

## Article

# Factors Influencing Consumer Behavior in Sustainable Fruit and Vegetable Consumption in Maramures County, Romania

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**Abstract:** The article explores consumer behavior in the context of sustainable consumption and the changes related to healthy food that have occurred during the pandemic. The study seeks to identify the factors that influenced consumer behavior on the consumption of fruits and vegetables. For this purpose, a questionnaire was applied to a sample of 1230 people from Maramures County, Romania. This study evaluates consumer behavior and attitudes on sustainable healthy food consumption; determining factors of consumer behavior are established by the needs, knowledge, selection of quality products, and the degree of culture and education in health diet issues. The study also presents a specific classification for fruits and vegetables in terms of consumer preferences and the clustering of local consumers by their interest in healthy food habits according to consumer culture, consumer loyalty, consumer needs, and consumer knowledge. In this study, it was revealed that consumer behavior consumption is not influenced by age, gender, or education. As a result of the correlation analysis, a positive relation was identified between the consumer preference, consumer attitude, and consumer behavior variables. The results of this study offer practical solutions and directions for future research on redesigning sustainable development of local, traditional foods. The new trend focuses on brand offerings and consumer needs for quality food and shows the consumer's ethnocentrism and orientation for practical solutions.



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**Keywords:** consumer behavior; consumer attitude; sustainable food consumption; brands

## 1. Introduction

At the September 2015 Sustainable Development Summit, world leaders adopted the 2030 Agenda for Sustainable Development, which includes 17 sustainable development goals (SDGs). The SDGs are tasked with guiding development, funding, and action policy for the years before 2030 [1]. Objective 12 of the 2030 Agenda for Sustainable Development aims to ensure sustainable production and consumption patterns, an important role, and is committed to sustainable development as the center of its objectives and activities by 2030 [2]. Goal 12 from Agenda 2030 is to ensure sustainable consumption and production patterns and establishes how countries should commit to making fundamental changes to the way our societies produce and consume goods and services [3].

The term sustainable consumption is more than just a type of behavior in marketing terminology, and it is not just consumption behavior. Sustainable or responsible consumption behavior can change the world. The sustainable consumption concept has been investigated widely in the literature of Sesini et al. [4] and Yldirim [5]; factors affecting sustainable consumption or being a green consumer have been investigated recently as well. Sesini et al. [4] promoted sustainable consumption as a crucial aspect of sustainable development, which depends on achieving long-term economic growth that can ensure environmental and social needs for both present and future generations.

The key aspects of sustainable consumption are from ecological, social, and economic points of view. Sustainable consumption is hampered by differences between consumer attitudes and consumer behavior in the food market; however, the relationship

between sustainable development and consumer behavior is not investigated sufficiently. Quoquab et al. [6], Abdulrazak and Quoquab [7], Brach et al. [8], and Bulunt et al. [9] consider sustainable consumption as a driver of sustainable development.

The concept of sustainable food consumption was adopted at an international forum on fundamental human rights to adequate food. Sustainable diets have been defined by the Food and Agriculture Organization (FAO) of the United Nations [10,11] as “those diets with low environmental impact that contribute to food and nutrition security and a healthy life for present and future generations”. Such a model for food consumption was developed by Johnstone et al. [12] in a model also known as Sustainable Healthy Diets. The concept of a sustainable diet is not new; however, it is a complex term because changes to more sustainable dietary patterns are needed to reduce the environmental burden. The Johnstone [12] model is a model for sustainable diets that presents an opportunity to successfully advance commitments to sustainable development and eradicate poverty, food and nutrition insecurity, and poor health outcomes. This study examines the determinants of sustainable diets.

The main determinants of sustainable diets fall into the following: agriculture, health, and sociocultural, environmental, and socioeconomic factors. When factors or processes are modified in a determining category, such changes affect other determining categories and, in turn, the level of “sustainability” of a diet. Kevany et al. [13] recalled that sustainable diets are influenced by several cultural and social factors such as cultural identity, customs, family practices, and food acceptability, with time pressures that often exceed health and environmental considerations. These diets are healthy, have low environmental impact, and need to be socioculturally acceptable and economically accessible for all. Drewnowski [14] and Donati et al. [15] have confirmed that the ideal diet is one that is healthy, of sufficient quality and quantity, affordable, safe, and culturally acceptable for ideal human nutrition and health status.

Boucher et al. [16] and Brown et al. [17] have investigated various ways to promote the consumption of fruits and vegetables among students, and their interventions showed positive results, especially when combining educational aspects with environmental ones. Consumption of organic food and the proliferation of the green marketing paradigm are also parts of a sustainable diet in the opinions of Baudry et al. [18] and Bryla [19]. There is a favorable attitude among consumers towards organic products due to their taste, quality, safety, and impact on health and the environment.

Moser et al. [20], Pasick et al. [21], and Carrington et al. [22] have noted that in Europe, more importance is given to the characteristics of the experience and the health-related components of products, while the attributes of belief (environmental, origin, local, organic elements) are somewhat limited or less important. Another factor that can influence sustainable food consumption, in the opinion of Kevany et al. [13], would be the quality of food, which is manifested by sensory attributes, safety, nutritional value, functionality, service and stability, health, and authenticity, along with psychological factors, production process, food value, and the importance of connections between consumers and producers.

This latter aspect is particularly true for Europe, where each country has a unique food culture and tradition. The studies of Masoom et al. [23] present a high level of uncertainty regarding the attitude of consumers; unpopularity regarding overall food quality needs to be resolved to ensure the continuity of the businesses involved and guarantee the quality of the products sold. Ohen et al. [24] identified that niche market products, including organic and locally grown food, are becoming more popular, although, very often, the attitudes of consumers regarding perishable foods are unknown and their preferences remain unidentified. On the other hand, Herath [25] and Balaji [26] studied customer decisions on buying fruits and vegetables based on analyses of cognitive and emotional elements, with a little effect from advertising or other campaigns, and they found that consumers value freshness, appearance, and price more than other characteristics.

## 2. Literature Review

Global empirical analyses can give further valuable information regarding the factors affecting consumer behavior and attitudes and their orientation for sustainable consumption. Grimmer and Miles [27], Kollmus and Agyeman [28], Gupta and Ogden [29], and Pickett-Backer and Ozaki [30] found that proenvironmental and sustainable attitudes are not often reflected in people's behavior. Peatti and Crane [31] and Ianole et al. [32] suggested that financial constraints, loyalty to establish brands, and lack of opportunities to practice environmental behavior may have a negative effect on environmentally friendly consumption behavior. Additionally, they mention that knowledge is important, especially for an orientation toward green bio and eco products and to influence consumer behavior. White et al. [33] found that factors like social influence, habit formation, the individual self, feelings and cognition, and tangibility are important and mentioned that consumers are more inclined to engage in proenvironmental behaviors when the message or context leverages the following psychological factors.

A consumer behavior analysis should reveal the following: what consumers think and how they feel about various alternatives (brands, products); what influences consumers to choose between various options; consumers' behavior while researching and shopping; how consumer environments (friends, family, media) influence their behavior.

There are three categories of factors that influence consumer behavior:

1. Personal factors: an individual's interests and opinions can be influenced by demographics (age, gender, culture, education);
2. Psychological factors: an individual's response to a marketing message will depend on their perceptions and attitudes;
3. Social factors: family, friends, education level, social media, and income influence consumer behavior.

