Article

Sustainability for Food Consumers: Which Perception?

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Abstract: A sustainable future for the community is one of the objectives established by the European Union Agenda 2030. Furthermore, sustainable consumption has been identified as one of the possible trajectories for sustainable development. It is for this reason that food production, distribution and consumption ways cannot be overlooked for sustainability achievement, as well as the consumer's related perception. In this research the Best–Worst scaling methodology was adopted to explore the priorities declared by a sample of 801 consumers among 12 different sustainability definitions selected from the scientific literature. The choice experiment was carried out through face-to-face interviews during two food and wine events closely related to the sustainability theme in the food sector. The respondents considered as sustainability priority definition the "preservation of natural resources", followed by "decent working conditions" and "accessibility for everyone to healthy and safe food". Moreover, 5 consumer's clusters were identified according to the priorities assigned to the different sustainability definitions, as well as to individuals socio-demographic characteristics. The description of the priorities assigned by the clusters to the different sustainability definitions have also been described as guidelines for consumer attitudes towards the different sustainability dimensions (environmental, social, economic and governance).

Keywords: sustainability; consumers; consumption; SDGs

1. Introduction

Europe has recently adopted the Sustainable Development Goals (SDG), promoted by United Nations, and is committed to being the forerunner in implementing them by 2030 [1]. The SDGs represent a program for achieving a better and more sustainable future for all without leaving anyone behind (www.un.org). In this extensive program, food appears to be evident as a transversal issue that connects most of the objectives; indeed, the 2030 agenda cannot be effectively implemented without eliminating hunger, achieving food and nutrition security and improving the health of the world's population.

Three goals are directly connected to food: SDG Objective 2, "ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture"; Objective 12 "to enhance sustainability by guaranteeing responsible consumption and appropriate production models"; and Objective 15 to "protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, contrast desertification and stop and reverse land degradation and halt biodiversity loss".

It is therefore evident that the ways in which food is produced, distributed and consumed influence the approach toward sustainability. This requires a sensible change of the mentality regarding the whole food system, mostly in order to improve the basic knowledge related to it, as well as to identify opportunities to design meaningful actions to support the transition [2]. In this vein, it is necessary to involve all the actors able to shape the system, not least the consumer. The awareness that the choices, behaviors and lifestyles of consumers, or their consumption decisions, play a key role in achieving sustainable development is one of the greatest agreements to emerged in the last decade [3–5].

The consumer can therefore change from being a passive recipient to playing an active role and being able to influence the market trend with his/her purchase decisions, starting from the strategies of institutions and companies. A new economic paradigm in which consumers are consumer-actors (pro-sumers/co-producers), where companies are socially and environmentally committed and where institutions actively interact with the local community is being considered. In this context, the innovative form of responsible consumption growths, determining the tangible characteristics of the good (or service) to ethical, social and environmental assessments, paying more attention to its social quality, meaning that this does not pollute the environment or that a socially deplorable conduct (e.g., child labor, anti-union activities, arms sales, illicit or financial fraud, collusion with dictatorial regimes, etc.) is not created by the manufacturing company.

For this reason, there is a strong pressure on public opinion to make sustainability a guiding principle for consumer's decisions, even though it is very often difficult to understand exactly which ones are going in this direction. In [3,6] suggested that research aimed at investigating what consumers effectively associate with sustainability, how relatively different the dimensions of sustainability are, and what purchase decisions they consider sustainable, can provide a valuable contribution to promoting sustainable consumption.

In recent years, the idea of sustainable consumption has received a lot of attention and much research has analyzed the ethical approach to consumption [7–9], consumption values [10], the identity of place [11], ecological marketing [12], and the consumption of organic [13] and local products [14].

Sustainable consumption is therefore considered a concept that goes beyond the traditional understanding of consumerism, described by [15] as the collection and purchase of physical assets to increase happiness and social position. More specifically, the act of consuming in a sustainable way involves a decision-making process which considers the social responsibility of the consumer in addition to the individual needs and desires [16]. In [17] the authors linked sustainable consumption to the need to communicate the relationship between ecological degradation, modern hyper-consumption and prevailing economic and political institutions. All this research, however, has only explored certain aspects of sustainable consumption, therefore, a different perspective is necessary for understanding that the economic, social and environmental sustainability of any form of consumption requires a holistic understanding of all potential impacts (for example social environmental) that occur during the entire production and consumption cycle of a product [18].

Therefore, consumption must be understood not as a purchase activity but as a process of decisions and actions that includes the purchase, the use of the product and the management of post-consumption [19].

2. Which Consumer?

The Anthropocene is the new geological era [20] characterized by humanity becoming dominant in the planetary change [21]. Today, the human is able to change the composition of the earth's atmosphere [22] and modifies most of the terrestrial and marine ecosystems [23,24]. These transformations have led to critical thresholds for what concerns the sustainability of the systems and in order to move away from such thresholds, it will be necessary to implement changes in values, beliefs and models of social behavior [25]. There is, therefore, a strong interest, also highlighted in the SDGs, in the development of a socio-ecological system based on new directions able to guarantee human well-being and a series of ecosystem services supported in a long period [26–29]. Consumption models are an integral part of

these transformative dynamics, therefore, understanding how shared opinions emerge in social groups (such as communities, states or markets) has become crucial.

