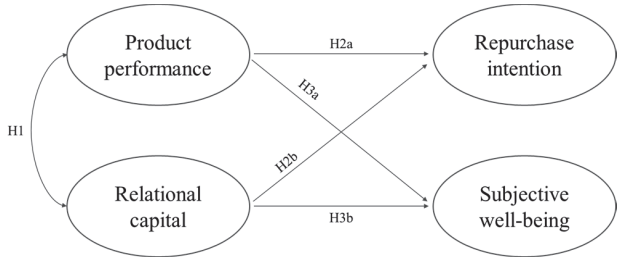

Figure 1. Proposed conceptual model.

3. Methodology

3.1. Construct Measurement

A structured questionnaire was developed to collect data, including four demographic variables, namely, participant gender, age, educational background, and average monthly household income and the four potential constructs, namely, product performance, relational capital, repurchase intention, and subjective well-being. Gender included male and female. Age was originally divided into six groups: under 20 years old, 21~30 years old, 31~40 years old, 41~50 years old, 51~60 years old, and over 61 years old. However, after compiling the statistics, I rearranged them into three groups: under 40 years old, 41~60 years old, and over 61 years old. Educational background was originally divided into four groups: junior high school or below, senior/vocational high school, university/junior college, and graduate school or above. However, after compiling the statistics, I rearranged them into three groups: senior/vocational high school or below, university/junior college, and graduate school or above. Average monthly household income was originally divided into nine groups: NTD 20,000 or lower, NTD 20,001~40,000, NTD 40,001~60,000, NTD 60,001~80,000, NTD 80,001~100,000, NTD 100,001~120,000, NTD 120,001~140,000, NTD 140,001~160,000, and NTD 160,001 or higher. However, after compiling the statistics, I rearranged them into four groups: NTD 40,000 or lower, NTD 40,001~80,000, NTD 80,001~120,000, and NTD 120,001 or higher.

In addition to the demographic variables of the participants such as gender, age, educational background, and average monthly household income, the potential constructs of this study all contained several indicators, each calculated using a single question item measured on a five-point Likert scale. The responses ranging from strong disagreement to strong agreement were given 1 to 5 points, respectively. After referring to the literature [57,58], I divided product performance into three variables, namely, product quality, product safety, and product superiority. Relational capital was divided into four variables, namely, face-to-face interaction, communication and understanding, learning experience, and development of friendship [59,60]. Repurchase intention was divided into three variables: repurchasing frequency, repurchase quantity, and repurchase priority [21,43]. Subjective well-being was divided into four variables: life satisfaction, happiness, fulfillment, and self-reported health [56,61]. The question items regarding product performance were worded in the negative direction and reverse scored. All of the question items in the questionnaire were reviewed and revised by three experts familiar with farmers' markets to ensure content validity. Table 1 presents the potential constructs, indicators, and their question items:

Table 1. Potential constructs, indicators, and question items.

Potential Construct	Indicator	Question Item
Product performance	Product quality	The product quality does not meet my expectations.
	Product safety	The product is not guaranteed to be safe.
	Product superiority	The products seem no different from those from other sales channels.
Relational capital	Face-to-face interaction	The farmers personally sell their products, which offers more opportunities for face-to-face interaction.
	Communication and understanding	I can get to know the farmers better by talking with them directly.
	Learning experience	The market farmers and I can learn from each other.
	Development of friendship	I can become friends with the market farmers.
Repurchase intention	Repurchase frequency	I am willing to come to this market more frequently.
	Repurchase quantity	I am willing to purchase more at this market.
	Repurchase priority	I will choose to buy agricultural products from this market over those from other sales channels.
Subjective well-being	Life satisfaction	I am satisfied with my life.
	Happiness	I think I am happy.
	Fulfillment	I am living a fulfilled life.
	Self-reported health	I think I am in good health.

3.2. Data Collection

I first prepared a structured questionnaire and then chose three recurring farmers' markets in Taiwan that had been around for a long time. Two sold environmentally friendly agricultural products, whereas the other sold organic agricultural products. All three markets are managed by a market committee consisting of member vendors who ensure that all agricultural products sold at the market are produced, processed, and marketed by the farmers themselves and that all the agricultural products pass safety inspections and organic produce verification. I adopted convenience sampling of consumers with purchase experiences at these three markets. As convenience sampling was employed, the analysis results may not be representative of the entire population [62]. The interviewer confirmed that the participants were return customers who had purchased products at the market in the past before administering the questionnaire. The survey was conducted from February to April in 2016. A total of 394 questionnaires were distributed. After eliminating incomplete questionnaires, I obtained a total of 358 valid questionnaires, representing a valid recovery rate of 89.5%. Most of the valid samples were from women (65.9%), and over half of the participants were between the ages of 41 and 60 (54.2%). The highest level of education attained by most of the participants was university or junior college (60.3%), and in monthly household income, the largest group was between NTD 40,000 and NTD 80,000 (37.7%). Table 2 shows the sample characteristics in detail.

Table 2. Sample characteristics.

	n	%		n	%
Gender			Age		
Female	236	65.9	40 years old or under	121	33.8
Male	122	34.1	41 to 60 years old	194	54.2
			61 years old or above	43	12.0
Educational background			Monthly household income		
Senior high school or lower	59	16.4	NTD 40,000 or lower	78	21.8
University or junior college	216	60.3	NTD 40,001 to NTD 80,000	135	37.7
Graduate school or higher	83	23.2	NTD 80,001 NTD 120,000	84	23.5
			NTD 120,001 or higher	61	17.0

4. Results

4.1. Analysis of Descriptive Statistics

Table 3 presents the descriptive statistics of different participant groups with regard to the four potential constructs. On the whole, relational capital received the highest score (mean = 4.23, SD = 0.62) and was followed by repurchase intention (mean = 4.12, SD = 0.71), subjective well-being (mean = 3.91, SD = 0.59), and product performance (mean = 2.75, SD = 0.74). Looking at the individual latent variables, I found that female participants expressed higher product performance evaluations, relational capital, and repurchase intention than male participants after their purchase experiences, and they also perceived greater subjective well-being than male participants on the whole. Older participants displayed both higher product performance evaluations and repurchase intentions than younger participants. Participants between the ages of 41 and 60 presented the highest relational capital, and those under the age of 40 showed poorer subjective well-being. Participants with higher educational backgrounds expressed poorer product performance evaluations as well as higher relational capital, repurchase intention, and subjective well-being. Participants with higher monthly household income presented higher product performance evaluations, relational capital, and subjective well-being, whereas those with slightly lower monthly household income (NTD 40,001~80,000) displayed the highest repurchase intention.

Table 3. Descriptive statistics of different population groups in potential constructs.