Moser et al. [20] mention that in Europe, greater significance is given to features of the experience and to health-related components, while credence attributes (environment and farmer support, origin, local, organic) are of somewhat limited or little importance. This latter aspect is particularly true for Europe, where each country has a unique food culture and tradition. The objective is to provide a valuable research tool that stimulates additional research in the area of sustainable consumer behavior. White et al. [33], Smith [34], and Peslak et al. [35] have stated that factors like social influence, habit formation, the individual self, feelings and cognition, and tangibility can help address the attitude–behavior gap that is commonly observed in sustainability contexts.

Trudel and Cotte [36] summarized and organized research from the past 20 years and explored the psychological drivers of sustainable consumer behavior. Four areas of scientific inquiry that have dominated research agendas were identified: cognitive barriers, the self, social influence, and product characteristics. Moreover, understanding sustainable consumer behavior is central to any paradigm shifts on how society approaches environmental problems. Kollmuss and Agyeman [28], Auger and Devinney [37], and Gatersleben et al. [38] observed that although consumers report favorable attitudes toward proenvironmental behaviors, they often do not subsequently display sustainable actions.

Nevertheless, Rejman et al. [39], Grunert [40], Vermeir and Verbeke [41], and Zander and Hamm [42] have shown that there is a gap between consumers' positive attitude and market behavior, and, most important, everyday consumption practices are likely to be resistant to change. Trudel's research [43], investigating sustainable consumer behavior, began to take on a decision-making perspective and focused more narrowly on consumers' motivations and other psychological factors driving environmentally consequential behaviors. Zakaria et al. [44], in their study, found that the level of adolescents' sustainable consumption attitude was slightly more than half because a positive attitude towards the environment is associated with human beliefs that humans are a part of nature.

Consumers are not familiar with the concept of sustainability. Rejman et al. [39] found that only a low percentage of respondents indicated that sustainable consumption is connected with nutrition (which has possibly less impact on the environment); the desire

to improve health by decreasing body weight was the main driver for sustainable food choices, while prices were the main limitation. Markova-Nenova and Watzold [45] reflected that German consumers were also willing to support small family producers with lower incomes when purchasing pasture-raised milk from outside their region of residence. At the same time, all regional farmers would benefit from consumer desire to contribute to the local economy and environment by reducing transport. Bucic et al. [46] analyzed consumer behavior and identified that consumers consider price, convenience, and packaging as more important factors influencing their behavior; Indonesian consumers are focus on quality, brand, and convenience, and ethical product attributes are not an active driver for their consumption decisions.

Corallo et al. [47] studied another aspect of consumer behavior in Italy—the product label. This behavior matches the current philosophies of sustainable food consumption of ecological products. The same consumer reorientation for green products was analyzed by Seyfang [48] and Alexander [49], where consumers pay more attention to respect for nature during production, the integrity of the farmer, food origin, and the healthy benefits of the product.

The erosion of consumer confidence caused by false green claims (greenwashing) often provokes skepticism, an impediment to environmentally sensitive behavior, and significantly reduces the effect of environmental concern as a factor, according to Albayrak et al. [50]. Kostandinova [51] stated that economic conditions could also influence sustainable consumer behavior and demand for green products. According to Jackson [52], the effect of individual-related factors (such as attitudes and beliefs) and overlooking situational factors (such as the availability of green products and financial constraints) when evaluating consumer behavior is known by the term “fundamental attribution error”.

According to Niva et al. [53], consumers are most sensitive about the issues related to food and health; this is visible in their activities of sustainable food consumption, such as eating seasonal fruit and vegetables, buying organic products, and reducing meat consumption. On the other hand, it can be assumed that this group (compared with younger consumers) is also more willing to resign from hyperconsumption or “showing off” (buying exotic food or products with excessive packaging). Niva et al. [53], Haanpää [54], Onyango et al. [55], and Wier et al. [56] did not confirm the impact of education and income on sustainable food choice but confirmed the correlation between food prices and the implementation of a sustainable diet; the discrepancy between the cost of healthy and unhealthy foods is an obstacle.

Consumer tendency to buy a locally made good over a foreign product is known as consumer ethnocentrism. Alshammari and Williams [57] considered another important factor influencing consumer behavior, namely, consumer ethnocentrism. This factor proves to be an important factor in causing consumers to evaluate foreign products negatively. Studies have tried to understand the effect of consumer ethnocentrism and how it influences the consumer’s attitude and purchase intention towards foreign products on the market.

Consumer ethnocentrism has a strong influence on consumer attitudes but does not significantly affect consumer intention to buy foreign products. Cultural similarity has a significant moderating effect on the relationship between consumer ethnocentrism and purchase intention. This suggests that cultural similarity plays an important role for ethnocentric consumers in the evaluation of foreign products.

Additional research on ethnocentric behavior has been conducted by Balabanis and Siamagka [58], addressing factors that include product availability, domestic brands, perceived need for the product, perceived vulnerability of different products, and level of economic development of the countries of origin of the brands purchased. The results of He and Lu’s study [59] showed that consumer ethnocentrism can exist during the evaluation and selection of brands matched to ethnic groups as well as the origin of the product (local vs. imported); the in-group recommended logos were treated more favorably than the out-group recommended logos by the higher ethnocentrism group. The results of the study by Ma Q, Abdeljelil, and Hu [60] demonstrated that in addition to the origin of the product

(local vs. imported), consumer ethnocentrism can also exist during the evaluation and selection of brands appropriate to ethnic groups.

Garmatjuk and Parts [61] stated that this conceptual phenomenon leads to making purchasing decisions that do not only depend on price–quality but also depend on the criterion of where the product comes from.

More specifically, we found applications of consumer ethnocentrism in specific countries, such as by Kaynak and Kara [62] and Erdogan and Uz Kurt [63] in Turkey, who studied the effects of ethnocentric tendency on consumer perception of product attitudes for foreign and domestic products. In Russia, Puzakova et al. [64] remarked on mitigating consumer ethnocentrism via advertising and media consumption in a transitional market. In Slovenia, Vukasovič's research [65] was focused on consumer attitudes towards organic fruits and vegetables. In Germany, Evanschitzky et al. [66] revealed evidence of consumer ethnocentrism, with foreign products being perceived as better brands. In their research, Marcoux et al. [67] dealt with the influence of sociocultural variables on the preferences of Polish consumers towards specific products made in Poland versus the same products made in Western countries.

Bryla [68] and Siemieniako et al. [69] found the relative importance of elements such as brand image (based on Polish culture and referring to its symbols), local brands as contributors to local identities and the form of their expression, as well as a moral obligation to buy local brands. On the other hand, Bryla [68] and Yagci [70] contributed to the theory of consumer ethnocentrism by providing more insights on its regional dimension in the context of the market of regional food products, where signs of quality are more important for regional ethnocentric consumers; interestingly, this applied not only to regional food, but also conventional food.

In their research, Pagliaci et al. [71] paid attention to consumers who eat green food (including fruits and vegetables) in the context of the economic situation in the Moldavia Counties (Romania). They noted [71] that when buying green food, consumers also adopt ecological behavior as most consumers will choose traditional products based on immediate price and benefits by supporting national and local products.

