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Food Quality and Risk Perception: An Empirical Study Based on the Opinion of University Students

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Abstract: In recent decades, the literature on food risk has grown significantly. Consumers are increasingly interested in being informed about the relationship between the food they purchase, their health, and current sustainability goals. In this study, university students' opinions on food quality attributes were collected through a survey in search of emerging common traits and taking into account the students' socio-demographic characteristics. The sample for the analysis consists of 5133 students enrolled at the University of Turin (Italy), whose perceptions of food risk are analyzed using hierarchical cluster analysis and principal component analysis. The results reveal the existence of four clusters within the surveyed student population: "Detached", "Warranty-oriented", "Inattentive", and "Made in Italy-oriented". In particular, the analysis shows a significant influence of age, education level, income, and employment on students' preferences concerning the purchasing process and food safety. The results also provide some suggestions to stakeholders, underlying the necessity to strengthen the knowledge of the origin of food products and the awareness of the challenges of the global–local food system.

Keywords: food quality; food risk; food origin; food sustainability; purchasing preferences; university students; cluster analysis

Citation: Rota, F.S.; Bollani, L.; Lucia, M.G.; Bonadonna, A. Food Quality and Risk Perception: An Empirical Study Based on the Opinion of University Students. *Sustainability* **2024**, *16*, 8116. https://doi.org/10.3390/su16188116

Academic Editors: Jaspreet Singh and Giuliana Vinci

Received: 15 July 2024
Revised: 16 September 2024
Accepted: 16 September 2024
Published: 17 September 2024

1. Introduction

Since the 2000s, the literature on food risk has grown significantly. Consumers want to be informed about the characteristics of the foods they purchase to make decisions that safeguard their health and contribute to manifold economic, social, and environmental goals. Attributes of healthiness, typicality, authenticity, ethics, and sustainability contribute to the representation of food quality. At the same time, however, how they influence the perception of food risk is still being determined [1,2], and the influence exerted by the social, cultural, and institutional context is also inadequately specified.

The market for food products provides highly diversified offerings from which consumers can choose. Still, some products' relevant characteristics often remain unknown to the consumer, even after consumption, thus placing these foods in the category of fiduciary goods [3]. This lack of transparency originates from the incompleteness and the asymmetry of the information on the characteristics of the food [4]. Furthermore, this lack of transparency can cause health risks and facilitate the diffusion of adverse market effects related to food alerts [5,6]. All market players—suppliers, clients, and even those who regulate the market—contribute to this situation. In the European Union (EU), the courts introduced geographical indications (GIs) such as protected designation of origin (PDO) and protected

geographical indication (PGI) to protect high-quality local agricultural products. These products are thus associated with a precise geographical area of production. However, EU regulations do not compel producers to provide consumers with an indication of the geographical origin of the raw materials. For instance, Bresaola della Valtellina PGI and Speck Alto Adige PGI often contain raw meat cuts from South America and northern Europe.

Under these conditions, the food market faces substantial risks of opportunistic conduct. By omitting complete information about products, the producer prevents the formation of a fair market, as the consumer cannot verify that the price of the food is commensurate with its characteristics and the production process [7]. In addition, these omissions can cause health risks and adverse market effects related to food alerts.

Based on these aspects, Peri provides a classification of food quality [8] assuming that the low level of transparency in the food market (i.e., product/packaging requirements) and, more generally, the food hazards (i.e., safety requirements) are closely intertwined with the concept of food sustainability, understood as the ability to produce, distribute, consume, and trace food in a local, fair, safe, and ecologically sustainable manner (i.e., under strict production, ethical, and guarantee requirements).

In the EU, cases of food contamination [9–11] have frequently occurred over the past 40 years. In order to reassure consumers and reduce the adverse effects of foodborne illnesses on the food market, the EU [12] has therefore structured a regulatory apparatus based on horizontal rules that apply to all products and vertical rules that cover individual products. Similarly, the methanol scandal in the Italian wine market [13] generated a stricter and more transparent system of controls, certifications, and labels. However, consumers' awareness, interests, and motivations for food risk [14–17] are heterogeneous and determine varied purchasing preferences [18,19].

Based on these considerations, in 2024, the EU plans new regulation on food quality systems (i.e., certification systems) to reduce the effects of information asymmetry [4], and the literature investigating the relationship between food origin and risk perception is today copious and structured [2,20]. However, some aspects still need to be explored, such as the different meanings of the food origin concept and the geographical dimension of purchasing decisions [19].