	Quality	Performance	Relational	Capital	Repurchase Intention		Subjective Well-Being	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Female	2.76	0.72	4.26	0.65	4.18	0.71	3.95	0.58
Male	2.74	0.77	4.19	0.56	4.01	0.68	3.84	0.60
Age								
40 years old or under	2.56	0.65	4.21	0.61	4.06	0.71	3.86	0.56
41 to 60 years old	2.83	0.75	4.25	0.63	4.13	0.70	3.92	0.61
61 years old or above	2.91	0.73	4.23	0.55	4.26	0.64	3.92	0.63
Educational background								
Senior high school or lower	3.12	0.76	4.16	0.53	3.92	0.68	3.89	0.58
Senior high school or lower	2.75	0.71	4.23	0.63	4.16	0.71	3.89	0.60
University or junior college	2.51	0.72	4.27	0.63	4.17	0.68	3.96	0.58
Monthly household income								
NTD 40,000 or lower	2.67	0.77	3.85	0.68	3.97	0.71	3.85	0.68
NTD 40,001 to NTD 80,000	2.77	0.71	3.86	0.59	4.17	0.70	3.86	0.59
NTD 80,001 NTD 120,000	2.81	0.78	3.92	0.60	4.07	0.72	3.91	0.60
NTD 120,001 or higher	2.67	0.74	3.91	0.54	4.08	0.66	3.91	0.54
Total	2.75	0.74	4.23	0.62	4.12	0.71	3.91	0.59

4.2. Measurement Model Test

Prior to structural equation modeling (SEM) analysis, I performed an outlier test, a normality test, and multicollinearity test to ensure that the data fulfilled basic assumptions [63,64]. The results of the

Q-Q plot indicated no problematic outliers in the measurement results of the individual constructs. The highest absolute value of the skewness coefficients of the four constructs was 1.201, and the highest absolute value of the kurtosis coefficients was 4.890. For a normal distribution, the absolute values of the skewness and kurtosis coefficients must be less than 3 and 10, respectively [64]. Thus, all four constructs can be regarded as following normal distributions. The most reliable index for multicollinearity testing is the variance inflation factor (VIF). The VIF of the two exogenous latent variables in this study, product performance and relational capital, was 1.022, thereby indicating lack of a high correlation between the two [65]. The measurement model was first tested, then structural equation modeling (SEM) analysis was conducted using AMOS 20. The measurement model test results indicated that the overall fitness of the measurement model was acceptable (see Table 4) with $\frac{X^2}{df} = 2.126$, RMSEA = 0.056, GFI = 0.938, and AGFI = 0.908. Table 4 shows that the composite reliability of the potential constructs ranged from 0.724 to 0.905, all exceeding 0.70 and thus indicating acceptable reliability [66]. According to Anderson and Gerbing [67], the requirements for convergent validity include standardized factor loading greater than 0.400 and reaching the 0.001 level of significance as well as average variance extracted (AVE) greater than 0.500. As shown in Table 3, the standardized factor loadings of the potential constructs ranged from 0.531 to 0.919 and all reached statistical significance ($p < 0.001$). Except for the AVE value of product performance being 0.469, the AVE values of all the other potential constructs exceeded 0.500. Thus, the convergent validity of the potential constructs was acceptable.

Table 4. Measurement model test.

Constructs and Variables	Standardized Loading	CR	AVE	Cronbach's α
Product performance		0.724	0.469	0.720
Product quality	0.753 ***			
Product safety	0.622 ***			
Product superiority	0.672 ***			
Relational capital		0.905	0.705	0.900
Face-to-face interaction	0.832 ***			
Communication and understanding	0.919 ***			
Learning experience	0.852 ***			
Development of friendship	0.747 ***			
Repurchase intention		0.897	0.744	0.895
Repurchase frequency	0.855 ***			
Repurchase quantity	0.910 ***			
Repurchase priority	0.821 ***			
Subjective well-being		0.878	0.651	0.859
Life satisfaction	0.829 ***			
Fulfillment	0.919 ***			
Happiness	0.888 ***			
Self-reported health	0.531 ***			

Goodness-of-fit: χ2/df = 2.126, RMSEA = 0.056, GFI = 0.938, AGFI = 0.908, *** $p < 0.001$.

Chin [68] pointed out that AVE values greater than 0.500 and coefficients of the correlation between constructs being lower than the square roots of the AVE values are required for discriminant validity. The AVE values of the constructs in the model ranged from 0.469 (close to 0.500) to 0.744, and their square roots fall between 0.685 and 0.863 (see Table 5). Thus, the measurement model has suitable discriminant validity.

Table 5. Correlation matrix of constructs and square roots of their AVE values.

	Product Performance	Relational Capital	Repurchase Intention	Subjective Well-Being
Product performance	**0.685**			
Relational capital	0.146	**0.840**		
Repurchase intention	0.300	0.357	**0.863**	
Subjective well-being	0.068	0.229	0.238	**0.807**

Note: The bold figures on the diagonal are the root values of potential constructs.

4.3. Structural Equation Modeling (SEM) Analysis Results

After confirming the suitability of the measurement model, I conducted SEM analysis to test model fitness and the hypotheses. The important fitness indices of the overall theoretical model were as follows: $\chi 2/df = 2.233$, GFI = 0.935, AGFI = 0.905, and RMSEA = 0.059. Except for RMSEA being slightly higher than 0.05, the remaining indices all reached the ideal criteria.

The analysis results of the overall theoretical model (Figure 2) indicate a significant and positive correlation between product performance and relational capital ($\Psi = 0.20$, $p < 0.01$). Thus, H1 is supported. The influence of product performance on repurchase intention was positive and significant ($\beta = 0.30$, $p < 0.001$), thereby supporting H2a. The influence of relational capital on repurchase intention was positive and significant ($\beta = 0.32$, $p < 0.001$). Thus, H2b is supported. The standardized coefficients of the influences of product performance and relational capital on repurchase intention were 0.30 and 0.32, respectively. I can thus say that the effect sizes of the two on repurchase intention are roughly the same. The influence of product performance on subjective well-being was positive but did not reach the level of significance ($\beta = 0.08$, $p < 0.22$). Thus, H3a is not supported. The influence of relational capital on repurchase intention was positive and significant ($\beta = 0.24$, $p < 0.001$), thereby supporting H3b.

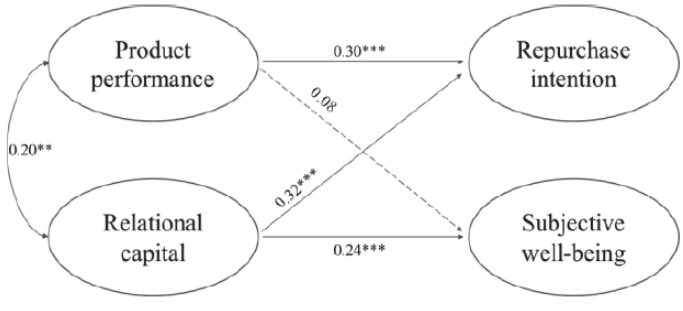

Figure 2. Structural equation modelling (SEM) analysis results. Note: * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$. The dashed line indicates that the influence was not statistically significant.

5. Discussion and Conclusion

Farmers' markets have many functions, such as directly connecting farmers and consumers and promoting local production for local consumption. Furthermore, they can serve as cultural attractions, which can provide opportunities for rural tourism. They offer opportunities for training in production and marketing so that farmers can improve their effectiveness in marketing and management. Finally, they provide venues for social interactions and social embeddedness between consumers and farmers and improve their social well-being. This study combined the economic and social perspectives of consumer participation in farmers' markets and examined the relationships among important concepts of the post-purchase stage of consumer consumption at farmers' markets, namely, product performance, relational capital, repurchase intention, and subjective well-being.

The first finding was that a significant and positive correlation exists between product performance and relational capital, which indicates that farmers' markets can provide consumers with quality,

safe, and superior agricultural products as well as the opportunity to form and accumulate diverse relational capital such as face-to-face interactions, communication and understanding, learning, and development of friendship. Consumers who perceived greater product performance at farmers' markets accumulated more relational capital, so the two have a mutually complementing effect. In other words, farmers' markets with greater product performance can better enable consumers to form and accumulate relational capital during the consumption process. This result confirms the views expressed in previous studies [10,41,42], in which the social interactions such as conversations and information-sharing between buyers and sellers at farmers' markets enable consumers to establish social capital. At the same time, they promote consumers' understanding of market product characteristics and their ability to choose products of good quality, thereby leading to good product performance evaluation.