Authors in [30] explained how to take responsible consumption, anti-consumption and conscious consumption into account to acquire the tools to academically and politically discuss, starting from an interesting question: how can sustainable consumption be theoretically consistent and practically feasible for consumers both as a collective group and as individuals?

The research published in 1995 [31] clearly demonstrated that the citizens of the United Kingdom, individually interviewed, were not aware of the concept of sustainability, despite being aware of the need to respect environmental resources in order to guarantee the sustenance of current and future generations. The increased media coverage of sustainability issues over the last 10 years has certainly changed consumers' understanding of sustainability, but little is known about how this appears in consumer decisions and, for example, what type of products consumers see as sustainable, especially in the food sector.

According to a survey carried out by [32], 44% of consumers reported that they considered social awareness issues during shopping (e.g., do not purchase products that involve child labor, do take care of animal welfare, do reduce the pollution), 61% said they were ready to pay 5% more to meet these commitments, 31% decided to boycott specific products, and 52% had decided to buy an ethical product in the last six months. Although these percentages look promising, a significant portion of the world's population remains ignorant or chooses not to engage in sustainable consumption practices. Furthermore, the industrialized economies, which represent only 23% of the world population, consume more than 77% of its resources (including 72% of all energy) and generate about 80% of the total pollution [33]. In relation to this, [19] argue that many consumers meet difficulties in consuming in a sustainable way, mainly because of the contradictory approach between the consumption and promotion of the food products.

Regarding the above point, sustainable consumption has been listed as one of the possible directions for sustainable development; for this reason, this paper aimed to examine the conceptual bases that allow its practice by exploring the importance that a group of selected consumers gives to different definitions of sustainability, selected from the scientific literature of the past 20 years.

In particular, the aim of this research was the quantification of the consumers' preferences (numerical index of priority) about a qualitative concept (sustainability definition). At this purpose, the Best–Worst (BW) scaling was adopted as the methodological approach. The BW is a multivariate quantitative methodology which allows the exploration of the priorities reported from individuals in terms of food sector. The priority given by the individuals were also analyzed by grouping the sustainability definitions into the four dimensions (economic, governance, social and environmental) as well as considering consumer socio-demographic variables [34,35].

3. Research Experiment

In order to analyze and understand the consumer's perception of the meaning of sustainability, a survey was carried out to identify the priorities reported by a sample of individuals through face-to-face interviews. A total of 804 consumers were involved in a choice experiment during which a specially designed paper questionnaire was submitted. The questionnaire was structured in two parts: the first investigated the socio-demographic characteristics of the questioned individuals (gender, age, nationality and occupation) and the second was structured for the purpose of implementing the BW scaling methodology on consumers' perception about the concept of sustainability.

3.1. The Definitions Used

According to the UNWCED (1987) [36] and the final document of the UN 2005 Summit, in order to achieve sustainability, development policies must integrate environmental protection economic sustainability with social equity, mostly aiming at eliminating the gap between industrialized and developing countries [36].

In line with these hypotheses, we proposed to distinguish four dimensions of sustainability (Figure 1): (i) The environmental dimension; (ii) the economic dimension; (iii) the socio-cultural dimension and (iv) the policy dimension. This partitioning reflects the main aspects of sustainability as they are discussed both in research and in politics [37].