Concerning the procurement of green food, the authors [71] found that the products do not come from supermarkets or specialized stores but from consumers' own households, from their parents or grandparents, or are purchased from the street market. Ianole et al. [32] and Lakatos et al. [72] presented a replica of the young consumer's sustainable consumption behavior for foods, as applied to Romanian students, and identified as a strong point the trend of a healthy diet and the purchase of organic products, which are more pronounced at the consumer level than on the shelf. The support for healthy eating habits of Romanians was also studied by Voinea et al. [73], and the results showed the need for supporting educational campaigns targeted at consumers aiming to develop healthy food habits.

## 2.1. Consumption of Fruits and Vegetables

Roos et al. [74] conducted a study on 15 countries in Europe and presented the disparities that occur in the consumption of vegetables and fruits, taking into account the educational level of respondents, the region, and the level of consumption that influences the variation. In most studies, with the exception of a few in Southern and Eastern Europe, the consumption of vegetables and fruits was more frequent among those with higher education. The results suggest that consumption of vegetables and fruits more frequently occurs in those with a lower social level. Other differences in patterns of disparities in vegetable and fruit consumption that occur between regions and within populations should be taken into account when planning efforts to improve nutrition and health. Stea et al. [75] increased the research in Europe and created a cross-sectional study for fruit and vegetable consumption according to gender, educational attainment, and regional affiliation for 21 European countries. According to Ramjan and Ansari [76], there are many factors involved in the selection of fruit and vegetable varieties. They considered that in addition



to high visual quality, it is desirable to emphasize the composition of the fruit in relation to aroma, texture, color, and nutritional value, which are of paramount importance. Factors affecting the quality of fruit and vegetables can be largely classified into two groups, namely, preharvest and postharvest factors [76].

Studies regarding how consumer perception (in terms of quality, taste, price, and product) shapes imperfection were conducted by Briggs [77], Lombart et al. [78], and De Hooge [79]. They investigated the conditions under which consumers will buy or consume foods that deviate from ordinary products in terms of appearance standards, date labeling, or damaged packaging, without deviations from intrinsic quality or safety. Barbe et al. [80] noted that one of the reasons why fruit and vegetables are wasted in developed countries is the aesthetic standards set by retailers. Aesthetic standards regulate the shape and appearance of fruits and vegetables. With the help of educational campaigns, people could be made aware to accept aesthetic differences, as demonstrated by the recent campaigns of retailers. El-Mesery et al. [81] also considered the quality of fruits and vegetable products as an element of identifying satisfaction in customers; however, it is influenced by external variables such as appearance (estimation, shape, brightness, and consistency), surface, aroma, and various other components, which are revised as rules and internal elements [81]. Zalega [82] determined in his study that the consumer also has a concern regarding the safety and quality of food products. The description of quality is extremely broad, suggesting numerous desires that may differ from one buyer to another and incorporating properties that impact the value of an item for the customer.

Although most European studies have reported a graded relationship between educational attainment and fruit and vegetable consumption, this is not a consistent finding. Stefler et al. [83] and Mackenbach [84] have shown that in countries and regions characterized by high availability and consumption of fruit and vegetables, those with low education tend to have a higher consumption of these food items compared to those with high education.

Inconsistent findings may partly be explained by a general lack of comparable estimates due to different study designs. Most previously published studies have focused on single countries.

## 2.2. Motivation of the Study

When creating a SWOT analysis for sustainable food consumption in Maramureş County, we identified, as a first strength, the fact that the area is famous for orchards and berries and mushrooms that are exported to European markets. The selection of Maramureş County takes into account the fact that traditional agriculture represents a sustainable way of life in Maramureş as a result of the different stages of change that the common European agricultural policy has produced for rural areas. A weakness would be the emergence of large chain stores and changing consumer preferences for sorted, packaged, and labeled products that respect the principles of quality and security of food supply, which continue to reduce the percentage of products sold at the farm gate in favor of organized markets. However, these low percentages are also due to the intensification of trade through intermediaries, so that small producers fail to enter the market.

The opportunity for Maramureş fruits and vegetables is important because consumers are not interested in the commercial aspects but in consumer requirements for the special nutritional qualities of fruits and vegetables. The future offers a chance to this area through the presence of food consumption, which, lately, due to the pandemic, is a combination of online and offline sales based on a smart supply chain that was built to satisfy consumers whose preferences are constantly changing.

Another opportunity is physical stores; these will not disappear completely as shoppers like to see, choose, and test the products they buy. Their comfort will be increased by ensuring a balanced mix of platforms or applications through which to choose their purchases and, in particular, to buy something personalized after having seen or physically tested the product. After the experience of the pandemic and its impact on consumers'

daily lives, it remains to be seen to what extent Maramureş County will be able to change the current perception of digital infrastructure and capacity and to promote education and culture in this regard, given the existing context and priorities at the European level, which cannot be ignored. The Maramures area was a mining area—disadvantaged by the environment being a mountainous area but favorable for vineyards and fruit trees. The area is famous for berries, syrups and preserves, satin, blueberries, berries, and mushrooms. The surplus could be used for cold-pressed juices, preserves, or a famous brandy fruit drink, which is considered the brand of the area. Additionally, the study on consumer behavior with regard to fruits and vegetables must be considered a future vision for Maramures County and a strong benchmark for domestic producers and the implementation of products specific to the area.

The purpose of this study would be to analyze the main components and factors that could affect the intention and behavior towards the consumption of sustainable food in Maramureş County; in our case, we focus on fruits and vegetables. The survey was applied between October–November 2020 in Maramureş County in the Transylvania Region (Romania). The purpose of the study is to better understand consumer behavior regarding sustainable food consumption and to identify the factors that influence consumer behavior and attitudes toward the food industry.

### 3. Materials and Methods

Taking into consideration the literature and research conducted, this study was necessary in order to know what the consumer from Maramures (Romania) should do and know in their daily behavior and attitude towards food consumption. A survey was created to collect the research data; it has four sections, with 24 questions. Table 1 shows the questionnaire structure and how the factors influencing consumer behavior were established.

**Table 1.** Questionnaire structure and factors influencing consumer behavior factors.

	Questions	Items		Factor
1	Age	I1	I1	Individual characteristic
2	Gender	I2	I2	
3	Profession	I3	I3	
4	Education level	I4	I4	
5	How much from your budget do you invest in healthy food	B	B	Budget
6	How important it is to consume quality products	Q	Q	Quality
7	How often do you consume fruits	OF	OF	Frequency
8	How often do you consume vegetables	OV	OV	
10	What are your favorite fruits 1	NF1	NF1	Needs Preferences
11	What are your favorite fruits 2	NF2	NF2	
12	What are your favorite fruits 3	NF3	NF3	
13	What are your favorite fruits 4	NF4	NF4	
14	What are your favorite fruits 5	NF5	NF5	
15	What are your favorite vegetables 1	NV1	NV1	
16	What are your favorite vegetables 2	NV2	NV2	
17	What are your favorite vegetables 3	NV3	NV3	
18	What are your favorite vegetables 4	NV4	NV4	
19	What are your favorite vegetables 5	NV5	NV5	

Table 1. *Cont.*

	Questions	Items		Factor
20	Do you consume bio fruits and vegetables	CBIO	CU1	Culture
24	What is your favorite brand for natural juice	Brand	CU2	
9	Product provenience	Origin	CU3	
21	Do you consume natural juice	Juice	K1	Knowledge
22	What kind of natural juice do you prefer	Type of juice	K2	
23	How do you prefer the natural juice to be	Made	K3	

In order to be sure that the respondents come only from Maramureş County, the respondents were chosen at random in different shops and supermarkets in the biggest cities of the area. The data were collected through a face-to-face survey based on structured questionnaires. For that reason, a total of 1230 consumers, who constituted the target group, were enrolled and gave feedback regarding behavior, attitude, and preferences related to food market consumer products. This study used the explanatory survey method to establish several hypothetical relationships between respondents' characteristics and fruit and vegetable consumption.