The second finding was that product performance and relational capital are both important factors of the repurchase intention of consumers, and the two are roughly equal in importance (β values equaling 0.30 and 0.32, respectively). The analysis results indicate that the effects of product performance and relational capital on repurchase intention are almost the same. In other words, whether consumers can experience high-quality interpersonal relationships and social interactions during consumption processes is just as important to customer loyalty to farmers' markets as whether consumers can purchase safe and high-quality agricultural products. Thus, existing customers can be encouraged to return to the market using an economic approach: for example, improving the quality of the agricultural products on sale to increase consumer ratings and satisfaction regarding the products. A social approach, which involves improving the quality of interactions between producers and consumers and providing consumers with deep psychological attachment and social support, could also prove effective. The analysis results indicate that these approaches are of equal significance.

The third finding was that the economic product performance does not have a significant impact on the subjective well-being of consumers at farmers' markets. This is consistent with the results derived by Cassia et al. [46] and Chen and Scott [47]. In contrast, the social relational capital does have a significant impact on the subjective well-being of consumers. This means that the economic perspective of whether consumers can buy safe and high-quality agricultural products at farmers' markets does not affect their subjective well-being. However, if a consumer has a good consumption experience with good interpersonal relations and social interactions at a farmers' market, then he or she will be more likely to go again. On the whole, the economic product performance and the social relational capital are of equal importance to repurchase intention. However, only the social relational capital is significant to subjective well-being. The question of whether product performance or relational capital is more important in this study is thus answered. The empirical data of this study indicates that the social relational capital is more important the economic product performance.

The managerial implications of the literature review and research findings are as follows. (1) Consumers can engage in more in-depth social interactions or establish close relational capital at markets, and at the same time, information exchanges enable them to acquire more product information and purchase agricultural products of greater quality. Thus, farmers' market planners should aim to provide high-quality agricultural products and maintain a friendly, social atmosphere that is conducive to communication. (2) To enhance consumer loyalty and repurchase intention, measures to improve the quality of economic and tangible products are necessary; however, measures to improve the social and intangible qualities of the environment cannot be ignored. (3) Aside from contributing to the local economy and serving as a form of leisure consumption, shopping at farmers' markets can enhance the subjective well-being of the consumers. In policy planning, administrative departments should encourage the establishment and promotion of farmers' markets.

Finally, I put forward five suggestions for future research. First, research applying both the economic perspective and social perspective to farmers' markets is still new; I suggest that future studies develop and test different constructs and frameworks to enrich research in this respect. Second, there are still many other factors that impact the product performance evaluation, relational capital, repurchase intention, and the well-being of consumers at farmers' markets, such as

demographic variables, personality, and socio-economic status, which I did not include in our analysis model. Future studies can use control variables or interference variables to encompass these factors and thereby enhance the rigor of research in this respect. Third, the operations of farmers' markets involve various stakeholders, including the government, communities, managers, farmers, and consumers. Future studies should include all of the aforementioned stakeholders as participants when investigating a topic. Fourth, including different demographic variables such as gender, age, educational background, and income in the SEM for multi-group path analysis to compare the moderating effects of different population groups would be interesting and meaningful. There were only 358 valid samples in this study, which was not enough for said analysis. It is recommended that future studies collect more samples for multi-group path analysis. Fifth, because of using convenience sampling, this research may have compromised the representativeness of the sample. Future studies can use random sampling method to enlarge sample's representativeness.

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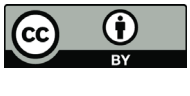

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Culinary Tourism Experiences in Agri-Tourism Destinations and Sustainable Consumption—Understanding Italian Tourists' Motivations

Riccardo Testa, Antonino Galati, Giorgio Schifani, Anna Maria Di Trapani and Giuseppina Migliore *

Department of Agricultural, Food and Forestry Sciences, University of Palermo, Viale delle Scienze13 - Edificio 4-, 90128 Palermo, Italy

* Correspondence: giuseppina.migliore@unipa.it; Tel.: +39-091-23896618

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Abstract: Culinary tourism represents an emerging component of the tourism industry and encompasses all the traditional values associated with the new trends in tourism: respect for culture and tradition, authenticity and sustainability. Italy is known worldwide for the richness and variety of its gastronomy, and agri-tourism represents one of the most important places where culinary tourists can experience local food and beverages. By using a modified version of Kim and Eves' motivational scale, the present study aims to investigate which motivational factors affect the frequency of culinary tourists to experience local food and beverages in agri-tourism destinations. The findings of the present study reveal that the social and environmental sustainability, among the other motivations, has shown to play a crucial role in influencing Italian tourists' frequency to experience local food and beverage in agri-tourism destinations.

Keywords: gastronomy; local food; cultural experience; social and environmental sustainability; rural development; food consumption

1. Introduction

The local food movement is part of the contemporary social movements aiming to change the global agricultural landscape by altering the way we understand and interact with the food system [1,2]. Its main goal is focused on shortening the distance between producer and consumer, in order to increase the social, economic and environmental sustainability of the food system, and to strengthen the cultural identity of the territories [3]. According to Feenstra [4], the local food movement is founded on social and cultural interests, by including support for producers, local economies and environmental protection, through the production, processing, distribution and consumption of local foods. An emerging component of this movement is culinary tourism [5], which emphasizes unique foods and dishes from the culture of a specific region [6]. Hall and Sharples [7] considered culinary tourism as the leisure pursuit of a memorable eating and drinking experience, made to places where good foods are prepared for the purpose of fun or entertainment, which incorporates visits to local producers, food fairs, farmers' markets, cooking demonstrations and any food-related tourism activities. Among EU countries, Italy has shown a considerable growth of culinary tourism over the last years, becoming one of the most dynamic and creative segments of tourism [8]. According to the latest available data [9], culinary tourists in Italy have exceeded 110 million in 2017 (of which 43% domestic tourists), with an economic impact of 12 billion euros (15.1% of the Italian tourism sector). Italy, in fact, represents a tourist destination whose brand image is connected, with varying levels of intensity, to gastronomic

values, thanks to the fact that it represents the first EU country for protected designation of origin (PDO), protected geographical indication (PGI) and traditional specialty guaranteed (TSG). According to EU regulations, the PDO label identifies a product in which all the phases of the production process (production, processing and preparation process) must take place in the specific region. The IGP differs from PDO, as at least one of the stages of production, processing, or preparation takes place in the region. TSG refers to all those food products whose production processing is recognized and used throughout the area concerned, according to traditional rules agri-food labels (825 agri-food products with these labels) and traditional agri-food products (5056 labels).

Culinary tourism includes several areas such as wine tourism, beer tourism, gourmet tourism and gastronomic tourism, and tourists can experience it through local and unique restaurants, breweries, wineries, culinary events, farmers' markets and agri-tourisms [10,11]. In Italy, agri-tourism represents one of the most important places where culinary tourists can experience local food and beverages. As indicated by McGehee and Kim [12], agri-tourism is a farm that combines agricultural production with a component of rural tourism. In Italy, agri-tourisms amounted to 23,406 in 2017, showing an increase of about 27% over the last 10 years [13]. Agri-tourisms are seen as effective means of supporting local economies as they represent an important source of income diversification for farmers [14], and a way to contributing to the preservation of landscapes and cultural heritage in the rural areas [15]. According to the latest available data, in Italy the number of tourists in the agri-tourism sector exceeded 12 million, with an economic impact of over 1.4 billion euros [16]. An estimate, the latter, that seems destined to grow, is also in consideration of the fact that tourists are increasingly interested in consuming food products and dishes that are characteristic of specific territories [17]. Accordingly, the ability of agri-tourisms and territories to attract culinary tourists could assume a winning role for the development of the whole economy in rural areas and to contribute to enhancing the value of the local farm's products through its association with the social and cultural context [18].