In this context, the present study conducts a questionnaire-based survey to explore how the factors influencing food risk perception rely on different meanings of food origin. In particular, it focuses on university students as a specific group of food consumers. University students emerge as an appropriate population to analyze because they often form a distinctive community with specific characteristics and behaviors [21]. In addition, they are likely to be educated individuals inclined to contribute to surveys [22] and to be recipients of policies and initiatives aimed at improving general food awareness.

The paper presents a survey-based empirical research design to answer the following questions:

- Which attributes of food origin most influence perceptions of food risk in university students? Are these attributes the same as those identified in the literature for other social groups?
- Do students show homogeneous attitudes toward food regarding its risks? Are recurrent behaviors connected to specific students' characteristics such as age, gender, income, education, and employment?
- What lessons can be learned from the analysis of a specific case study?

This paper is structured as follows: the next subsection refers to the conceptual framework of the study and the literature review on food risks and related perceptions, food risks and sustainability, and food origin and its relevance for consumers; the second section outlines the methodology used, considering the stages of the research process and the definition of the set of indicators, and defines the main characteristics of the sample; the third section shows the primary evidence obtained from the data collected; and the fourth section highlights the link between the literature review and the results of the study. The final section discusses the evidence drawn from the study and the implications of the

research. Also, it illustrates the study's limitations and future research perspectives in a separate subsection.

1.1. Conceptual Framework

In 1963, the Joint FAO/WHO Conference on Food Standards established an intergovernmental commission to create the "Codex Alimentarius", a collection of international standards, codes, guidelines, and recommendations to protect consumer health and ensure fair practices in food trade. However, the Food and Agriculture Organization of the United Nations (FAO) did not initially provide a specific definition of food safety. Rather, it implicitly defined food security dimensions, such as availability, accessibility, utilization, and stability of food over time [23], which overshadow aspects such as intrinsic characteristics and the wholesomeness of food. The literature on food safety and risk perception is extensive, covering all aspects of this multifaceted problem [24]. However, a shared definition of food safety must still be provided in the scientific literature and the regulatory system [25–27].

1.1.1. Food Risks and Related Perceptions

Healthy foods typically contain the essential nutrients and undergo minimal processing, preserving their taste, freshness, and seasonality. These factors are common attributes of food quality. However, quality foods are also foods that come from pesticide-free organic agriculture [28] and farms geographically close to the end consumer [19,29]. Food quality perception, in fact, also relies significantly on the fear of microbes, viruses [30,31], and foodborne illnesses. Zoonoses such as the human variant of bovine spongiform encephalopathy (BSE or "mad cow disease") have led the European Commission to ban imports to the continent from Britain of cattle over six months old; avian influenza and the swine flu has reinforced the EU obligation of traceability of the origin of raw meat materials and other agri-food products [32–38]. Without hygiene, food contamination can spread in all phases of the food chain (production, storage, and preparation), leading to health risks and higher health expenditure [39,40].

Place of origin is one of the food characteristics that consumers value most. Many consumers consider local food to be fresher, safer, and healthier. They value it for preserving tradition, local development [41], ethical codes of conduct, and sustainability [42,43]. At the same time, the perception of local food quality is often based more on trust than actual knowledge [44]. For instance, consumers tend to be biased against imported food, especially when they lack sufficient knowledge [40,45].

Ethnicity, age, and gender are other important sources of variation in risk perception within and between countries [46]. A survey conducted in the Netherlands found that older people perceived food risks more than younger people, and women perceived more risk than men [47]. However, a deeper examination of the literature reveals that risk and its perception are also influenced by social, cultural, educational, and psychological factors. These findings have been corroborated by other studies conducted in various countries [48,49].

Specific socio-cultural and institutional contexts can indeed shape lifestyles and preferences [50], influencing food attitudes and perceptions [51]. In a cross-national study, Knight et al. [52] found that the perceived reliability of nations induced an "inferential belief" in consumers so that they preferred food products from countries with an established green image. Finally, membership in a specific community also has an influence [53,54].