The first part investigated the sociodemographic characteristics of the respondents using four questions (gender, age, education, and occupation). Education attainment was coded into three categories: primary school, high school and post high school, and academic education. The study allowed the analysis of the interaction and association between fruit and vegetable consumption and the education level of consumers. The age segmentation was established to identify consumer behavior in terms of the generations aged 30 years or younger and 31–40, 41–50, and greater than 50 years of age. Regarding profession, respondent categories were students, employees with responsibilities (manager, chief of departments), and employees (without responsibilities).

The data utilized for analyses in the second part of the present study were based on a questionnaire that focused on consumer behavior related to purchasing, preference, and needs when consuming fruits and vegetables.

Additionally, the questionnaire establishes and identifies the frequency of fruit consumption, which was measured by asking respondents "How often do you eat fruit?"; vegetable consumption was measured by asking "How often do you eat vegetables". Response categories for both fruit and vegetable consumption were (1) daily; (2) every week; (3) monthly; (4) sometimes; (5) never. Regarding the purchasing power of consumers, it was possible to identify how much from their income they spend on the purchase of these products (10%, 20%, 30%, 40%, and 50%) and the emphasis they put on the quality of products and how this affects consumer behavior. The survey also provides data on the quantity and variety of fruit and vegetable consumption for better classification; this made it possible to classify priorities and preferences for fruits and vegetables.

Consumer attitude, in the third section of the questionnaire, was established to determine consumer culture on brands, the benefits of consuming bioproducts, and the importance of consumer orientation on the market for traditional and national products (seasonability) and products from abroad (exotic fruits and vegetables). Response categories for culture consumption were (1) daily; (2) every week; (3) monthly; (4) sometimes; (5) never.

The answer categories for the open question about brands offered the respondents the possibility of stating their favorite brand (thus, it was possible to establish and identify the most successful Romanian brand and local and traditional brands).

The last part of the questionnaire included three questions that identify consumer knowledge of fruits and vegetables (including juices), where and how they buy them, how they like to consume them (here, we could identify the specific niche elements and the possibility of introducing innovative elements).



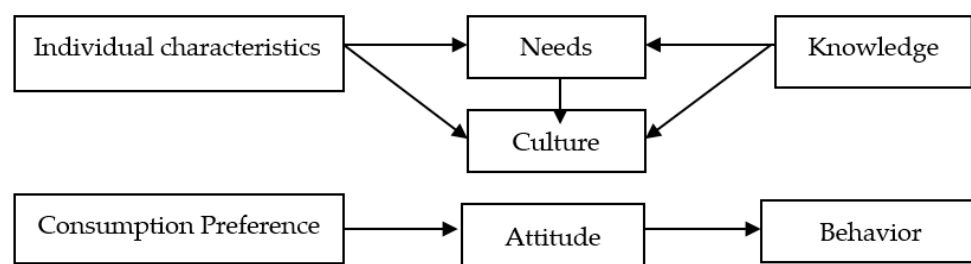
Response categories for both fruits and vegetables were homemade from squeezed fruits, commercial (shop, supermarket), special location (pasteurized juice from consumers' own fruits/vegetables taken to local processors), and online demand. The isolation period of the COVID 19 pandemic has changed the model for consumers and their preferences, behaviors, and attitudes on food consumption.

### 3.1. Sample and Measurement Tool

To determine the dimensions of consumer behavior and to identify implied consumer needs, the culture regarding bioproducts, and the related knowledge, explanatory factor analysis (EFA) was applied to the data set. Using independent sample *t*-tests, the hypotheses were tested using SPSS statistical analyses software. The Lisrel 8.7 program was used to establish the connection and correlation between items.

### 3.2. Purpose of the Study

The research model from Figure 1 is based on the research objectives and hypothesis. The model shows the direct and indirect relationships between the research variables (Needs, Culture, and Knowledge); additionally, demographic variables (age, gender, education) were included.



**Figure 1.** Research model of consumers. Source: by author.

In this study, the following four factors that influence consumer behavior were taken into consideration:

1. Individual characteristics (A-age, G-gender, E-education, Occupation);
2. Needs—frequency of consuming fruits and vegetables (OF, OV), consumer costs with regard to budget for acquisition (B); consumer orientation for and towards quality products (Q);
3. Culture—consumer culture regarding bioproducts, orientation for local and traditional products, and product brands (CU1, CU2, CU3);
4. Knowledgeable consumers, direct participation, and selection of food industry for fruits and vegetables (juice; K1, K2, and K3).

The hypotheses tested on the attitude of consumers in the present study are:

**Hypothesis 1 (H1).** Food preferences of consumers have a significant effect on their attitudes towards their diet culture.

**Hypothesis 2 (H2).** Food preferences of consumers have a significant effect on their attitudes towards their diet needs.

**Hypothesis 3 (H3).** The preference of consumers has a significant effect on their attitudes towards knowledge.

**Hypothesis 4 (H4).** The preference of consumers concerning local food has a significant effect on their attitudes.

**Hypothesis 5 (H5).** Attitudes of consumers towards culture have a significant effect on their behavior.

**Hypothesis 6 (H6).** *Attitudes of consumers towards needs have a significant effect on their behavior.*

**Hypothesis 7 (H7).** *Attitudes of consumers towards knowledge have a significant effect on their behavior.*

The total Cronbach's alpha value of scale was calculated as 0.72, which is statistically one of the indicators that shows that the reliability of the scale is enough. After reliability analysis, exploratory factor analysis (EFA) was applied and the structural equation model (Table 2) was developed after removing items that had factor loadings lower than 0.5.

**Table 2.** Goodness of fit indices for the structural model.

Criteria	Perfect Fitness	Acceptable Fitness	Model
RMSEA	$0 < \text{RMSEA} < 0.05$	$0.05 \leq \text{RMSEA} \leq 0.10$	0.049
NFI	$0.95 \leq \text{NFI} \leq 1$	$0.90 \leq \text{NFI} \leq 0.95$	0.92
NNFI	$0.97 \leq \text{NNFI} \leq 1$	$0.95 \leq \text{NNFI} \leq 0.97$	0.95
CFI	$0.97 \leq \text{CFI} \leq 1$	$0.95 \leq \text{CFI} \leq 0.97$	0.95
GFI	$0.95 \leq \text{GFI} \leq 1$	$0.90 \leq \text{GFI} \leq 0.95$	0.87
AGFI	$0.90 \leq \text{AGFI} \leq 1$	$0.85 \leq \text{AGFI} \leq 0.90$	0.85

Source: Schermelleh-Engel and Moosbrugger [85]. RMSEA: root mean square error of approximation; NFI: normed fit index; NNFI: non-normed fit index; CFI: comparative fit index; GFI: goodness of fit index; AGFI: adjusted goodness of fit index.

#### 4. Results

Using the database of respondent answers, the program solution presented the following results. The target group was chosen randomly and nonrepetitively, as structured in Table 3. Depending on gender, respondents participated in a percentage of 68.5% women and 31.5% men. The distribution of respondents, according to age, was 43% between 31–40 years, 34.7% under the age of 30, 14.9% aged between 41–50 years, and, for over 50 years in age, a percentage of 7.4%.