However, to date few efforts have been made to understand culinary tourists' motivations to experience local foods and beverages [19,20]. With reference to agri-tourism literature, the research has been mainly focused on the supply side of the market, with most studies concerning entrepreneurial motivations [21,22]. Few studies have investigated the tourists' motivations to visit agri-tourism destinations [23], some of them mainly focused on the recreational component of agri-tourism, including being with family, and enjoying natural landscapes and the smells and sounds of nature [24]. Very few efforts have been done on the link between the tourists' motivations of experiencing local food and beverage and the interest in visiting agri-tourisms [25]. To the best of our knowledge, no study has explored the role of motivations on the consumption of local food and beverages in agri-tourism destinations in Italy. Furthermore, it is not clear which motivations play a key role in influencing the choice to consume local food in agro-tourism destinations. The current study aims to reduce this gap by contributing to understanding which motivational factors affect the choice of Italian culinary tourists to experience local food and beverages in agri-tourism destinations. Considering the importance of the role played by food in the choice of a tourist destination, findings of the present study could contribute both to enrich the literature on culinary tourism and to drive agri-tourist operators who want to shape their business model to satisfy the costumers' expectations.

Using a behavioural approach, we conducted a survey in Italy through an online questionnaire with modified items from the Kim and Eves' scale measurement of tourists' motivations to consume local food [26]. We chose this scale as it seems the most comprehensive tool for inferring how tourists perceive local food and beverages in agri-tourism destinations. Furthermore, to understand whether motivations linked to sustainability aspects of food consumption affect the choice to experience local food and beverage in agri-tourism destinations, we implemented in Kim and Eves' scale some motivational items deriving from local food consumption literature.

2. Culinary Tourism and Local Food Consumption: A Focus on the Existing Relevant Literature

Culinary tourism is an increasingly expanding sector of tourism in which tourists experience local food and beverages of other destinations and cultures [27]. Over the years, in fact, culinary tourism is becoming an emergent alternative to mass tourism, inasmuch culinary tourists increasingly try to gain new experiences in an active, differentiated and unique manner than the choice of reaching standardized touristic destinations [28]. What emerges is that many holiday destinations worldwide are very sought-after for their traditional food and beverages [29,30].

In scientific literature, culinary tourists are also called foodies as they, by means of the local food and beverages, are looking for a genuine and memorable experience [31]. Several authors claimed that the most important factor that pushes culinary tourists towards specific destinations is the desire to taste local gastronomy [32–34]. Similarly, Dann and Jacobsen [35] highlighted that an important aspect of culinary tourism is to practice variegated sensory experiences, as the taste of local gastronomy is different to the taste of same food in own country or region.

Green and Dougherty [5] conceptualized culinary tourism as a subset of cultural tourism, by asserting that food and beverages are expressions of specific cultures. They perceived local food and beverages as guarantees of authenticity, since they emphasized unique regional dishes, telling a collective memory made of knowledge, flavours and peasant rituals. This was also supported by the UNWTO that recognized food as a key element of all cultures and a major component of global intangible heritage. Culinary tourism, in fact, incorporates moral and economical qualities dependent on the territory, landscape, local culture, local food items and authenticity [36]. In the context of tourism research, motivations are important constructs to understand tourists' behaviour, as they are seen to affect the choice of a touristic destination [37], or participation to a particular touristic activity [19,38]. In the literature, different motivations have been recognized to affect the choice of tourists to experience local food. Culture seems, in fact, an important motivator that affects culinary tourism. According to Fields [20], tourists' desire to experience local food and beverages in a tourist destination is strictly linked to cultural motivations, as experiencing new foods and dishes means also experiencing new cultures. In addition, Kim and colleagues [39] showed that healthy eating is another important motivational factor affecting tourists' interest in local food. They affirmed that tasting local food and beverages in their place of origin is perceived by tourists as a means to improve psycho-physical health, as they are perceived to be fresher and more nutritious.

Culinary tourism is perceived by tourists also as a change of everyday routine and eating habits in order to try new food experiences and to obtain a certain prestige with their family and friends [20,39]. This is in line with Schultz [40] who denoted that nowadays more and more tourists are in search of authentic travel and food experiences, thanks also to the role of the media that have positively influenced tourists' perspectives about the link between tourism and gastronomy [41].

Moreover, previous studies highlighted as culinary tourism could be an opportunity to socialize and be together with family and other people, as participating in festivals and events based on local food are able to build social relations, by contributing to make the tourist experience more pleasant [42,43]. This is also supported by Sotomayor and colleagues [24], related to agri-tourism experience in Missouri (U.S.), who found that being with family and enjoying natural landscape were important motivators for visiting agri-tourism destinations.

Moreover, Barbieri and colleagues [44] found that experiencing the farm lifestyle and learning about farming are crucial motivations for visiting agricultural environment for recreation. The same is true for the tourists' perception that agricultural environment is associated with the authenticity of experiences [45,46]. However, little effort has been made to understand how the motivations to visit the agri-tourism destinations are linked to the choice to consume local food and beverages. For example, Kline and colleagues [25] found a positive association between the consumers' concerns over the humane treatment of animals and environmental impacts of the mainstream supply chain and the interest of tourists to experience local food, in particular, meat, in agri-tourism destinations. The line of

research on consumer preference for local food highlights further motivational dimensions affecting consumer choice, including environmental and social sustainability motives [47].

These motivations, which highlight an ethical aspect linked to the consumption of local food, have been little explored in previous research on tourists' motivation to consume local food [25]. In particular, the literature emphasizes that environmental protection play a crucial role in affecting local food consumption. Indeed, according to Migliore and colleagues [48] consumers are often driven to consume local food because they are motivated to reduce the environmental costs of food production and distribution. Moreover, some studies reported that consumers perceive local food to be better for the environment and also for society than organic food [49].The preference for local food seems linked to the perception that local farms, more in particular, the small-size ones, adopt agricultural practices with less dependence on synthetic pesticides and fertilizers [49].

Several studies highlighted that the growing interest of consumers is often associated with the perception that local food is more nutritious, healthier and of higher quality than that sold in the mainstream supply chain [50,51], also because products have travelled a short distance to reach the consumer's table [47]. However, the most frequently named motivations for expressed preferences of local food among consumers seem related to environmental protection and support of the local economy [47].

Local food consumption has been recognized to increase social and economic justice in rural communities, as consumers desire to support local farms that have difficulty in entering the traditional commercial channels [52]. In particular, Sage [53] explained that direct interactions between farmers and consumers generate solidarity, promoting the recovery of a sense of morality within the agri-food sector. Indeed, besides supporting farms from an economic point of view, consumers try to create direct relationships based on solidarity and trust.

In scientific literature, several studies have analysed how socio-demographic characteristics of culinary tourists affect their choices and destinations. According to some authors [54–56], there is a specific profile of culinary tourists, inasmuch they usually have both a medium-high level of income and education and an age range between 35 and 45 years. In particular, Pérez-Priego et al. [54] showed that the majority of culinary tourists are women, hold a university degree and have a household monthly net income higher than 2000 euro.

By integrating both tourists' motivation literature and local food research, this study contributes to enriching understanding about motivational factors, and socio-demographic characteristics, influencing the consumption of local food and beverage in Italian agri-tourism destinations.

3. Methodology

3.1. The Modified Kim and Eves' Scale Measurement of Tourists' Motivations to Consume Local Food

In the literature on consumer decision-making, motivations refer to a set of psychological constructs that explains why people behave in certain ways. They can be thought of as the antecedent condition that compels human behaviour to occur [19].