The present study focuses on university students as a social group, and the literature suggests that their perceptions of food risk and purchasing preferences rely on several relevant socio-demographic variables [55]. The hypothesis is that sharing courses, housing, and activities among university students increases lifestyle imitation and the spread of common eating attitudes [56]. Indeed, numerous studies worldwide testify that concerns about healthy and sustainable eating are particularly prevalent among young people [57] and students in higher education institutions [58–63]. Women and university students, in

particular, tend to be more aware of food risks [64,65] and show a greater willingness to pay for healthy, local organic foods [66]. However, due to limited budgets and fads, many of them forgo meeting these criteria [67–71]. Risk perception in young generations also reflects the cultural influence of the country of origin [72]. In China, for example, environmental pollution is the most critical food safety concern among the young, while food technologies are considered safe [73]. In EU countries, on the other hand, young people report paying close attention to the geographical origin of food [74,75].

1.1.2. Food Risks and Sustainability

Food risk also has a relationship with sustainability. For example, it is related to animal welfare and the environment, as advocated by the "One Health" approach. Tilman and Clark's [76] dilemma of whether to feed the world's population or save the environment prompts a focus on the mutual impacts between the environment and the food industry [77] from a long-term holistic perspective. Scientific investigations of climate change, such as extreme rainfall and drought events, affirm that they alter the quality and content of food micronutrients and increase the burden of pathogens. At the same time, the current trend toward calorie-rich diets poses severe threats to human health and the environment by promoting greenhouse gas emissions, soil and water pollution from fertilizers and pesticides, and depletion of biodiversity and ecosystem services, included food and its proprieties [78–81].

While micronutrient deficiency contributes significantly to morbidity and mortality in low- and middle-income countries worldwide [82,83], the rise of a calorie-rich diet harshly impacts populations in wealthier countries. This paradoxical situation raises considerations about food ethics, involving aspects of micronutrient deficiencies (e.g., food fraud), food accessibility, and the fair treatment of individuals and animals in the agribusiness system, including the exploitation of child labor [84]. Scholars have discussed food injustice [85,86], emphasizing healthy, sustainable, and equitable food as a human right and highlighting the need to overcome barriers to it [87]. In this particular context, the importance of community involvement in creating just food systems is also considered [54,68,88].

1.1.3. Food Origin and Its Relevance for Consumers

A review of the literature on food safety risk perception conducted by Nardi et al. [89] reveals four meanings of food origin:

1. Genetic origin. A primary genetic classification is between plant/animal or artificial origin, such as in vitro grown products and genetically modified organisms (GMOs) [16]. Second, foods can be genetically classified according to their species [90];
2. Geographical origin. This refers to the place of origin of foods and the scale of production and supply chains [91];
3. Processing practices. This specifies the intensity of the manufacturing process [92] and distinguishes between handmade artisanal products and industrial products;
4. Distribution channels. The place where food is distributed and purchased (stores, convenience stores, or large supermarkets) may influence consumers. In addition, consumers may prefer alternative food networks or solidarity-based purchasing groups over global food chains.

The food industry provides information, certification, and warnings for all these types. Labels, in particular, play a key role in transparently communicating product characteristics. However, their objectives can be diverse, from nutritional and health purposes to marketing. Focusing on the geographical origin of food, relevant information for consumers is of three types.

First, consumers are interested in the country of origin of the food they purchase. In addition to the widespread tendency to prefer domestic over imported products [20,93], each country has its standards for regulating food production and distribution, and consumers tend to project the quality of these standards on the overall quality of food [2]. For example, in the European Union, a well-developed farm-to-fork system ensures the traceability and

safety of the supply chain from origins to the final consumer [12]. In contrast, the influence of the distribution channel (large or small, family-owned or international, with sound or poor reputation) is staggering [94]. In some cases, the larger the chain, the higher the trust. In other cases, the opposite is true, since, in the consumer's perception, a small retailer has a strong interest in maintaining its good reputation [95].

The second type of geographic information important to consumers is the presence of quality labels that certify the local and traditional origin of foods. The purpose of these labels is twofold: to ensure food transparency [96,97] and to certify the quality of the product to improve its appreciation and protect it from competition. The EU's geographical indications system is part of intellectual property protection actions.

The main GIs are the PDO, which identifies products made in a specific geographical area with local raw materials and codified processes, and the PGI, which identifies products whose quality and reputation rely on a specific territory and its know-how. Their goal is to identify products whose excellence is closely linked to where they are produced, with some flexibility on the actual geographical origin of the ingredients, as demonstrated, for example, in the case of Italian Bresaola della Valtellina (see Section 1). Several studies have shown that PDO and PGI marks increase the appreciation of food products in the market, both in terms of willingness to pay (WTP) and quality perception.