Environmenal dimensions (i)	*Economicdimensions (ii)*
• **Biodiversity preservation**: protection of the richness of animal and plant species variety and agro-ecosystems (Zimmerer et al., 2015; Tobin et al., 2018; De Cáceres et al., 2010; Niemi and McDonald 2004). • **Protection and good management of natural resources** (water, air and soil) (Fishman et al., 2015; van Dijk et al., 2016; Chartzoulakis and Bertaki 2015; Chadwick et al., 2015; Scotti et al., 2015; Rosenstock et al., 2016; Niemi and McDonald 2004; Tietenberg and Lewis 2016; Niemeijer and de Groot 2008) • **Local products promotion** linked to the territory of interest (Tello and de Molina 2017; Kumar et al., 2019).	• **Fair income for producers seen as an efficiency production system index** (Bacon 2010; Goucher-Lambert and Cagan 2015; van Dijk et al., 2016; Berti and Mulligan 2016). • **Fair price of final products to consumers**: transparent and fair price in function of producer investments and product quality standards (Manikas et al., 2019; Kalfagianni and Skordili 2018; Berti and Mulligan 2016; Schäufele and Hamm 2017). • **Short supply chain (From Farm to Fork):** the smallest possible number (understood as feasible and efficient) of stakeholders along the supply chain, between producer and consumer (Andrée et al., 2010; Berti and Mulligan 2016; Paloviita 2010; Kumar et al., 2019).
Socio cultutal dimensions (iii)	*Policy dimensions (iv)*
• **Transfer of knowledge** (traditions, uses, methods, etc.) to future generations: active involvement of young people generations in traditional activities and practices to maintain and pass on common knowledge linked to food production systems and food preparation practices (Guerrero Lara et al., 2019; Tobin et al., 2018; Renting et al., 2003; Moscatelli et al., 2017). • **Active involvement of the various interest groups in the territory management**: possibility of direct participation for all interest groups (without discrimination, exclusion or of any kind of marginalisation) in the territory interventions planning to be implemented (Hart et al., 2016; Flammini et al., 2014; Casadevall, 2016). • **Greater cooperation (and efficiency in cooperation) between the different supply chain actors**: respectful and equal collaboration between producers, processors, government officials, sellers, consumers, directly or indirectly involved in the supply chain (Xie et al., 2016; Barge et al., 2013; Dai et al., 2017).	• **Accessibility for all to healthy and safe food**: concrete possibility for all human beings to enjoy a healthy, nutritious and adequate daily meal. (Mayett-Moreno and López Oglesby 2018; Clark et al., 2017; Hunter et al., 2017). • **Respectful working conditions**: guarantee of work contract good form, no gender, religion, ethnicity or country discrimination, universal rights extended to the world of work (Galdeano-Gómez et al., 2013; Jaehrling et al., 2018). • **Sustainability regulations increase, improvement and updating**: ability and willingness of the government of a given country to update environmental, economic, legal and social regulations (Foley and Havice 2016).

Figure 1. The 12 definitions of sustainability selected for the research and belonging to the four dimensions: (**i**) Environmental; (**ii**) economic; (**iii**) socio-cultural; (**iv**) policy.

3.2. The Places of the Interviews and the Consumer Sample

The interviews were carried out during two events closely related to the theme of sustainability in the food sector, whose choice involved the selection of a sample potentially more informed and sensitive to the topic of research. The data were collected in Italy during the Salone del Gusto (September 2018), held in Turin (Piedmont region, north-west of Italy) and Golosaria (October 2018), and held in Milan (Lombardy region, central-northern Italy).

The choice of places arose from the concept of transformative niches or transition arenas often used in the literature on socio-technical transitions [28], describing the spaces in which new social innovations were tested and developed [38,39]. These "protected" spaces provide support for experimentation and are used to develop new pathways (ideas, plan visions) and to support a process (of construction of tiers/coalitions, learning) [40]. Recent studies on a regional-to-international scale and through different types of institutions show that these areas of innovation can play a key role in facilitating transformative change [40].

The Salone del Gusto is an international event organized every two years by the Slow Food association dedicated to food. The 12th edition focused on the topic of #foodforchange, an international campaign on the theme of sustainability seen not only as an approach to a green lifestyle, but also as a starting point for a change in eating habits from a sustainable perspective. Local producers, artisans active in the sectors of agriculture, and food processing and restaurant services proposed their products while various cooking shows organized during the five days of the event brought visitors closer to the methods of use and preparations of the different products. The sharing of knowledge with consumers

regarding the production systems of the various countries was implemented through the organization of conferences addressed to the sector both in a technical and in a dissemination view. Overall, the media estimated the attendance of around 1,000,000 people during the 5 days of the event in 2018, based on 900 exhibitors from 100 countries and 70 chefs. The interviews were carried out by two previously well-educated interviewers and performed during the 5 days of the event by changing the data collection points from 10 a.m. to 6 p.m.

Golosaria is a food and wine event dedicated to consumer as well as to a B2B approach that has been organized in Milan every year since 1994. Exhibitors and sector operators come from all over Italy and for the 2018 edition, 300 artisans of taste, 100 wineries, 20 street food chefs and 25,000 visitors/consumers visited the event. The XIII edition had the theme "Good that causes good" and was held at MiCo (Milan Convention Center), an extended area dedicated to events and congresses which allowed exhibitors to be organized into two large thematic areas: one dedicated to consumers and one to B2B, divided into food and wine. In this case, the interviewers operated in the food area on Sunday September 28th only, from 9 a.m. to 5 p.m. This event has smaller dimensions and a limited international appeal than the Salone del Gusto, but it was also developed around the themes of agro-food production and the link with the territory of typical products recognized by a denomination of quality and origin. Moreover, it is held in one of the most important and culturally active cities in Italy.