**Table 3.** Distribution of respondents according to the level of education by age and gender.

		Education Level				Cumulative Percent
		General	High School	Post High School	Academic	
Age	≤30 Age	0	5.45	1.06	28.21	34.72
	31–40 Age	0.89	3.58	3.00	35.53	43.00
	41–50 Age	0	1.79	1.71	11.38	14.88
	>50 Age	0	1.06	1.38	4.96	7.40
Total		0.89	11.88	7.15	80.08	100.00
Gender	Female	0.89	5.37	5.37	56.83	68.46
	Male	0	6.50	1.79	23.25	31.54
Total		0.89	11.87	7.16	80.08	100.00

From the education level point of view, 80% of respondents were educated people with academic studies and 19% with high school and postgraduate levels.

From the point of view of a professional occupation, 77.8% of respondents were involved in different professions (9.9% were engineers, 10.7% were professors, and 13.1% were economists), and 9.9% of respondents were students. Regarding job responsibilities, a percent of 12.3% were people with responsibilities (managers or entrepreneurs) in their own business or a company.

#### 4.1. Factors Influencing Consumer Behavior

It was shown that 56.7% of consumers were “very interested” in consuming quality fruits and vegetables and 40.7% of them were only “interested” in consuming quality products because they considered that the external aspect is not so important; only the benefits and the healthy influence is important. The results obtained gave evidence that 31.9% of respondents invested 30% of their income in quality fruits and vegetables, which are considered healthy diet food. Around 25.8% of respondents were oriented to spend between 50% of their budget on quality food products and, for 26.2% of respondents, a value of 40% of their budget. A low value of 13.6% of respondents only spent 20% of their budget on quality products. These results present local consumers as well oriented towards a sustainable healthy diet.

Taking into consideration the frequency of consumption of fruits and vegetables, a value of 67.1% of respondents consumed fruits daily; only 26.3% of respondents consumed fruits every week. In comparison to vegetable consumption, the situation increased to 71.1% for daily consumption but remained at the same level for weekly consumption as fruit consumption (26.6%).

In conclusion, the results confirm that the consumers are oriented towards quality for both fruits and vegetables, and the education level or profession does not influence consumer behavior and quantity of fruit consumption (it is less than for vegetables). Again, the study reveals the orientation of consumers to a healthy diet.

Another factor taken into consideration for consumption behavior was consumer preferences: 72.3% of respondents preferred local and national fruits, and only 27.6% preferred fruits from other countries, taking into account seasonability.

By applying the questionnaire, it was possible to see if consumers are influenced in their behavior by the fact that the Maramures area is known for orchards and fruit trees (apples, plums, pears). As expected, the apple is the consumers’ favorite fruit. Apples gain first place as the most important fruit, with 36%, followed by grapes at 7%; both are fruits specific to that area. Depending on the season, consumers prefer the other berries specific to the area: strawberries, cranberries, and cherries. Consumer behavior is also influenced by and oriented towards fruits from abroad: first place belongs to bananas with 18%, with 11% favoring citrus fruits (oranges, lemons).

For vegetables, the ranking preferences are 25.3% for tomatoes, followed by carrots at 21% and 9% for potatoes, pepper at 6%, and cucumbers at 4.8%. Traditional and national vegetables were only purchased from department stores, the countryside, and from small traditional farmers’ families.

To see if people pay more attention to healthy diets, it was possible to determine the level of knowledge of respondents on the benefits of organic products for both fruits and vegetables and the frequency with which they consume them. The results presented that respondents consumed bio fruits and vegetables in a percent of 44.9% every week, 23.2% daily, 11.3% monthly, 18.2% sometimes, and 2.4% never.

A special factor that marked consumer behavior was that of consumer preferences for national and traditional products that highlight the quality of products that were relevant to the study. Regional ethnocentric consumers are also characterized by strong classical (national) ethnocentrism on both the market for regional food and for conventional food. We can mention some brands selected by consumers that have obtained the highest percentage and are considered to have quality guarantees: Cappy 11%, Prigat 7%, and Santal 6%. A segment of 40% of respondents did not have an opinion on a specific brand, considering the wide variety of producers and products that are in a continuous dynamic. For the orientation of consumers towards new Romanian companies and those that are already recognized by consumers, 6% selected the brand “Ana are mere” (Ana has apples), followed by 1.4% for Fragus and 1% for Pravalia Mica.

The concrete objective is to encourage the consumption of traditional Romanian products, prepared according to old recipes, without additives, and to promote the small producers in this rural area. The orientation of consumers towards Romanian brands

is very optimistic, this being important for the Maramureş area, which is an area with high potential.

#### 4.2. Interaction between Variables

To see the interactions between variables and to give supplementary information regarding consumer behavior, the results of the classification and regression tree (CRT) analysis for consuming fruits are shown in Figure 2.