EU consumers conceive PDO/PGI products as typical, characterized by place-based production processes and specific gastronomic heritage [98]. However, they can also be rhetorical, constructing the image of the local food product independently of its genetic origin [99,100], its taste and organoleptic characteristics [101], and its wholesomeness [102]. The impression is that only the most educated consumers know that the quality of local products has little to do with their contribution to health [92]. At the same time, the local origin of food is widely appreciated because it protects and enhances cultural heritage [103,104].

The third type of geographic information that influences consumers is the km-zero attribute. However, as in the case of PDOs and PGIs, the km-zero label does not imply that the food product is better for one's health than a conventional product, except for its supposedly greater freshness, more explicit traceability, and environmental sustainability due to the seasonality of the products (which do not require greenhouses) and their reduced transportation [95]. In addition, consumers identify the local farmer as a trusted member of the community and an exponent of the traditional and admirable rural lifestyle [94,97].

2. Materials and Methods

The literature on food risk perception testifies that the relationship between the perception of food-related threats and food attributes is a complex topic that needs further investigation. Factors influencing the perception of the risks include the characteristics of the foods, the consumers, and the community to which consumers belong.

In this regard, this paper pursues a holistic approach to food risk including economic, social, and environmental viewpoints. In addition, this paper focuses on food origin and its multiple meanings as a primary variable influencing consumers' perception of food risk. As reported in the conceptual framework section of the paper, the notion of origin applied to food allows the contemplation of many different aspects. The geographic origin of the food product and its ingredients (domestic vs. imported, local vs. foreign, typical vs. standard) is only one of the dimensions involved. Other dimensions concern food processing (artificial and ultra-processed foods vs. fresh and wholesome foods), supply chain governance and purchasing process (large, globalized supermarkets vs. family-owned stores and farmers' markets), quality information, and the certification it provides (PDO/PGI vs. non-certified).

Finally, the paper identifies the university student community as a relevant subject not only for testing the distinctive behaviors (in food and other everyday aspects) that the literature attributes to this specific social group but also for making policy suggestions, considering the critical role that universities and related students will play for the future of society.

The empirical research investigates students' food risk perceptions and behaviors at the University of Turin. The University of Turin (in the Piedmont region) is one of the largest universities in Italy. At the time of the survey, 78,799 students were enrolled in this University, including 49,080 women and 5151 foreigners (USTAT-MUR data).

The student community's general awareness of food risk was first investigated through qualitative conversations with the students attending quality-related courses. Subsequently, a preliminary version of the questionnaire was created and tested within small groups of students. Finally, the questionnaire was distributed to all the undergraduate students at the University of Turin. A centralized mail delivery system of the University was used for this purpose. As a result, a sample of 5133 individuals was collected (Table 1).

Table 1. Description of the sample according to some control variables.

Control Variables	Categories	No.	Percentage (%)
Age	18–22	2724	53.07
	23–29	1922	37.44
	30–37	220	4.29
	38–57	239	4.66
	58–73	28	0.55
Gender	Female	3806	74.15
	Male	1327	25.85
Income (EUR)	<10,000	633	12.33
	10–20,000	1235	24.06
	20–30,000	1375	26.79
	30–40,000	872	16.99
	40–50,000	470	9.16
	>50,000	548	10.68
Education	Diploma	3402	66.28
	Bachelor's degree	1731	33.72
Employment	Student (only)	4463	86.95
	Student/worker	670	13.05

Source: authors' elaboration.

The questionnaire contained five-point Likert scale questions to quantify the sample's opinions on food safety and multiple-response questions to identify target groups.

As illustrated in the conceptual framework section, the dimensions of risk and origin are highly correlated. Therefore, eight variables were identified (placed in quotes) and organized according to three group of questions to assess students' attention to food safety issues and the different dimensions of the food origin concept as follows:

- The influence that factors such as the "origin of the product, its "traceability", and the presence of "quality marks" (PDO, PGI, organic product) exert on the purchasing process;
- The risk associated with specific types of food such as "imported products" compared to products protected under a "geographical indication" (PDO, PGI) or "purchased directly from the producer";
- The perceived importance of transparent information, such as "domestic origin" and the presence of "certification marks (PDO or PGI)", for food safety.

The intention was to test students' opinions on the factors influencing both their opinions on food risk and purchasing preferences.