During these events a total of 804 consumers were interviewed to investigate their perception of the concept of sustainability based on declared preferences. The total sample involved in the research was balanced from the gender point of view (55% women and 45% men) and counted 75% of individuals of Italian nationality and 25% of foreign nationality. The distributions of the age and occupational status of the interviewed are graphically represented in Figure 2.
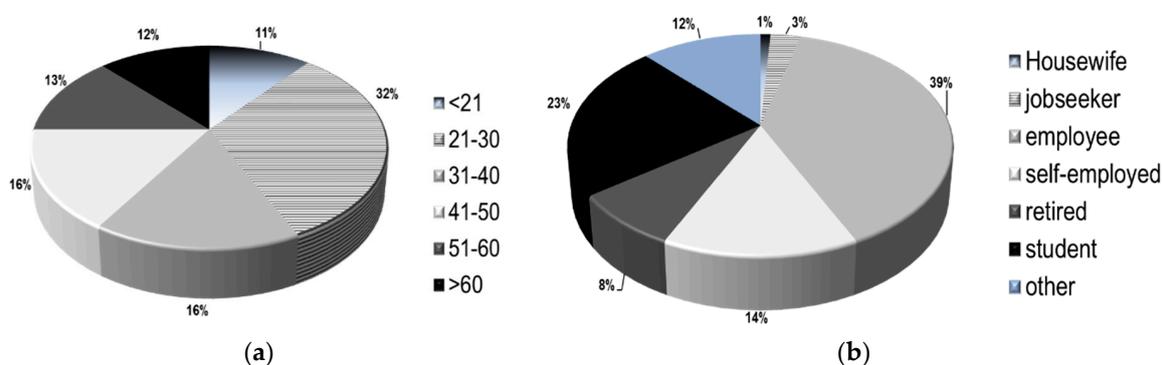

Figure 2. Percentage distribution of the individuals interviewed in the different age groups (**a**) and by occupational status (**b**).

Respondents were fairly evenly distributed within the different age groups, apart from a small majority (32%), compared to other groups, of individuals aged between 21 and 30 years. Considering the occupational status, the sample counted a majority of employed and student respondents (Figure 2).

3.3. Best–Worst Scaling

The theoretical basis for the BW analysis was provided by Marley and Louviere (2005) in their development of probabilistic models for the analysis of declared preferences. The BW, as originally devised by [41], can determine the level of priority/preference for each attribute of choice that describes a concept/product/service with a methodological approach different from the traditional discrete choice models. In order to observe the tradeoff behavior in an experimental design, 12 definitions were chosen. By using the software Sawtooth MaxDiff Designer (v.2.0.2; Sawtooth Software, Orem, UT, USA), the survey was designed by dividing the work objectives into nine different scenarios (subsets) with a variable choice, each containing 4 different definitions in such a way that each of them appeared three

times in each version of the questionnaire (Table 1): 4 different versions were created with the aim to increase the variability of the order in which they are organized and defined with and minimize errors in econometric analysis.

Table 1. Example of typical survey based on Best–Worst choice set questions for selecting sustainability definitions.

MORE IMPORTANT (an answer)	DEFINITION	LESS IMPORTANT (an answer)
By Thinking about the Concept of Sustainability in a General Way, Tick the Only One Definition for You MORE Appropriate and That the Definition LESS Important to Define "Sustainability"		
○	Biodiversity preservation (richness and variety of animal and plant species and agro-ecosystems)	○
○	Short supply chain (*from farm to fork*: direct contacts between producer and consumer)	○
○	Decent working conditions (form of employment contract, no gender, religion or country discrimination)	○
○	Protection of natural resources (water, air and soil)	○

For each set, the individual questioned was asked to indicate the most and the least appropriate answer in order to define sustainability, or to indicate the couple of definitions at the antipodes or "couple of maximum difference". This is why the BW is also defined as "maximum difference scaling": because the chosen definitions should be able to maximize the difference on a priority scale of preferences according to the questioned. The experimental design used, from a theoretical point of view, follows the rule that having chosen a number of definitions equal to k (12) positioned in the C (9) subset, k (k − 1)/2 BW pairs and k (k − 1)/2 WB pairs were set up and associated with each subset in each version of the survey, according to [42]. Thus, each choice set contained k (k − 1) possible choice options (the BW and WB pairs).

The experimental design was structured to favor the two-way balance, as well as a balanced design where each factor (definition) appears in equal quantities: this means that the design was addressed to measure the frequency whose combinations of the definitions appeared together and each pair of them appeared together [43].

The level of priority for each definition was measured by the BW analysis and indicated by the Raw Average Score (RAS). The RAS in a BW analysis is given by the difference between the number of times that a single definition has been considered BEST and the number of WORST, compared to the frequency of appearance in the questionnaire for the sample size. These BW scores (measuring the importance of the single item) can be positive and negative, and their sum is always zero. However, a negative BW value does not indicate negative importance, but a preference level below the average. The sample was then divided into consumer clusters based on the priority assigned to the different definitions by the individual questioned according to the Latent Class Clustering analysis. The analysis of the data, starting from a default setting, created 4 segmentations, each containing the division of the sample from 2 to 5 clusters respectively. The identification of the best segmentation of the sample was carried out, evaluating a series of numerical indicators provided by the software (Log Likelihood—LL; Consistent Akaike Information Criterion—CAIC and Bayesian Information Criterion—BIC). In our case, the most appropriate segmentation was selected as the one corresponding to the lowest BIC value, according to [35,44], corresponding to the division into 5 consumer clusters (Table 2).