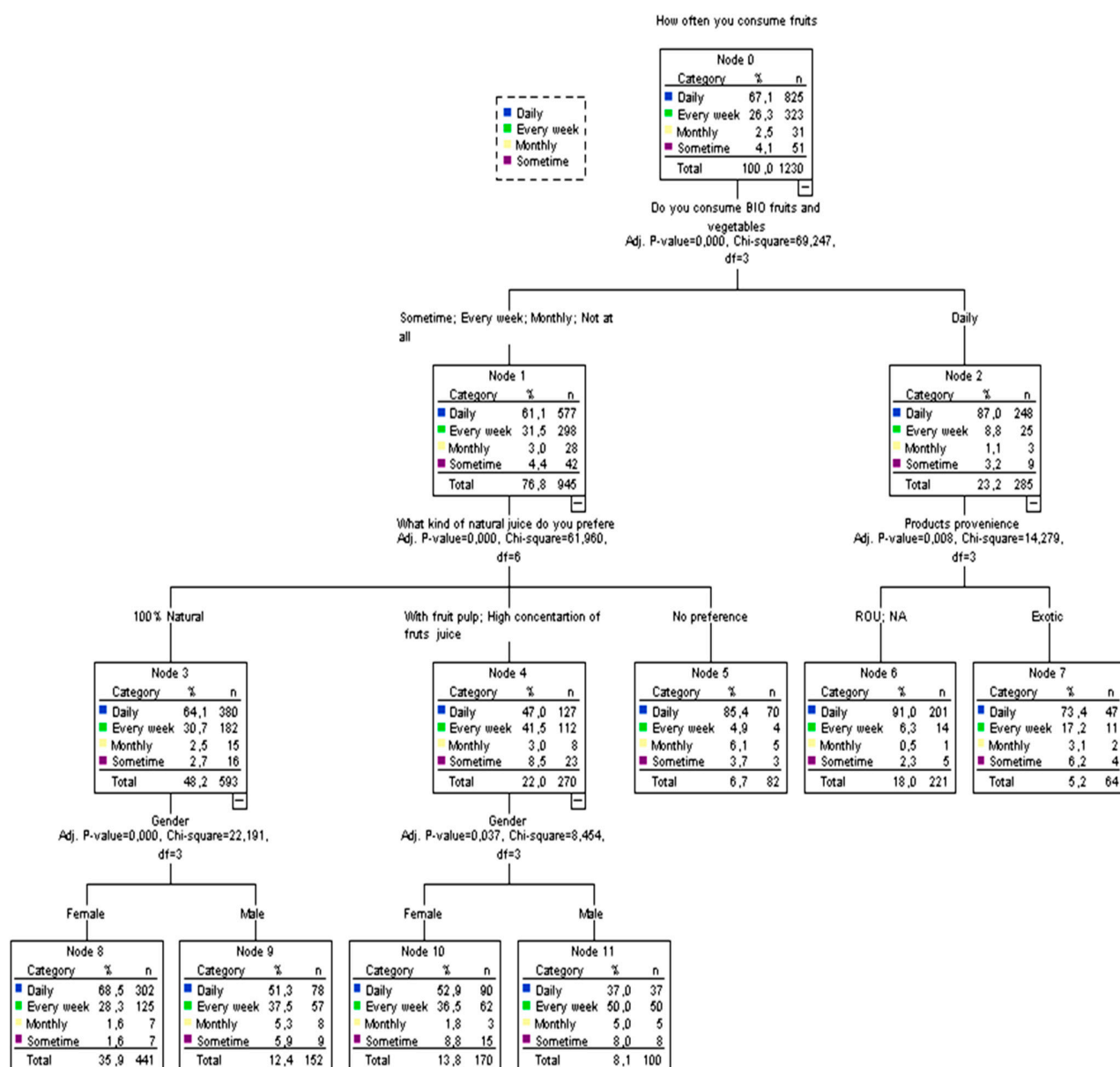


Figure 2. Classification and regression tree (CRT) results for consuming fruits.

From Figure 2, we note that consumers are oriented towards bioproducts. Weekly or monthly fruit consumption is a routine for 76.8% of respondents, and 23.2% of consumers consume fruit daily; this is feedback on their education on a healthy diet.

Additionally, 18% of daily fruit consumers are oriented towards traditional and national products, and only 5.2% prefer exotic fruits (lemons, oranges, bananas), so seasonality has an influence on the taste and orientation of consumers, especially for seasonal fruits.

Consumers who prefer to consume fruits daily in the form of natural juices are 48.2% of respondents, of which 35.8% are women and 12.4% are men. A wide segment of 22%

is oriented towards other types of fruits juices from stores that have specific technologies for fruit (cold pressing) and concentrated juice; in this case, the percentage is different for weekly consumption, it increases to 50% of men and 36.5% of women.

Fruits for daily consumption are traditional and regional products for most consumers (91%), but for weekly consumption, the ratios are reversed; consumption is supplemented with fruits not specific to the country due to climate (17.3% in comparison with 6.3% from traditional fruits). Hence, consumers are oriented towards a diverse and healthy diet, taking into consideration the benefits of fruits and not the origins of fruits.

To see the interactions for vegetable consumption between variables and consumer behavior, the results of the CRT analysis is shown in Figure 3.

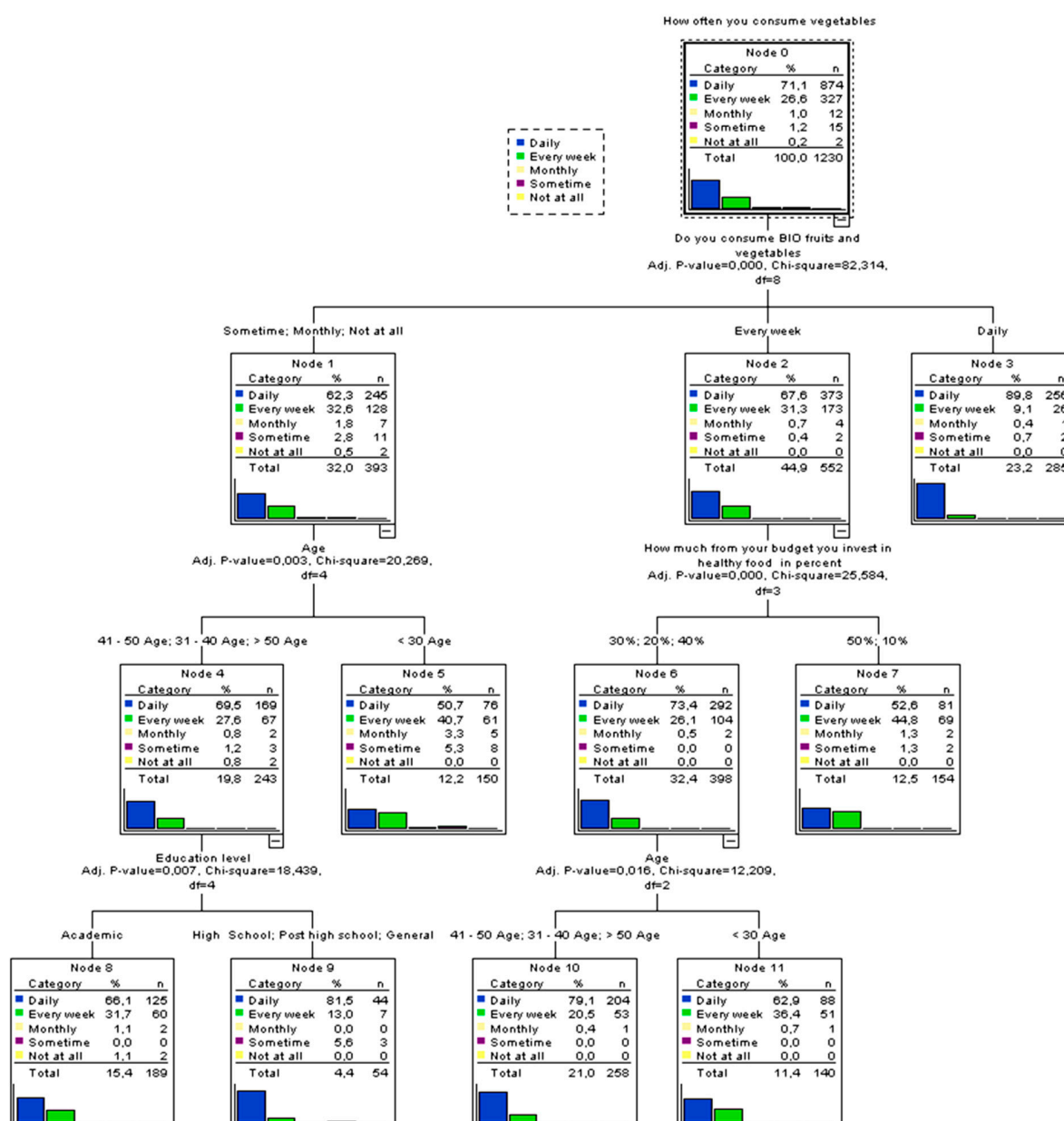


Figure 3. Classification and regression tree (CRT) results for consuming vegetables.

We can see that vegetables are a kind of lifestyle for 71.1% of respondents, who consume daily vegetables, especially bio and green products. The respondents' culture and health education are very important for all ages.



The respondents who consume vegetables daily (66.1%) are those who have academic studies (81.5% for those with secondary education). For the generation under the age of 30, respectively, 50.7% of the respondents are students who consume vegetables sometimes (12.2%); this is very close to the percent of other generations (19.8%), a good orientation for healthy diets, maybe because the students are from the vegan and vegetarian generation.

So the results confirm that education level is not a factor of influence in consumer behavior consumption. Additionally, age is not an impediment to consumer orientation towards a healthy diet.