Five control variables were then included in the empirical analysis to identify target groups:

- Age: less than 22 years, 23–29, 30–37, 38–57, more than 58;
- Gender: male, female, non-binary;
- Income (annual, expressed in thousands of EUR): less than 10, 10–20, 20–30, 30–40, 40–50, greater than 50;
- Education (the highest qualification acquired): high school diploma, bachelor's degree;
- Employment: any predominant work activity.

Consistent with the literature on generational differences in food opinions presented in Section 1.1.1, this study considers respondents aged 18–22 as members of Generation Z, respondents aged 23–29 as a mixed generation including Generation Y and Generation Z, respondents aged 30–37 as Generation Z, and respondents aged 37+ as the oldest generation. Using cluster analysis—a quite standard methodology to survey individuals' food preferences [105]—the study aims to identify some main groups of consumers to whom to target food governance decisions and policies. Respondents were organized into a hierarchical cluster-type structure by adopting multivariate methods based on the joint use of several variables. Specifically, they were divided into four clusters based on the eight variables concerning attention to food safety and the different dimensions of food origin.

For this purpose, hierarchical cluster analysis was used, based on the first factorial dimensions of a principal component analysis [106]. The analysis used the R statistical environment (R Core Team—ed. 2023) and the FactoMineR package (PCA and HCPC functions) for the computation and the visualization of the results. Operationally, the five socio-demographic variables selected to identify the target groups were included as factors in the PCA and used as additional qualifying elements in the description of the clusters resulting from the variables related to the different dimensions of food origin.

3. Results

The analysis process is preliminarily based on principal component analysis (PCA) of the eight variables, concerning attention to food safety and the different dimensions of food origin (see Section 2). To exclude some noise in the data, only the first five PCA dimensions are included in the clustering process (they explain 83.96% of the total variance). In addition, some control variables (presented in Table 1 and expressed in categorical form) are included in the analysis as supplementary variables. The following dendrogram is obtained and used to identify four clusters by means of a horizontal cutting line (Figure 1).

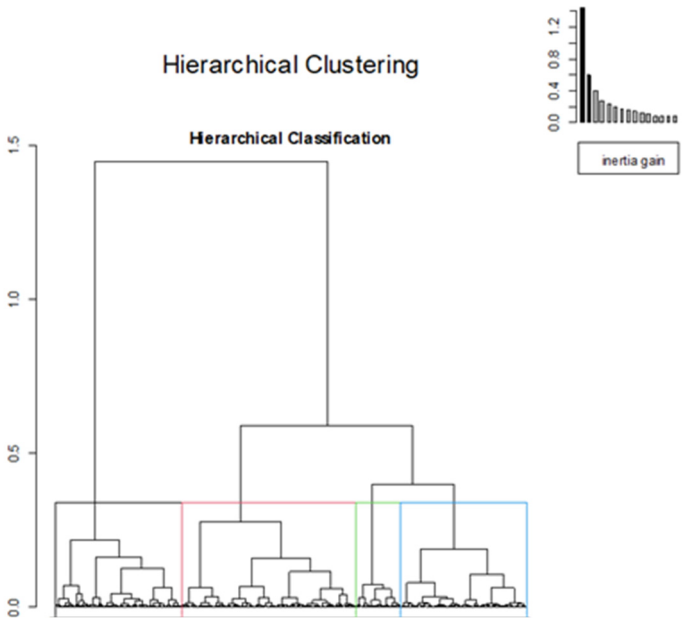

Figure 1. Dendrogram. Black—Cluster 1; red—Cluster 2; green—Cluster 3; pale blue—Cluster 4.

The four clusters are then represented in the first factorial plane of the PCA in the following graph (Figure 2). Dimension 1 (horizontal axis) and Dimension 2 (vertical axis) together explain 52.79% of the variance, providing a first glimpse of the characteristics of the four clusters that are explained in more detail in the results section (using more axes and a higher percentage of explained variance).

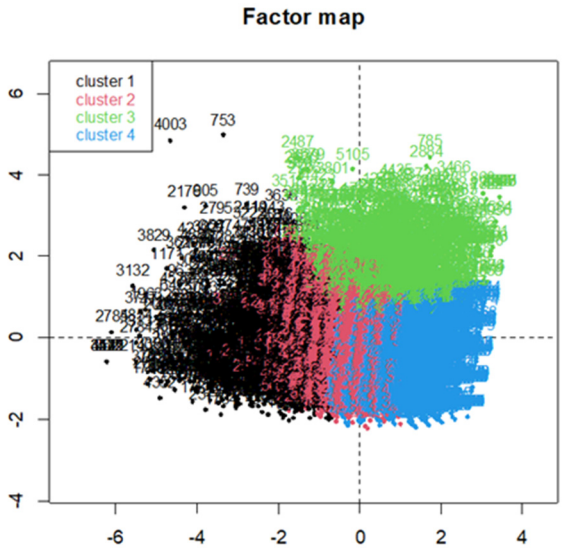

Figure 2. Clusters presented in the first two PCA dimensions.