The accuracy limit applied to estimate the raw preference indexes of the definitions of sustainability (BW analysis) was set at 95%. Furthermore, the standard deviation was calculated for an indication of the variability present within the sample. In order to understand whether a definition was preferred over another within the same sample of questioned, we applied the two-tailed test. Aiming at the evaluation of the variability between clusters, the *p* value was instead considered for each attribute

based on the homogeneity test of the variance. The software used for the quantitative analysis was SPSS.21.0 for Windows.

Table 2. Results of the Latent Class Clustering analysis.

Segmentation	Number of Clusters	Log-Likelihood	AIC	CAIC	BIC
1	2	−16,848.21	33,742.41	33,939.75	33,916.75
2	3	−16,533.40	33,136.80	33,437.10	33,402.10
3	4	−16,331.36	32,756.73	33,159.98	33,112.98
4	5	−16,172.89	32,463.78	32,970.00	32,911.00

The variability of the preferences of the individuals belonging to the different clusters towards sustainability was validated, also analyzing the socio-demographic components of the subjects within each sub-group in order to evaluate the effect of the characteristics of age, gender, nationality and level of study on the formation of attitudes and behaviors.

4. Results

The experiment carried out by adopting the BW methodology allowed the identification of the definitions of priorities among the 12 selected alternatives, evidencing the most influential (indicated by the highest value of RAS) for the perception of the concept of sustainability for the sample of consumers involved (Table 3).

Table 3. Results of the Best–Worst Scaling analysis for each definition shows the number of times that this is a stat CHOOSING to as BEST, WORST number of choices, the preference index Best-Worst (BW), the average score Raw and the standard deviation.

Pillars of Sustainability [1]	Definition/Size Sustainability	N. Best	N. Worst	Level of Importance		St. Deviation
				(Best-Worst)	Raw Average Score	
i	Preservation of natural resources	1044	98	946	1.776	0.914
iv	Decent working conditions	1079	193	886	1.625	1.268
iv	Accessibility for everyone to healthy and safe food	1032	202	830	1.591	1.256
i	Protection of biodiversity	824	279	545	0.983	1.315
iii	Transfer of knowledge to future generations	644	465	179	0.275	1.405
ii	Right income for producers	469	501	−32	−0.082	1.245
ii	Short food chain	536	717	−181	−0.378	1.687
i	Local product	467	732	−265	−0.463	1.473
iv	Increase, improvement and update of sustainability regulations	350	845	−495	−0.840	1.315
ii	Fair price to the consumers	315	940	−625	−1.245	1.556
iii	Greater cooperation between the different actors involved in the supply chain	287	1028	−741	−1.314	1.198
iii	Active involvement of different stakeholders in territory management	189	1236	−1047	−1.927	1.313

[1] Pillars of sustainability of belonging: i: environmental, ii: economic, iii: socio-cultural, iv: policy.

The analysis identified three priority sustainability definitions. In particular, it first identified the "safeguard of natural resources" (RAS 1.776), followed by "decent working conditions", with a RAS of 1.625 and "accessibility for all to a healthy and safe food" (raw score 1.591). In particular, it should be noted that for the definition of maximum priority for the consumers involved, "safeguarding of natural resources" corresponded to the minimum value of standard deviation, while the greater level of variability of the answers (indicated by the maximum value of standard deviation) coincided with the definition "short chain" (1.687 sd). Furthermore, the "fair price to consumers of final products"

evidenced high variability, while consumers on average agreed to attribute high priority in the definition of sustainability with "increased cooperation between the different actors involved in the supply chain".

The Latent Class Analysis allowed the identification of five clusters of consumers according to the priorities attributed to the different definitions of sustainability. Within each cluster, individuals were grouped by similar preferences, perceptions and attitudes related to the concept of sustainability. Table 4 shows the names assigned to the individual clusters according to the specific priorities and the orientation and perception arising from sustainability, as well as the average RAS assigned to the different definitions by the individuals of each cluster.

In general, the BW results and, in particular, the variability of the identified priority responses with standard deviation, had a direct impact on the definition of preferential profiles of individuals of different consumer cluster. In fact, for about 30% of the sample, represented by the clusters "Local ecosystem preservation" and "Relationship with the territory", the "short food chain" (1.687 sd) represented, the first and second priority definition of sustainability, respectively. On the contrary, for almost half of the sample (represented in the two clusters "Man–nature balance" and "Social welfare sensitive"), the definition "Safeguarding natural resources" was the priority, but "Relationship with the territory" was also important for consumers. The definition also chosen with low variability (Greater cooperation between the different actors involved in the supply chain) represented the average priority value on the basis of which the raw scores for each definition for each cluster were calculated.

In particular, the most represented cluster (26.9% of the sample) was related to "Man–nature balance". For these individuals, the sustainable approach to agri-food products was represented by the protection of ecosystems, minimizing the human footprint on the quality and quantity of available water, soil and air. The ecological aspect became a priority for these individuals for the definition of sustainability.