In order to explain tourists' behaviour to taste local food and beverages, Kim and Eves [26] developed a motivational scale composed of five motivational dimensions, generated by 26 items. The five motivational dimensions were cultural experience, excitement, interpersonal relation, sensory appeal and health concern (Figure 1).

In particular, 'cultural experience' is associated to the tourists' desire to experience different cultures, since experiencing new foods and dishes means also experiencing new cultures. 'Excitement' dimension is related to the need to practise exciting experiences during holiday, also associated with the need to escape from routine.

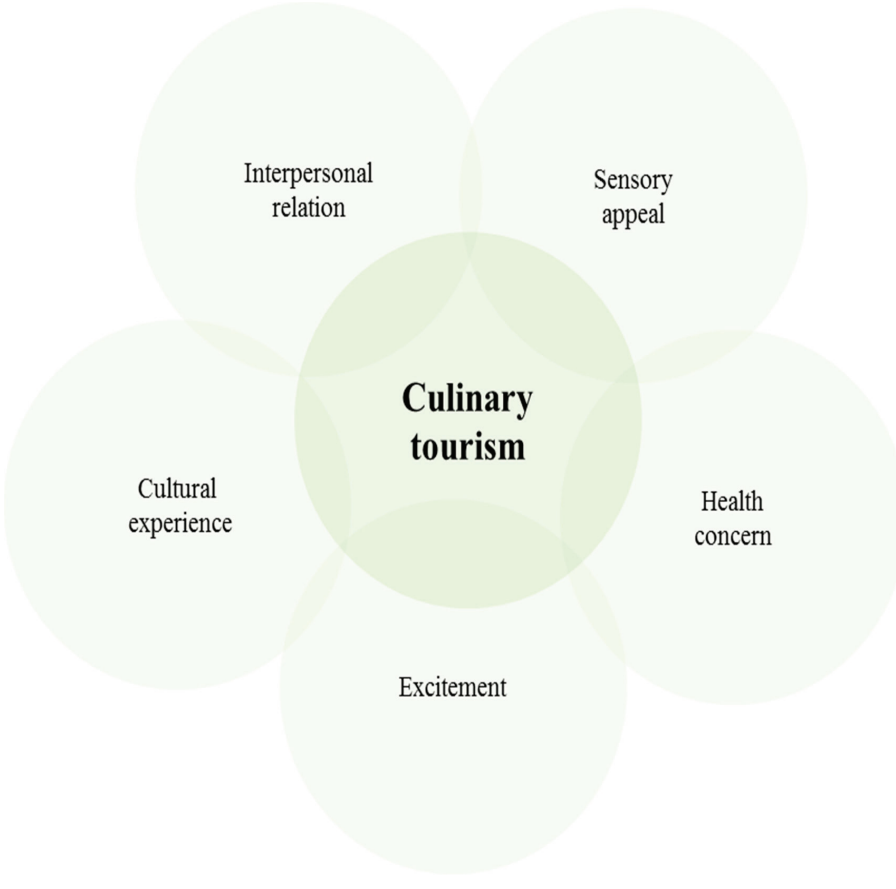

Figure 1. The five motivational factors of Kim and Eves' motivational scale.

The third dimension identified by Kim and Eves was 'interpersonal relation', which is seen as a desire to meet new people, spend time with friends and family and get away from routine relationship.

Culinary tourism is also seen as a sensory experience. 'Sensory appeal' is, in fact, the fourth dimension found by Kim and Eves and it is related to the sensory characteristics of food that can play an important role in culinary tourist' choices. 'Health concerns' is the fifth motivational dimension affecting local food and beverages consumption in touristic destinations identified by Kim and Eves.

Moreover, several previous studies have highlighted that prestige is another factor affecting tourist choice to experience local food and beverage in tourist destinations. In fact, Kim and colleagues [39], Crompton and McKay [19] and Botha and colleagues [57] pointed out that prestige, in the context of local food experience, is an expression of self-esteem and it derives from the need to create a favourable impression on other people. Therefore, considering the above-mentioned motivational factors, a modified version of Kim and Eves' motivational scale was proposed in this study, including new items deriving from local food literature. More in detail, in Table 1, are reported the 26 original items from Kim an Eves' scale, 4 items from previous studies on tourists' prestige, and 10 items recognized on local food literature, emphasizing the social and environmental sustainability, as well as the healthy eating associated with local food.

Table 1. Modified version of Kim and Eves' (2012) motivational scale.

	Kim and Eves' Original Items
No.	***Cultural Experience Dimension***
1	Experiencing local food gives me an opportunity to increase my knowledge about different local cultures
2	Tasting local food served by local people in its original place offers a unique opportunity to understand local culture
3	Experiencing local food enables me to learn what this local food tastes like
4	Experiencing local food makes me see things that I don't normally see
5	Experiencing local food helps me see how other people live
6	Experiencing local food allows me discover something new
7	Tasting local food in its traditional setting is a special experience
8	Tasting local food in an original place is an authentic experience
	Excitement Dimension
9	Experiencing local food in its original place make me excited
10	When tasting local food I have an expectation that it is exciting
11	Tasting local food makes me feel exhilarated
12	Tasting local food on holiday helps me to relax
13	Tasting local food on holiday makes me not worry about routine
14	Tasting local food on holiday takes me away from the crowds and noise
	Interpersonal Relation Dimension
15	Tasting local food enables me to have enjoyable time with friends and/or family
16	Having local food increases friendship or kinship
17	I want to give advice about local food experiences to people who want to travel
18	I like to talk to everybody about my local food experience
19	It is important to me to taste local food in its original regions
	Sensory Appeal Dimension
20	It is important to me that the local food I eat on holiday tastes good
21	It is important to me that the local food I eat on holiday smells nice
22	It is important to me that the local food I eat in agri-tourism looks nice
23	The taste of local food in its original countries/regions is different from the taste of same food in own country/region
	Health Concern Dimension
24	Local food is nutritious
25	Local food contains a lot of fresh ingredients produced in a local area
26	Tasting local food keeps me healthy
	Other Items from Tourism Literature
	Tourists' Prestige
27	I like to take a picture of local food to show friends
28	I like to talk to everybody about my local food experiences
29	I want to give advice about local food experiences to people who want to travel
30	Experience local food enriches me intellectually
	Items from Local Food Literature
	Social and Environmental Sustainability
31	Eating local food allows me to be in solidarity with local farmers
32	Eating local food allows me to contribute to the local economy
33	Eating local food allows me to contribute to maintaining agricultural landscape
34	I like to eat local food because it has not travelled long distances and is therefore more environmentally sustainable
35	Eating local food I contribute to conserving the environment and its natural resources
36	Local food are more environmentally-friendly
37	It is important to me that local food I eat is organic certified
	Healthy Eating
38	Knowing the producer is for me a guarantee of the wholesomeness of local food
39	I believe that the local food is free of synthetic chemicals that are harmful to health
40	I prefer to consume local food because it is good for health

3.2. Data Collection and Methods

In order to detect and measure the effects of tourists' motivations on the frequency of consumption on local food and beverages in agri-tourisms, an online survey was performed, involving 412 Italian tourists who visited agri-tourism destinations. Data were collected between the spring and winter 2018, and participants were recruited through invitations to participate in the online survey. In this study, a snowball sampling recruitment technique was adopted, as it allowed to reach a large number of participants by means of their interpersonal relations and their social connections. It is worth noting that, despite this technique did not provide a fully representative sample, it allowed collecting a wide variety of information in a short time [58,59]. For the survey, a questionnaire was adopted, which was organized in three sections. In the first section, information was collected regarding the frequency of local food consumption in agri-tourism destinations, the main occasions affecting this frequency (e.g., food festivals, cooking school, or just to experiencing local food in its area of origin), and the preferred place for agri-tourism destination (rural area far from the cities or near tourist attractions). The second section of the questionnaire was reserved to gather information about the main motivations affecting tourist to taste local food and beverages in agri-tourism destinations. For each motivational items, participants were asked to rate the level of importance for these motivational items using a Likert scale ranging from 1 to 7 (where 1 was not important and 7 was very important). The third section of the questionnaire included participants' socio-demographic indicators, such as age, gender, education (in four categories: primary school, lower secondary school, upper secondary school and a university degree or higher) and household monthly net income measured in euros.