Figure 3 shows that there is a good positive correlation between the horizontal axis and six of the eight variables considered. In particular, three of them concern purchasing behavior: the origin of the product (label: BF_Origin), its traceability (label: BF_Traceability), the presence of quality marks (label: BF_QM). One of them is related to the perceived risk of imported products (label: RISK_Imported). The last two variables concern the perceived importance of domestic origin (label: PERC_Origin) and certification marks (label: PERC_Mark). This first axis distinguishes cluster 1 (with low values of these variables) from cluster 2 (with medium values) and clusters 3 and 4 (with higher values).

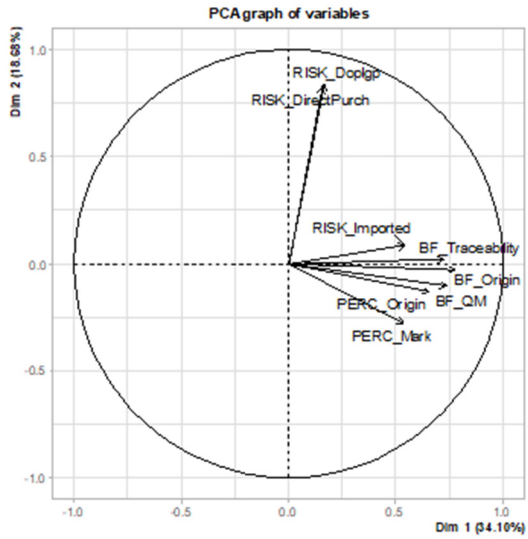

Figure 3. Variables presented in the first two PCA dimensions.

Furthermore, since the second dimension is positively correlated with the perceived risk of products with a geographical indication (PDO or PGI) (label: RISK_DopIgp) and of products purchased directly from the producer (label: RISK_DirectPurch), it distinguishes cluster 3 from cluster 4 (the first with higher values for these two variables).

The four clusters, named "Detached", "Warranty-oriented", "Inattentive", and "Made in Italy-oriented", are described in Tables 2 and 3.

Table 2. The distribution of the respondents into the identified clusters (absolute number and percentage).

Clusters	Members No.	Percentage (%)
1 (Detached)	1203	23.44
2 (Warranty-oriented)	1337	26.05
3 (Inattentive)	1011	19.69
4 (Made in Italy-oriented)	1582	30.82

Source: authors' elaboration.

Table 3. Main elements of the four clusters.

Cluster No.	Age	Income	Education	Employment	Food Purchasing Influence	Low Food-Risk Perception	High Food-Safety Perception
1 (Detached)	<22	<20,000	High School	-	NO	NO	NO
2 (Warranty-oriented)	-	-		Students	Traceability, Origin and Food quality systems	Direct purchasing and PDO/PGI	NO
3 (Inattentive)	≥23		University degree	Workers	Origin, Traceability and Food quality systems	NO	PDO/PGI
4 (Made in Italy-oriented)	-	>30,000	-	-	Food quality systems, Origin and Traceability	Direct purchasing and PDO/PGI	Food origin and PDO/PGI

Source: authors' elaboration.

Cluster 1 (Detached) shows a negative approach to almost all the survey themes. Members of this cluster believe that food traceability and origin and food quality systems do not influence their purchasing process. In addition, they believe that product origin and PDO/PGI marks do not convey a high level of food safety. Finally, they think that imported food products, PDO/PGI products, and direct food purchasing do not generate specific food risks. This cluster is characterized by a more significant presence than elsewhere of very young university students (less than 22 years old) without a degree and with a low income (less than EUR 20,000). They represent 16.97% of the sample.

Cluster 2 (Warranty-oriented) members share a positive approach in considering traceability, food origin, and food quality systems in the food purchasing process. They also identify PDO/PGI products and direct food purchasing as tools to reduce food risk perception, and they believe that imported foods are not crucial regarding food risks. This cluster is also characterized by the predominant presence of university students not engaged in work activities. It constitutes 26.05% of the sample.