The second cluster of "Social welfare sensitive" accounted for 22.3% of the entire sample. These subjects, with respect to the first cluster, attributed less importance to the environmental pillar of sustainability, addressing a priority importance to the definition of policy in terms of "decent working conditions" and "accessibility for all to healthy and safe food". They also negatively considered the definitions "fair price of final products to consumers", "short food chain" and "local product", demonstrating they were away from issues related to environmental and social sustainability but closer to the concept of Fair Trade.

The "Relationship with the territory of production" cluster represented 19.1% of the entire sample. These individuals first show a propensity to the economic and social sphere of sustainability, evidencing a specific interest to choose local products, linked to the production area.

A total of 18.8% of the sample was represented by "Environmental sensitive" consumers. For them, the environmental component of sustainability (safeguarding biodiversity and natural resources) and, at the same time, defining policy for "accessibility for all to healthy and safe food", represented the priority definitions of sustainability. In addition, these individuals were able to distinguish the level of importance expressed by "fair price of the final products to consumers" from the rest of the sample. In this case, obtaining a high standard of sustainability is considered as a protection of the environment, also from an economic point of view, for productions unhooked from the short food supply chain and from local productions.

Finally, the clusters with smaller dimensions (12.9% of the sample) was named "Local ecosystem preservation". For these consumers the environmental, economic and policy issues were a first choice for the definition of sustainability. Although they attributed a high priority value to the short food chain and to the local product, they did not consider it as important when discussing the transfer of knowledge to future generations: Therefore, for these individuals, the social value of the traditions linked to a product was less important, untying the social component from the concept of sustainability. However, the economic aspect linked to guaranteeing a fair income for producers emerged as a discriminating factor in the definition of sustainability.

Table 4. The five consumer clusters identified by the Latent class analysis: the name of clusters assigned on the based on the declared priorities, the cluster size (% of the total sample), the raw score values for each definition assigned by the different clusters and the *p*-value values.

Pillars of Sustainability [1]	Classes	Man-Nature Balance	Social Welfare Sensitive	Relationship with the Territory	Environmental Sensitive	Local Ecosystem Preservation	*p*-Value
	Class size (% of total)	26.9%	22.3%	19.1%	18.8%	12.9%	
i	Preservation of natural resources	3.812	1.294	2.025	1.830	1.181	0.0004
iv	Decent working conditions (employee welfare)	3.808	1.209	1.596	2.137	0.519	0.0040
iv	Accessibility for everyone to healthy and safe food	3.479	1.216	2.565	0.934	1.514	0.0004
i	Protection of biodiversity	3.298	0.018	2.474	0.593	1.427	0.0060
iii	Transfer of knowledge to future generations	2.751	1.543	0.623	0.572	−0.945	0.0140
ii	Right income for the producers	2.178	−0.011	0.926	−0.144	1.197	0.0050
ii	Short food chain	2.050	1.339	−0.818	−0.749	1.516	0.0360
i	Local product	1.734	1.390	−0.372	−0.759	0.871	0.0270
iv	Increase, improvement and update of sustainability regulations	0.803	0.032	0.586	0.301	−0.318	0.0060
ii	Fair price of final products to consumers	0.756	0.326	1.351	−1.994	−0.169	0.0390
iii	Active involvement of different interest groups in land management	−0.356	−0.339	−0.502	−0.278	−0.918	0.0170
iii	Greater cooperation between the different actors involved in the supply chain	0.000	0.000	0.000	0.000	0.000	0.0090

[1] Pillars of sustainability of belonging = i: environmental, ii: economic, iii: socio-cultural, iv: policy.

　　The age groups of the individuals belonging to the different clusters are shown in Figure 3. In particular, the "Man–nature balance" cluster emerged as the most representative of the entire sample, as well as the one most balanced from the point of view of the age of the subjects contained in it. On the contrary, there is a good representation of young people between the ages of 21 and 30 in the less representative "Environmental sensitive" and "Local ecosystem preservation" clusters.
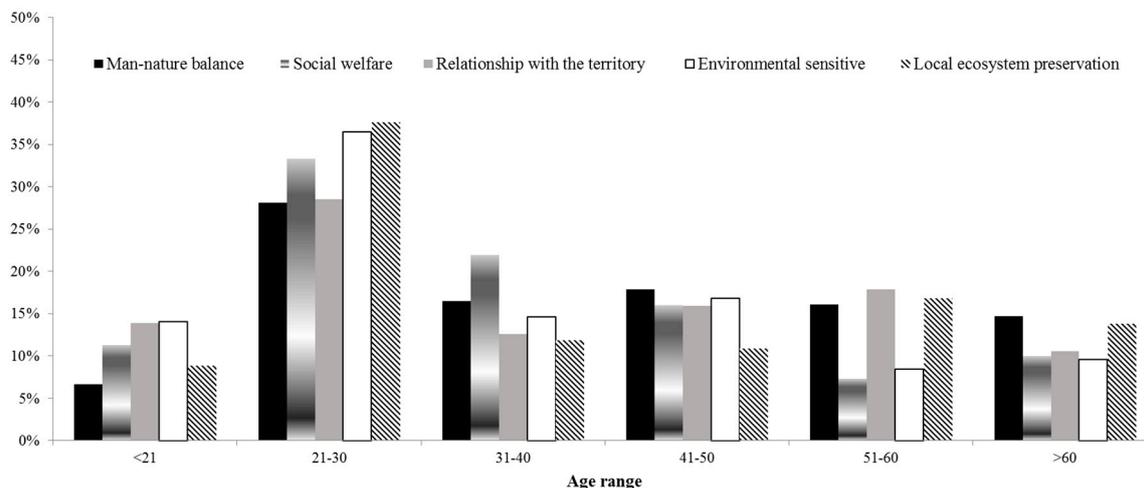