Of the 412 questionnaires collected, 29 were deleted because they were incomplete, while 383 were retained for the analysis. To identify the main motivational factors of Italian agri-tourists, data were analysed using a Principal Component Analysis (PCA). It allowed the analytical transformation of a set of correlated variables into a smaller number of independent variables or constructs, reducing the number of variables while minimizing the loss of information. To achieve a more meaningful and interpretable solution, during the extraction process, items with factor loadings higher than 0.5 were retained, while those with a value lower that 0.5 and those cross-loaded on more than one factor were eliminated (more in particular, they are the items No. 3, 4, 5, 6, 7, 19, 22, and 23, shown in Table 1). Cronbach's alpha was also calculated to measure the internal consistency of items in each factor or principal component. After that, factor scores were also calculated for each principal component, expressing the contribution of each observation to the composition of factors. The factor scores were used for the subsequent ordered logit econometric model, allowing ordered categories of a dependent variable to be modelled as a sequence of latent variables, y*, through increasing threshold levels [60].

The dependent variable was constructed as the annual frequency of local food and beverages consumption in agri-tourism destinations. This was subdivided into three categories in increasing size by level of consumption: 'low', frequency of local food consumption in agri-tourism destinations less than 2 times a year; 'medium', frequency of local food consumption between 2 and 4 times a year; and 'high', frequency of local food consumption in agri-tourism destination higher than 4 times a year (Table 2).

Table 2. Distribution of the three categories of the dependent variable.

Frequency of Consumption	Frequency	Percent
Low (less than 2 times a year)	102	26.6
Medium (between 2 and 4 times a year)	198	51.7
High (higher than 4 times a year)	83	21.7
Total	383	100.0

The independent variables were the factor scores obtained from PCA and some other agri-tourists' socio-demographic characteristics. In order to measure the effects of each motivational factor on local

food and beverages consumption, the odds ratios (ORs) were also determined. An OR quantifies the changes in the probability of the dependent variable after a unit change in the independent variable. This means that when the OR is equal to 1, the effect of the unit variation of the independent variable on the dependent variable is null, thereby maintaining the values of the other explanatory variables constant; the larger the deviation from the unit value, the greater the effect of the independent variable on the dependent variable [60].

4. Results

Of 383 participants in the survey, 209 were females (equal to about 55% of the respondents). Data processing showed that the average age of agri-tourists participating in the survey was 34 years ranging from 25 to 72 years, and 46% had a university degree and almost 50% had an upper secondary school. Over 53% of them lived in a household of three or four members. In total, 45% of respondents declared a household monthly net income between 2160 euros and 3240 euros, 18.5% of them between 3241 euros and 4350 euros, while only 6.3% declared a household monthly net income of over 5400 euros. Moreover, 31% of respondents visit agri-tourism destinations during food festivals, 42% just to experience local food in its area of origin and about 27% for cooking schools or other events organized in agri-tourism. The application of factor analysis allowed reducing the initial number of variables (31) into 6 factors, which accounted for 63.4% of the total variance. The KMO value at 0.93 exceeded the acceptable minimum value of 0.6 [61], and Bartlett's test of sphericity was observed to be significant ($p < 0.000$). The Cronbach's alpha scores were higher than 0.7, ranging from 0.78 to 0.89, indicating that the variables exhibited correlation with their factors and can be considered as internally consistent [61].

The Factor Analysis allowed identifying the main motivational factors characterizing tourists' choice to consume local food in agri-tourism destinations (Table 3). The first factor extracted, which represented one of the motivational dimensions characterizing tourists' choice, accounted for 16.8% of the explained variance and was named 'social and environmental sustainability'. It is characterized by items associated with the motivations of being in solidarity with local farmers, of contributing to the local economy, of maintaining the agricultural landscape, of eating food that has not travelled for long distance, of conserving the local environment and its natural resources, of perceiving local food more environmentally-friendly, and with the motivation associated with the importance that local food ate in agri-tourism is organically certified.

The second motivational factor extracted was named 'health concern' and what's more, it represented 13.8% of the explained variance. This factor is characterized by the items emphasizing the health aspects of local food, that is, local food is good for health, it is more nutritious, it is perceived free of synthetic chemicals harmful to health, it contains a lot of fresh ingredients produced in the local area and knowing the producer is guarantee of the wholesomeness of local food. The third motivational factor extracted accounted for 11.8% of the explained variance. It was named 'cultural experience' as it is characterized by items associated with the opportunity that eating local food increases the knowledge about different local cultures and increases understanding about local cultures, and with the perception that experiencing local food is an authentic experience and creates excitement. Compared to Kim and Eves' scale [26], in this study the excitement dimension has been incorporated into the cultural experience dimension, almost to emphasize that cultural motivations are associated with the desire to have an exciting experience.

Table 3. Explorative factor analysis results.

Factors	Factor Loading	Mean	(SD)
Factor 1: Social and Environmental Sustainability (Cronbach's Alpha: 0.78)			
Eating local food allows me to be in solidarity with local farmers	**0.732**	5.86	(1.17)
Eating local food allows me to contribute to the local economy	**0.698**	5.83	(1.64)
Eating local food allows me to contribute to maintaining agricultural landscape	**0.658**	4.99	(1.05)
I like to eat local food because it has not travelled long distances and is, therefore, more environmentally sustainable	**0.638**	5.95	(0.99)
Eating local food I contribute to conserving the environment and its natural resources.	**0.615**	5.64	(1.10)
Local food is more environmentally-friendly	**0.596**	5.07	(1.54)
It is important to me that the local food I eat is organic certified	**0.524**	5.97	(1.56)
Factor 2: Health Concern (Cronbach's Alpha: 0.82)			
I prefer to consume local food because it is good for health	**0.762**	5.74	(0.96)
Local food is nutritious	**0.733**	6.05	(0.98)
I believe that the local food is free of synthetic chemicals that are harmful to health	**0.694**	5.07	(1.45)
Local food contains a lot of fresh ingredients produced in a local area	**0.654**	6.18	(0.97)
Tasting local food keeps me healthy	**0.629**	5.56	(1.10)
Knowing the producer is for me a guarantee of the wholesomeness of local food	**0.555**	5.54	(0.95)
Factor 3: Cultural Experience (Cronbach's Alpha: 0.89)			
Experiencing local food gives me an opportunity to increase my knowledge about different local cultures	**0.807**	5.42	(1.09)
Tasting local food served by local people in its original place offers a unique opportunity to understand the local culture	**0.785**	5.36	(1.18)
Tasting local food in an original place is an authentic experience	**0.752**	5.61	(1.06)
Experiencing local food in its original place makes me exciting	**0.549**	5.42	(1.66)
Factor 4: Prestige (Cronbach's Alpha: 0.86)			
I like to take a picture of local food to show friends	**0.784**	5.10	(1.18)
I want to give advice about local food experiences for people who want to travel	**0.738**	4.97	(1.56)
I like to talk to everybody about my local food experience	**0.707**	5.55	(1.39)
Experiencing local food enriches me intellectually	**0.568**	5.23	(1.06)
Factor 5: Sensory Appeal (Cronbach's Alpha: 0.83)			
It is important to me that the local food I eat on holiday tastes good	**0.693**	6.16	(0.95)
It is important to me that the local food I eat on holiday smells nice	**0.482**	5.23	(1.05)
Factor 6: Interpersonal Relation (Cronbach's Alpha: 0.88)			
Tasting local food enables me to have an enjoyable time with friends and/or family	**0.804**	6.12	(1.10)
Tasting local food enables me to meet new people with similar interest	**0.622**	5.64	(1.23)

The fourth motivational factor was named 'prestige', as a holiday destination, such as agri-tourism, through its local food and beverage can communicate something about tourists' status. This factor accounted for 10.9% of the explained variance and is characterized by items associated to the desire to take a picture of local food to show friends, to give advice about local food experiences to people who want to travel, to talk about local food experience and to enrich intellectually.