An overall positive approach characterizes cluster 3 (Inattentive). On the one hand, PDO/PGI marks, direct purchase, and imported foods seem potentially risky. On the other hand, traceability, food origin, and food quality systems positively influence the purchasing process. This cluster is also characterized by a considerable share of workers already holding a bachelor's degree. It constitutes 19.69% of the sample.

Cluster 4 (Made in Italy-oriented) is characterized by a positive food origin orientation. Food quality systems, food origin, and traceability can positively influence food purchasing. In addition, direct purchase and PDO/PGI marks confer low food-risk perception. In contrast, origin and PDO/PGI marks are associated with a high level of food safety perception. On the other hand, imported foods seem to have potentially high levels of food risk perception. This cluster is characterized by a group of students with high income (above EUR 30,000). It constitutes 30.82% of the sample.

The main elements of the clusters are summarized in Table 3.

4. Discussion

The survey results on the perception of food risk among university students in Turin showed some correspondence with the results emerging from the literature.

For instance, in line with evidence attributing EU consumers' higher appreciation for local foods [91] and for domestic foods or foods imported from countries with a "clean image" [52], the highest mean scores were recorded in questionnaire questions that, on a Likert scale, relate to the influence on the purchasing process of knowledge regarding the food's place of origin and Italian origin as elements of perceived safety. In addition, among the risks considered, those related to the import of products have the highest average score. Similarly, in line with consumers' fears that food may be a vector of disease along the food chain due to the lack of adequate national controls [2], among the questions investigating the determinants of food risks, the one related to the import of produce has the highest average score.

The literature also emphasizes the importance of age groups, presenting the situation of young adults who are attentive to avoiding the risk of foodborne diseases and are therefore interested in local products [58]. However, the survey shows at least a partial influence of the age variable, suggesting a gradual increase in food knowledge with increasing age.

Some considerations about purchasing power can be drawn from the literature, as those who would like to limit food risks by making a more careful choice in their purchases sometimes encounter budgetary constraints that guide them otherwise [67,69]. The survey also highlights the importance of the income variable with respect to factors influencing the purchasing process and perceptions of risk and food safety. The results suggest a gradual increase in attention to most variables (i.e., food origin, traceability, presence of quality marks, perceived risk of imported products, perceived importance of domestic origin, certification marks) as income increases.

Among those subjects where an increased value of the variables considered was observed (i.e., product origin, traceability, presence of quality marks, perceived risk of imported products, direct purchase, PDO/PGI, and perceived importance of domestic origin and certification marks), it emerges that it is more typical for these subjects to have earned a college degree, as far as education is concerned, and that it is more typical for these subjects to have a job during university studies, as far as employment is concerned.

Regarding gender, no particular differences in behavior were found. This result is consistent with an empirical survey conducted in Greece [22]. Nevertheless, it is inconsistent with another study showing that women perceive greater risks than men [47].

Considering the division into clusters, cluster 4 (Made in Italy-oriented, 30.82%) is a particularly interesting case, especially regarding variables related to the perception of the three types of risk investigated. In fact, in this cluster, the risks of direct purchase and local quality systems are perceived as low, while the risk of importing is considered high. Individuals in this cluster seem to prefer domestically produced foods more than other clusters. This cluster seems to be in line with other studies that show, on the one hand, that local food products assure a better guarantee in terms of risk [20] and that some initiatives oriented towards the development of local food markets, e.g., AFNs, locavores, and CSAs, stimulate a return to small-scale, more responsible, and locally oriented products [91]; on the other hand, some large-scale food distribution groups are stimulated to promote local food in order to meet the demand of locally oriented consumers [91].With respect to other clusters, the question of the level of information on risks and food origin can be analyzed. Some respondents confirm several salient features considered in the literature, such as interest in traceability, food origin, and quality systems (Warranty-oriented, 26.05%). However, other respondents appear partially informed about the main issues related to traceability and food origin. There are groups of people whose opinions are less informative in that they have a generally negative attitude towards the topics discussed (Detached, 23.44%) or a generally positive attitude but with some contradictory perceptions, particularly about food risk perception (Inattentive, 19.69%).