Figure 3. Age ranges of individuals belonging to the five identified consumer clusters.

5. Discussion

　　The application of the BW scaling method for analyzing the preferences declared by the consumer allowed the analysis of the priority level provided for each definition of sustainability and the identification of five clusters of individuals characterized by different attitudes. Furthermore, the socio-demographic variables of the questioned individuals affected the determination of priorities, evidencing the most relevant dimensions of sustainability for each cluster.

　　Man–nature balance: These questioned individuals were likely aware of man's threat to nature, mostly due to a distant approach to this issue [45]. The environmental vision that characterized this cluster was confirmed by the level of importance attributed to biodiversity that falls within the definitions of priorities chosen to determine the perception of sustainability. These results demonstrate an ever-increasing consumer sensitivity to environmental issues and awareness of man-made environmental problems. At the same time, the individuals of the "Man–nature balance" group defined a sustainable product as deriving from supply chains that safeguard the working conditions of the people involved in the production chain. The third priority definition of sustainability was the accessibility for all to healthy and safe food. Ensuring food security is becoming a challenge for institutions, but is also an increasingly realistic perspective for the consumer and human society [46]. The latter two definitions fell within the dimension of governance as a sustainability-supporting policy [47] and, together with the environmental dimension, prevail in the definition of the priorities of this cluster of consumers. It is interesting to underline that the SDGs Objective 12 (sustainable and responsible consumption) emphasizes the promotion of resource and energy efficiency, sustainable infrastructures, as well as guaranteeing access to basic services, decent work and respectful of the environment and a better quality of life for all. Furthermore, this consumer profile was reflected in an individual descriptive model already presented by Tallontire et al. in 2001 [48], when the behavioral attitude of the ethical consumer was emerging as attitude to a more direct link between what is consumed and the social and environmental issue. In fact, this type of consumerism was already described as more sensitive to environmental issues, as well as to human rights and working conditions in developing countries. These sustainability attributes are considered discriminating pre-requisites

able to separate from the efficiency of relationships and the integration between the stakeholders of the supply chain itself.

From the socio-demographic point of view, these consumers were characterized by a slight majority of women (55/45%), while 28% of individuals were between 21 and 30 years old. The rest of the individuals in this cluster were evenly distributed between the ages of 31 and over 60. This cluster had 74% Italians and 26% foreigners equally divided between EU and non-EU countries. For the implementation of Objective 12 of the SDGs, a systematic and cooperative approach is needed between active individuals in the supply chains, from the producer to the consumer. The high number of young questioned lets us imagine the real possibility of a greater involvement of young people in consumer awareness initiatives and sustainable lifestyles, as well as the possibility of offering adequate information on standards and labels and involving them, among other things, in sustainable public procurement [49].

Social welfare sensitive: This consumer perceived sustainability as a heterogeneous concept which depends on the countries' policies, which directly affect the safety and efficacy of the working environment. From the point of view of the millennium goals, surely Objective 8 (to encourage lasting, inclusive and sustainable economic growth, full and productive employment and decent work conditions for all) and Objective 2 (food security) are those most relevant. Given the priority, the perception of these consumers could be comparable with that which emerged in [50], in which a concern for the well-being of the employees of the vineyards by various public and private bodies was stressed, closely linked to some environmental practices potentially harmful to the environment (such as the reduction of toxic spray applications). Moreover, this sensitivity could be justified by a greater awareness of the questioned individuals about the working practices and the earnings of the workers in the agri-food sector.

In this case, there was a majority of men (56/44%), mostly between 31 and 40 years old and from employees. The majority were Italians (70%) and 30% were foreigners from mainly non-European countries.

Relationship with the territory of production: This group represented 19.1% of the entire sample. Despite the majority (28%) of young people between 21 and 30 years on the whole, this cluster was mostly represented by individuals between 51 and 60 years old. In this case, there were mainly women (70%), employed, all Italian consumers. The particularly high value of the biodiversity safeguard factor brought the people involved in this cluster closer to the priorities of Objective 15 of the SDGs.