The fifth motivational factor accounted for 5.4% of the explained variance and was explained by two variables. It was named 'sensory appeal', as it is characterized by the importance that the local food ate in agri-tourism tastes good and smells nice. The sixth motivational factor was called 'interpersonal relation'. It is characterized only by two items that emphasize the role of local food associated to the desire to spend time with friends and family and a means to meet new people with similar interest.

As mentioned in the methodology section, the factors score of motivations identified during factor analysis process were analysed, together to the socio-demographic variables of respondents, with an ordered logistic econometric model. The explanatory variables implemented in the model approximate the main motivational factors and socio-demographic characteristics, affecting the choice of Italian culinary tourists to consume local food and beverages in agri-tourism destinations. Coefficients with a positive sign indicating that as an explanatory variable increase, so do the probability of falling in the category with the highest frequency of local food consumption in agri-tourist destinations. Some of the signs of the estimated coefficients were highly significant and consistent with the expected signs (Table 4).

Table 4. Results of the econometric model (Ordered Logistic Regression).

Log likelihood = −351.93217					**Number of obs = 383** **LR chi²(10) = 48.77** **Prob > chi² = 0.000** **Pseudo R² = 0.265**	
Frequency of consumption	Coef.	Std. Err.	z	P > |z|	[95% Conf.	Interval]
Prestige	0.280	0.112	2.50	0.012	0.061	0.499
Health concern	−0.088	0.105	−0.84	0.399	−0.294	0.117
Cultural experience	0.297	0.102	2.37	0.045	0.193	0.407
Social and environmental sustainability	0.365	0.109	3.34	0.001	0.051	0.579
Sensory appeal	−0.078	0.105	−0.75	0.453	−0.283	0.126
Interpersonal relation	0.264	0.106	2.48	0.013	0.055	0.472
Age	0.021	0.009	2.45	0.014	0.004	0.138
Gender	−0.411	0.230	−1.79	0.074	−0.863	0.040
Education	0.159	0.155	1.02	0.306	−0.145	0.464
Income	0.100	0.058	1.73	0.084	−0.013	0.213
Threshold 1	1.409	0.571			0.289	2.529
Threshold 2	3.477	0.599			2.303	4.651
	Odds Ratio	$p > \|z\|$^			[95% Conf.	Interval]
Prestige	1.323	**			1.062	1.647
Health concern	0.915				0.745	1.124
Cultural experience	1.393	**			0.813	1.213
Social and environmental sustainability	1.440	***			1.093	1.784
Sensory appeal	0.925				0.753	1.135
Interpersonal relation	1.302	**			1.057	1.603
Age	1.021	**			1.004	1.239
Gender	0.663	*			0.422	1.041
Education	1.173				0.865	1.590
Income	1.105	*			0.987	1.237

^ $p > |z|$: * 10%, ** 5%, *** 1%.

The latent variable, defined as the frequency of local food consumption in agri-tourist destinations, increased with the rise in all the explanatory variables apart from 'health concern' and 'sensory appeal' motivational factors which were statistically not significant in explaining the high frequency of local food consumption in agri-tourist destinations. However, it is important to note that the non-significance of these two motivational factors could be due to the high mean values that the respondents gave to the related items, regardless of the agri-tourists' local food consumption levels.

The results obtained described the influence of the motivational factors on tourists' choice to experience local food and beverages at agri-tourist destinations. In particular, the frequency of local food consumption among participants increases with the growing importance attributed to particular factors. It was found that four of the six motivational factors examined (cultural experience, prestige, social and environmental sustainability, and interpersonal relation) were important in influencing tourists' local food consumption.

Among the socio-demographic variables, 'age' 'gender' and 'income' were found to increase the probability of consuming local food in agri-tourist destinations. The negative sign of coefficient related to the variable 'gender' showed that being female increases the probability to experience local food and beverages in agri-tourist destinations. Among the socio-demographic variables, only 'education' was not statistically significant. The not-statistically-significant nature of this variable could be due to the high level of education of participants; in fact, as previously mentioned almost 96% had a upper secondary school and a university degree.

The calculation of the odds ratios (ORs) revealed the ratio between the probability of high frequency of local food consumption in agri-tourist destinations and the cultural experiences, prestige, social and environmental sustainability, and togetherness motivational factors. Meanwhile, among the factors identified in the factor analysis, the 'social and environmental sustainability' motivational factor showed the biggest influence on the probability to have a high frequency of local food consumption in

agri-tourism destinations (1.44 times); followed in order by the 'cultural experience' motivational factor (about 1.39 times), 'prestige' and 'interpersonal relation' motivational factors, which showed almost the same effect (about 1.32 and 1.30 times, respectively). Among the socio-demographic variables, only income showed a relatively biggest influence on the probability to have a high frequency of local food consumption in agri-tourism destinations (1.10 times).

5. Discussion

By integrating existing studies investigating motivations to consume local food and the stream of research on tourists' motivations, the present study set out to investigate the main motivational factors affecting the choice of culinary tourists to taste local food and beverages in Italian agri-tourism destinations. Gastronomy, in fact, is one of the most important elements affecting the authenticity of a tourist destination. Italy is known worldwide for the richness and variety of its gastronomy [17], and agri-tourism represents one of the most important places where culinary tourists can experience local food and beverages [62]. This is one of the first study investigating tourists' motivation to experience local food and beverage in agri-tourism destinations, revealing that 'cultural experience', 'prestige', 'interpersonal relation' and 'social and environmental sustainability' play a crucial role in influencing Italian tourists' frequency to consume local food and beverage in agri-tourism destinations. Relative to 'cultural' motivator, Kim and colleagues [39] highlighted that local food is an important means through which tourists experience the culture of a destination. Similarly, Fields [20] suggested that cultural motivation allows tourists to experience the culture of a particular destination, making them closer to the place. Also, Kim and Eves [26] found that culture is an important aspect of local food consumption since experiencing local food allows tourists to increase knowledge about different local cultures. This is also consistent with Ruiz Guerra and colleagues [46], who emphasized that culinary tourism, in particular oleotourism, seeks to combine environment, culture, tradition and gastronomy that create a new model of sustainability in rural environments. 'Prestige' is another important motivator influencing the consumption of local food and beverage in agri-tourism destinations. This is reliable with past research, uncovering that local food experience has a role in conscience improvement or smugness [39]. McIntosh et al. [38] described status and prestige motivations as closely related to the tourists' wish of attracting attention from others. This was also discussed by Hall and Winchester [63] who observed that the tourists' desire to learn about traditional food or wine contributes to creating a favourable impression on others. 'Interpersonal relation' is also recognized to play a crucial role in tourists' behaviour to have a high frequency of consumption in agri-tourism destinations. This is also consistent with Kim and Eves [26] who pointed out that socializing with new people and being together with family is recognized to be an important factor in tourist motivation to experience local food and beverage in tourist destinations. Social and environmental sustainability is a new motivational factor that the econometric analysis showed to play an important role in explaining tourists' behaviour to consume high frequency of local food in agri-tourism destinations. This is in line with Kline and colleagues [25] who found that animal welfare and environmental sustainability are important motivators for eating local meat in agri-tourism destinations. This is also supported by the literature on local food consumption, revealing that the desire to protect the environment play a crucial role in consumers interest towards local food [64,65]. Migliore and colleagues [47] highlighted that consumers' concerns to reduce the environmental costs of food production and distribution plays a crucial role in influencing consumers' interest in local food. Seyfang [66] emphasized that the 're-localization' of food is associated to consumers' motivation of reducing the impacts of 'food miles', understood as the distance food travels between being produced and being consumed. The environmental and social sustainability dimension is also linked to the importance tourists attribute to the organic certification of local food products. This is consistent with Basha and Lal [67] who highlighted that environmental concern and the desire to help local producers assisted the economy, developed their society and significantly affected the purchasing intentions for organically produced foods.