Overall, the results of this study confirm the need for more transparent information on food origins and suggest the importance of education on these issues, which is consistent with the existing literature. In this sense, the literature highlights the importance of educational background in a context where university students have more knowledge about some impacts (e.g., industrial processing and applied food genetics) than others (e.g., food vehicles of foodborne pathogens and food handling) [71]. In addition, it shows that students in faculties offering health-related programs outperform those in humanities programs, both in terms of food safety knowledge and practical outcomes [71]. Furthermore, in line with the literature on local food environments, students' knowledge and accessibility to healthy foods lead to an improvement in students' diets and related university performances [107–109]. In this context, the results suggest that tailor-made educational initiatives develop students' knowledge of food risks and origin.

5. Conclusions

This study examines perceived determinants of food risk in 5133 university students of a large Italian HEI and collects ideas and recommendations for interventions in a university-specific setting.

The results obtained from the survey are useful in describing an interpretation of the concept of food sustainability that refers to the diverse dimensions of food origin, the purchasing process, and the perceived health risk of foods. They provided a snapshot of the state of the art among university students in the northwest of Italy. Moreover, the results align with the indications of scholars dealing with these issues and contribute to a better understanding of the sector, emphasizing that the respondents are sensitive to food origin issues. Furthermore, the evidence underlines the importance of the concept of origin in its different meanings in the Italian context, i.e., direct sales, PDO and PGI certification, and traceability, with the majority of interviewees supporting the role of Made in Italy as an element of guarantee, wholesomeness, sustainability and, more generally, intrinsic quality of the food product.

Some implications can be identified. The findings provide some suggestions to public and private stakeholders. In the case of public institutions, there is a clear need to strengthen the guarantee instruments linked to the origin of food products further, consistent with some observations offered by the sample and current national and European policies. In the private sector, the origin of food products has a value that grows in importance as a function of age, economic availability, and education, suggesting to market operators possible strategies to make food products linked to the territory even more attractive. In particular, the results provide some recommendations for the management and training of university students in Turin that may also be considered for other geographical contexts.

Firstly, the survey response rates showed that women are much more inclined to contribute to the survey than their male counterparts, demonstrating a higher level of involvement during specific activities involving students. In any case, their responses to the questionnaire show levels of awareness of food risks that are similar to those of their male counterparts. In this sense, the university could implement campaigns to increase awareness of food risks, primarily to raise students' awareness, e.g., through seminars, workshops, and scientific activities, with the students' direct involvement.

Secondly, some interventions could aim to improve the campus food environment. For instance, positive results could be achieved in improving students' appreciation of healthy and local food products by providing them with healthy food from local producers through university canteens, cafeterias, vending machines, and other food services. Finally, regular surveys among the university community on food risks can help the university government monitor the evolution of this key issue over time.

In this sense, the University of Turin has already implemented several initiatives, the most important of which is the Unito GreenOffice (UniToGO), aimed at improving the institution's social, economic, and environmental responsibility. Furthermore, the University of Turin provides students with critical thinking on the challenges of the global–local

food system, according to the United Nations' Sustainable 2030 Agenda, and collaborates with local institutions to create a Strategic Food Agenda towards a Metropolitan Food Strategy [110].

Limitations and Future Research

Some limitations of the study should be considered. In particular, the numerous variables investigated provided an initial snapshot of the level of attention of university students concerning the relationship between food risk and the quality requirements associated with food origin. In this sense, future studies should delve into each of the elements considered in this study, e.g., factors influencing the purchasing process (traceability, origin, food quality systems), to obtain a more detailed picture of the state of the art in this area. Furthermore, the sample used for this study must be considered a limitation. Although large, it has geographical constraints, i.e., the study area refers only to a part of the Italian national territory and is limited to a particular category of potential consumers, namely university students. This limitation suggests that undergraduate students from other Italian and European universities should also be investigated. The Turin experience should be seen as a first step in defining best practices in this area.

Author Contributions: Conceptualization, A.B., L.B., M.G.L. and F.S.R.; methodology, A.B. and L.B.; validation, A.B. and L.B.; formal analysis, A.B. and L.B.; investigation, A.B., L.B., M.G.L. and F.S.R.; data curation, A.B. and L.B.; writing, A.B. (Sections 1, 3 and 4), L.B. (Sections 2, 3 and 5), M.G.L. (Sections 1 and 5) and F.S.R. (Sections 1, 4 and 5); final review and editing, F.S.R. and A.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Ethical review and approval were waived for this study because they were not necessary at the time of the survey.

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

Data Availability Statement: The datasets presented in this article are not readily available because the data are part of an ongoing study. Requests to access the datasets should be directed to the authors.

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

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