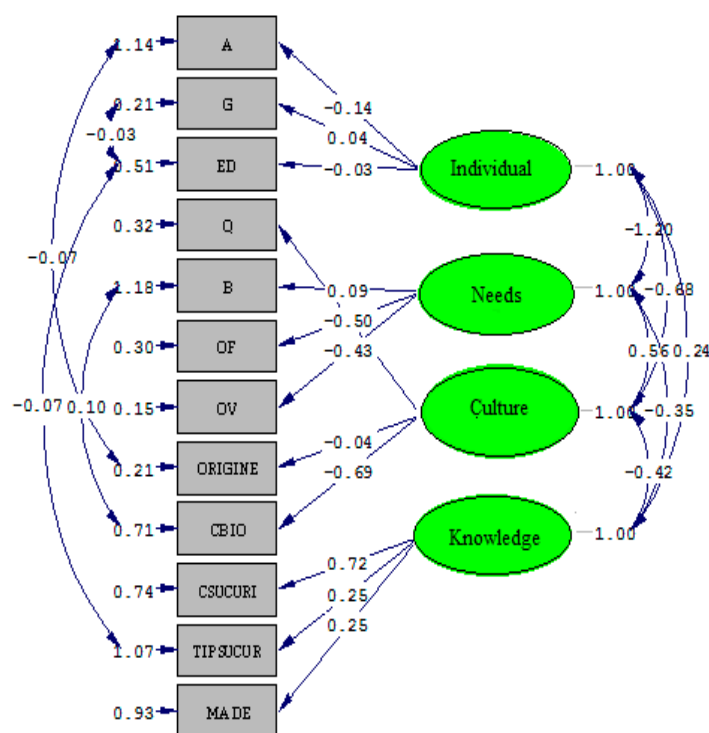
We also found that 52.6% of respondents invested 50% of their salary in healthy diet food; 73.4% of consumers invested between 20% and 40% of their salary daily. The generation aged 31–50 was more oriented towards daily consumption of (79.1%), and, for the generation under 30, 62.9% consumed vegetable daily.

The final conclusion is that the respondents encouraged the consumption of traditional fruits and vegetables, with a big impact on the Maramures area by increasing the demand for local products.

#### 4.3. Correlations between Items

Transferring the database and using the Lisrel 8.7 program, it was possible to select from the 23 items only 12 specific items (discarding Items I3, NF1–NF5, and NV1–NV5). The model established the correlation between factors influencing consumer behavior, individual characteristics, consumer needs, consumer culture, and consumer knowledge.

The proposed model for consumer transformation for sustainable food consumption is presented in Figure 4.



Chi-Square=169.12, df=43, P-value=0.00000, RMSEA=0.049

Figure 4. Correlation between factors influencing consumer behavior.

The values are positive, and the strongest connection exists between individual characteristics and consumer knowledge, with a value of 0.24. The results present that consumers from Maramures have strong knowledge of the consumption of fruits and vegetables and are informed on healthy diets.

The correlation between consumer needs and consumer culture obtained a value of 0.56. This means that consumers invest an important percentage of their budgets to buy bio

fruits and vegetables and they select traditional and national products. The bigger values for the knowledge factor for fruit consumption (including juice) items were Csucuri = 0.72, Tipsuc = 0.25, and Made = 0.25. A good sign for food consumption in the Maramureş County is consumers who have enough information on obtaining and processing both fruits and vegetables, including juice. Even consumers who are unsure of the notion of bio select their products very carefully. In this sense, Romanian brands bring new inspiration to consumers and, thus, encourage small farmers and traditional local products.

The pandemic has led to the development of online shopping, and the study shows that most are still reluctant to purchase online.

The low values obtained for the correlation between individual characteristics and needs obtained a value of  $-1.20$ , which presents a new profile of consumer that is very anchored in the market.

#### 4.4. Conventional Consumer Cluster

In order to identify subgroups of consumers, a cluster analysis was performed, taking into account the order of consumer preferences. A two-step group analysis (k-mean and hierarchical clustering) of the factors allowed the identification of 5 consumer groups with similar food profiles (fruits and vegetables). Clusters were labeled according to major consumer traits (Table 4).

**Table 4.** Consumer conventional clusters.

Items	Cluster	Number of Consumers
Age		
What are your favorite fruits 1	Consumer	
What are your favorite fruits 2	1	Needs 441
What is your favorite brand for natural juice		
Gender		
Profession	2	Consumer 204
What kind of natural juice do you prefer		Preferences
What are your favorite vegetables 2		
Education level		Consumer
How important it is to consume quality products	3	Knowledge
What are your favorite fruits 3, 4, 5		130
What are your favorite vegetables 3, 4, 5		
Do you consume bio fruits and vegetables		Consumer
Do you consume natural juice	4	Culture
How much from your budget do you invest in healthy food %		223
Product provenience		
How often do you consume fruits		Consumer
How often do you consume vegetables	5	Loyalty
How do you prefer natural juice to be		232
What are your favorite vegetables 1		

The sample of 1230 targeted consumers was divided into consumer clusters; the variability of the preferences of the individuals belonging to the different clusters towards consumption sustainability was validated. It was possible to analyze the sociodemographic components of the subjects within each subgroup in order to evaluate the effect of the

individual characteristics (age, gender, level of study) on the formation of attitudes and consumption behaviors.

Five clusters were identified and labeled as follows: “consumer needs” (characterized by consumption of specific brands), “consumer preferences” (characterized by the preferences of certain types of juices), “consumer knowledge” (characterized by high consumption of products, their quality, and quality importance), “consumers culture” (characterized by very high consumption of bio and organic food and a high intake of locally sourced food), and “consumers loyalty” (characterized by frequency consumption of fruits and vegetables).

Cluster 1: consumer needs obtained the highest value of 441 respondents, which shows, once again, that consumer behavior is influenced by age and brand. Brands should care about culture and identity and may feel they already have a sufficient understanding of the consumer groups they are targeting. Looking to the future, consumers will only continue to become more sophisticated in how they identify and express themselves, which, in turn, will influence how they make purchase decisions. As consumers become more sophisticated and introspective, so should the marketing and messaging brands are using.

Cluster 5: for 232 respondents, consumer loyalty to the frequency of consuming fruits and vegetables present the importance of lifestyle and orientation towards healthy diets. Here, producers can focus on a niche market; future targets will be consumers who prefer natural juice but, because of their busy lifestyles, do not have enough time to make the juice themselves. Producers must identify a way to send information on the benefits of juice consumption.

Cluster 4: for 223 respondents, in terms of consumer culture, we identify low values for consumer perception of bioproducts and the origin of local or imported fruits and vegetables. Consumer behavior gives a positive signal to eco-green-bio products, and they encourage local and small farmers.

Cluster 2: the preferences of 204 consumers are influenced by age and profession (salary). Gender and profession do not influence consumer behavior and their attitude towards healthy diets and present a bigger consumption of vegetables in comparison with fruits.

Cluster 3: for 130 respondents, consumer knowledge obtained low values, and they take into consideration the impact of product quality and quality in their preferences. The values indicate that quality represents an important characteristic in their decision and the external aspects are not as important (e.g., shape) as the benefits to their diets.

## 5. Conclusions

Based on the literature on consumer behavior and their attitudes towards the consumption of fruits and vegetables, the results were able to identify similarities between the Maramures consumer and consumers from different countries.