However, compared to Kline and colleagues [25], the present study highlights that social sustainability is another important motivation that together with environmental sustainability plays a crucial role in affecting the choice to consume local food in agri-tourism destinations. This is consistent with Zepeda and Leviten-Reid [68] who emphasised that consumers are motivated to purchase local food, as they wish to sustain the social and economic conditions of a local rural community, by recirculating financial capital and encouraging new forms of entrepreneurship. This contributes to the resilience of rural communities, where local farms are often strongly integrated, playing a positive role in strengthening and supporting the social and economic conditions of the local community [69,70]. This is particularly true in a rural tourism context since tourism could represent one of the most important economic development strategies in these areas [71]. Ferrari et al. [72], in fact, showed that an increase in rural tourists results in an overall positive increase in demand both for local food productions and handicraft products, generating an increase in regional value-add. This result strongly supports the relevance of sustainability as a crucial determinant of the competitiveness of agri-tourism destinations. Research seems to agree that the competitive destination has to deliver an experience that is more satisfying compared to similar destinations, and it is associated with the ability to preserve natural and cultural resources, which, in turn, increases long-term well-being of its residents [17,73,74]. This has important implications for rural development, as at farm level, tourism contributes to enhancing the value of the farm's products through its association with the social and cultural context [18]. Thus, culinary tourism plays a crucial role in the sustainable development of territories, as it allows to improve its economy and also to strengthen the cultural and social identity of residents [75]. The strong linkage between local food and tourism could stimulate the creation of entrepreneurial networks in a territory, by strengthening the whole economy and increasing the quality of life of residents [76]. In this context, the culinary tourism can represent a way to reduce the growing problem of sustainability in tourism, by ensuring socio-economic development of entire communities [77]. Therefore, agri-tourism destinations could represent an alternative to the unsustainable mass tourism practices, which have caused a detrimental use of urban and coastal spaces for tourism purposes [78].

However, in the analysis, not all these motivational factors identified during the factor analysis procedure are able to explain the high frequency of consumption of local food in agri-tourism destinations. Although 'health concern', as shown in the econometric results, is not a motivator influencing the frequency of consumption of local food in agri-tourism destinations, it was found to be an important characteristic of local food in holiday destinations, regardless of how often local food is consumed. The same is true for 'sensory appeal' motivational factors. The high scores on the items related to the perception that local food is healthy are rather in line with the previous literature, where local food is perceived to be fresher and more nutritious than the food that has travelled for long distances [51] and free of synthetic chemicals [47]. Moreover, knowing the producer is perceived by consumers as a guarantee of the wholesomeness of local food [48].

Finally, relative to socio-demographic characteristics of respondents, similar to Baderas-Cejudo et al. [79] and Nicoletti et al. [80], findings reveal that being older and with a higher level of household monthly net income significantly increase the probability of tourists to experience local food and beverages. In particular, older tourists seem to feed an important niche market, as they have both the time and purchasing power to try and experience local food and beverages, especially in rural areas. On the contrary, other studies showed that culinary tourists usually are aged between 35 and 45 years, and women are more attracted towards gastronomy destinations than men [81,82].

Although the results of the present study show that the variable educational level is not statistically significant to explain the frequency of local food consumption at agri-tourism destinations, the educational levels of participants is rather high as emphasized in other studies [83,84].

6. Conclusions, Limitations, Implications and Future Research

In an era of globalisation, there is a particular desire to enjoy varied, rather than mono-cultural ambience and experience. In this context, over the last years, in order to increase the social, economic

and environmental sustainability of the food system, and to strengthen the cultural identity of the territories, local food movements are spreading worldwide. Culinary tourism represents an emerging component of the tourism industry and encompasses all the traditional values associated with the new trends: respect for culture and tradition, a healthy lifestyle, authenticity, and sustainability. Accordingly, promoting culinary tourism in agri-tourisms represents a winning strategy for the development of the whole economy of rural areas.

At the local level, in fact, food and beverages experienced in agri-tourism can contribute to rural socio-economic development by creating new job opportunities and new added value, becoming a resource especially for many small-sized farms that cannot compete in an increasingly globalized market. Similarly, rural areas can play a crucial role in differentiating the tourism offer, giving the opportunity to experience local cultures and traditional dishes and beverages.

The results seemed to show that different motivations affect tourist in agri-tourism destinations; however, the main motivational factor that seems to explain the consumption of local food and beverages in agri-tourism destinations is 'social and environmental sustainability', a new motivational factor deriving from the measurement-scale proposed. This highlights that sustainability could play a crucial role in the competitiveness of agri-tourism destinations.

Understanding which motivational factors affect the tourists' choice to consume local food and beverages in agri-tourism could contribute to defining competitive marketing strategies of tourist destinations, in order to better align them to tourists' preferences. Marketing is a useful tool for agri-tourism's competitive strategy, as it provides agri-tourism operators with the ability to differentiate the products or experiences they offer from those of their competitors. For example, agri-tourism operators could focus their strategies by communicating the link between culinary tourism and the environmental and social sustainability of agri-tourism destinations. Therefore, it could be important for agri-tourisms to adopt CSR initiatives and business strategies focused on the social and environmental components of sustainability. In line with this, the adoption of certified environmental management systems, such as organic certification for local foods, could contribute to satisfying the needs of tourists in the environmental field. From this point of view, it is essential for the agri-tourisms adopting effective communication strategies, for example, the CSR reporting, in order to communicate to the tourists and local communities the engagement in the environmental and social field. At the same time, agri-tourism operators should commit themselves to better communicate the link between the local food and territories and the cultural content of dishes offered.

The findings of the present study could also enrich the extant literature on culinary tourism and agri-tourism demand, and reinforce business literature which supports that consumers have a positive attitude towards sustainable food products and tourism.

However, the present study faces some limitations. They are inherent to its very methodological nature and to the convenient sample used in the study, based on the voluntary participation of respondents. Therefore, the study does not intend to provide conclusive evidence but helps readers to have a better understanding of the trend of culinary tourism in agri-tourism destinations. Moreover, this study only focused on motivations, which are a part of psychological factors known to influence behaviour. Excluded were other individual factors such as attitudes, consumers' awareness and personal values, as well as cultural and social factors.

Therefore, further advancement in culinary tourism research should take into account a larger sample, as well as extending the study to foreign tourists' preferences, and other social and cultural contexts in order to validate the effort proposed in this study. Finally, future research should incorporate different theories to better understand the complex issue of individual behaviour. Furthermore, in the light of the increase in the agri-tourism demand, further research should take into account the Dialogical Self Theory or the Social Capital Theory [85] in order to explain how local communities shape their perceptions in light of changes in the environment due to a growing tourists' presence in the rural area.

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