Sustainable consumption is based on a decision-making process that takes into account the social responsibility of the consumer, as well as on the needs and requirements of individuals [16]. The individuals of this cluster believe not only that the link between product and territory are of extraordinary importance, but also that the values linked to the product are derived from traditions, knowledge, ways and uses historically linked to the product itself. The significant preference expressed towards the attributed "transfer of knowledge to future generations" according to a sustainability issue coincides with this assessment not only in relation to the quality deriving from safety and a short supply chain, but also in the future prospects for maintaining production over time. These consumers recognized that local productions are a real approach to sustainability (social, environmental, economic), underlining and including, in the added value of such products, the direct personal relationships with producers and the development of social networks with low environmental impacts that also affect consumer education [51]. The majority of consumers of Italian nationality in this cluster confirmed the sensitivity of these consumers to local production systems in the evaluation of agro-food productions: in fact, in recent research [35,52], it emerged that this greater awareness and attitude of consumers towards products of the territory resulted in the growth of alternative food networks like farmer markets and ethical purchasing groups in the last years.

Environmental sensitive: These consumers represented 18.8% of the sample. For them, the concept of sustainability was defined from the impact of the productions on the ecology and the environmental balance of the ecosystems that affect the efficiency of production (Objective 15 SDGs), as well as on

the definition of the product price. These connections were also found in a 2009 survey carried out in Finland among food industry actors who perceived sustainability programs as impacting the protection of the environment on production performance. Environmental performance improvements lead to improved quality performance, which in turn improves cost performance [53]. These results suggest that food sustainability and local production are closely linked and should be promoted through a socio-cultural approach. These consumers do not perceive sustainability as a concept applied only to the production phase, but consider sustainability in the context of their lifestyle, especially applied to consumption.

The questioned individuals belonging to this cluster were mostly included in the age group between 21 and 40 years old, equally balanced in terms of genders and employees. A total of 75% were Italian and 80% were European citizens.

Local ecosystem preservation: This was the smaller clusters (12.9% of the sample). They were mainly women (65%), mostly distributed into the two age groups (21–30 and 51–60 years). This cluster was distinguished by a majority of employees and by 23% of individuals being foreigners from non-UE countries.

The emerging aspects involving these consumers towards sustainability are confirmed in Berti and Mulligan (2016) [54], who have been defining this issue for small farms, evidencing that the reconstruction of systems of local agri-foodstuffs [55] comes from creating a competitive or survival strategy. In economic literature, this is usually defined as a sustainable food supply chain based on values [56]. Overall, these consumers show a growing environmental sensitivity to the issues of production and responsible consumption and their care for the social dimension of Objective 12 of the SDGs.

6. Conclusions

This research was based on a quantitative methodological approach in order to study the sustainability priorities (qualitative variables) expressed by a sample of consumers. One of the advantages of this approach is that it was able to scale the importance of sustainability definitions, also analyzing the dimensions determined in accordance to individuals declarations about the real priorities. In this regards, the results represent the basis of a real scheme of sustainable consumption and, therefore, an empirical tool for the implementation of ad hoc oriented production processes to ensure the sustainability of products in accordance to consumer opinions.

In particular, the definitions related to the environmental dimension of sustainability emerged as the most important for the definition of a sustainable system to safeguard the planet's natural resources, both from a quantitative and a qualitative point of view. Moreover, the individuals questioned prioritized factors directly related to policy actions for the protection of workers, as well as for food security (accessibility to healthy and safe food). These priorities were fully in line with the three SDGs Objectives (2,12,15) closely related to food as connected to the sustainable development. The link between sustainability and the environment is probably perceived stronger by the consumer even in reaction to current communication and advertising campaigns that promote sustainable products related to environmental protection and to the preservation of natural resources.

In the coming years, a sustainable transformation of consumption and lifestyles will depend on the fundamental changes in world public opinion towards a new paradigm of ecological systems (including the economic, social, environmental and ethical dimensions).

This research underlines once again that sustainability is a concept full of complexity that requires an adaptive, balanced and contextualized approach. The fact of having chosen 'protected spaces' [39] to manage the interviews could be seen as a limitation of this study, which is why the results may not be generalizable to other contexts and to other product categories. Despite our conviction of the efficacy of the parameters chosen for this study, we recommend that further research be conducted beyond food and Italy. For example, an in-depth analysis could be a further step in order to assess the sustainability perception by considering the country of origin as a discriminating factor. In fact,

the presence of 25% of foreign individuals in the sample could have affected the final results about sustainability perception. At present time, this aspect has not been considered in the present work.

A better understanding of the priorities in terms of sustainability for consumers will surely contribute to creating new sustainable consumption paths, as well as to preserving nature and the well-being of the individual and society in general, objectives pursued by the Agenda 2030 of the UN (17 SDGs). In the future, scientific research activity will strive to answer numerous questions related to politics and civil society in order to better understand the directions of socio-technical and cultural change towards sustainable development.

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