As a general conclusion, it can be seen that in Maramures County, consumers of fruits and vegetables are well oriented to a healthy diet, and they are familiar with the concept of bio-green consumption. They are loyal to local or national products and prioritize the relative importance of elements such as the brand image of the local identity and the moral obligation to buy local brands [70,71].

Highlighting the ethnocentric attitude is gratifying because it contributes to development and encourages the sustainable development of the area in the future. Loyalty and fidelity to certain Romanian foods or new brands by local consumers were also confirmed by the study results [31,32]. Regarding the daily consumption of fruits and vegetables, consumer practices were resistant to change [39–42]. Additionally, it is a normal way of living for both genders, with increasing attitudes for beneficial weekly consumption. The consumption of vegetables and fruits was more frequent among those with higher education. The results suggest that consumption of vegetables and fruits more frequently occurs in those with lower social standing [74].

Additionally, individual characteristics, such as age segmentation, presents a similar orientation for consumption for both food products (at least weekly). A gap between the

positive attitude of consumers and market behavior was also confirmed. The behavior of consumers in the Maramures area does not depend on gender, age, or profession because everyone uses a significant part of their budget to purchase these types of food. It was confirmed that there was no link between the impact of education and consumer income on sustainable food choice [54,55]. The correlation between food price and the implementation of a sustainable diet and income was confirmed [56,57]. The adult and educated segments are using between 40–50% of their income on healthy diets; for the young segment, this was 20%, which is encouraging. The respondents are consuming more vegetables than fruits, and they prefer quality food products. Quality is an element of study for identifying satisfied customers [27,81], and it was selected by the majority of consumers. Consumers have concerns regarding the safety and quality of food products [82].

The study presents some positive aspects:

1. Increasing emphasis on healthy diets, thus returning to a healthy lifestyle that will lead to product brands that take this change into account;
2. An increase in conscious consumption—consumers are more attentive to what they buy, buy more consciously, and avoid food wastage;
3. Growing preference for local products; by orienting consumers towards traditional local food, they are supporting small farmers and rural family businesses.

In the end, we can say that the study brings a novelty to the local market in terms of identifying the factors that influence the behavior of consumers in the area from the point of view of a predominantly educated segment that is oriented towards a healthy diet.

The five consumer cluster groups with similar food profiles is a proposed model that can also be improved by identifying the elements related to perception and the elements related to the quality of the two food products.

This study was conducted in Maramureş County, Romania, and the results can be used by companies in the area to identify consumer behavior and attitudes towards their products and to identify new innovative technologies for future products.

From this point of view, the study has some limitations but, in the meantime, offers opportunities for future research into consumer behavior and attitudes for sustainable consumption of different products, giving companies and traditional producers the opportunity to develop and implement new market strategies.

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## References

1. Sustainable Development Goals. Available online: <http://www.fao.org/cfs/home/activities/sdgs/en/> (accessed on 26 September 2020).
2. Agenda 2030. Available online: <https://sdgs.un.org/topics/sustainable-consumption-and-production> (accessed on 26 September 2020).
3. Ensure Sustainable Consumption and Production Patterns. Available online: <https://sdgs.un.org/topics/sustainable-consumption-and-production> (accessed on 22 December 2020).
4. Sesini, G.; Castiglioni, C.; Lozza, E. New Trends and Patterns in Sustainable Consumption: A Systematic Review and Research Agenda. *Sustainability* **2020**, *12*, 5935. [CrossRef]
5. Yildirim, S. *The Consumer Role for Sustainable Development*; IGI Global: Hershey, PA, USA, 2020; pp. 325–341.
6. Quoquab, F.; Mohammad, J.; Sukari, N.N. A multiple-item scale for measuring “sustainable consumption behaviour” construct. *Asia Pac. J. Mark. Logist.* **2019**, *31*, 791–816. [CrossRef]
7. Abdulrazak, S.; Quoquab, F. Exploring Consumers' Motivations for Sustainable Consumption: A Self-Deterministic Approach. *J. Int. Consum. Mark.* **2017**, *30*, 14–28. [CrossRef]
8. Brach, S.; Walsh, G.; Shaw, D. Sustainable consumption and third-party certification labels: Consumers' perceptions and reactions. *Eur. Manag. J.* **2018**, *36*, 254–265. [CrossRef]
9. Bulut, Z.A.; Çimrin, F.K.; Doğan, O. Gender, generation and sustainable consumption: Exploring the behaviour of consumers from Izmir, Turkey. *Int. J. Consum. Stud.* **2017**, *41*, 597–604. [CrossRef]

10. FAO. *Sustainable Diets and Biodiversity: Directions and Solutions for Policy, Research and Action*; FAO: Rome, Italy, 2012.
11. FAO. *The State of Food Security and Nutrition in the World 2019*; FAO: Rome, Italy, 2019.
12. Johnston, J.L.; Fanzo, J.C.; Cogill, B. Understanding Sustainable Diets: A Descriptive Analysis of the Determinants and Processes That Influence Diets and Their Impact on Health, Food Security, and Environmental Sustainability. *Adv. Nutr.* **2014**, *5*, 418–429. [\[CrossRef\]](#) [\[PubMed\]](#)
13. Kevany, K. Pamela Mason and Tim Lang: Sustainable diets: How ecological nutrition can transform consumption and the food system. *Agric. Hum. Values* **2017**, *35*, 743–744. [\[CrossRef\]](#)
14. Drewnowski, A. Healthy diets for a healthy planet. *Am. J. Clin. Nutr.* **2014**, *99*, 1284–1285. [\[CrossRef\]](#)
15. Donati, M.; Menozzi, D.; Zighetti, C.; Rosi, A.; Zinetti, A.; Scazzina, F. Towards a sustainable diet combining economic, environmental and nutritional objectives. *Appetite* **2016**, *106*, 48–57. [\[CrossRef\]](#)
16. Boucher, D.; Gagné, C.; Côté, F. Effect of an intervention mapping approach to promote the consumption of fruits and vegetables among young adults in junior college: A quasi-experimental study. *Psychol. Health* **2015**, *30*, 1306–1325. [\[CrossRef\]](#)
17. Brown, O.N.; O'Connor, L.E.; Savaiano, D. Mobile MyPlate: A pilot study using text messaging to provide nutrition education and promote better dietary choices in college students. *J. Am. Coll. Health* **2014**, *62*, 320–327. [\[CrossRef\]](#)
18. Baudry, J.; Péneau, S.; Allès, B.; Touvier, M.; Hercberg, S.; Galan, P.; Amiot, M.-J.; Lairon, D.; Méjean, C.; Kesse-Guyot, E. Food choice motives when purchasing in organic and conventional consumer clusters: Focus on sustainable concerns (the Nu-triNet-Santé cohort study). *Nutrients* **2017**, *9*, 88. [\[CrossRef\]](#)
19. Bryła, P. The development of organic food market as an element of sustainable development concept implementation. *Probl. Ekorozwoju Probl. Sustain. Dev.* **2015**, *10*, 79–88.
20. Moser, R.; Raffaelli, R.; Thilmany-McFaddenc, D. Consumer Preferences for Fruit and Vegetables with Credence-Based Attributes: A Review. *Int. Food Agribus. Manag. Rev.* **2011**, *14*, 121–142.
21. Pasick, R.J.; Barker, J.C.; Otero-Sabogal, R.; Burke, N.J.; Joseph, G.; Guerra, C. Intention, Subjective Norms, and Cancer Screening in the Context of Relational Culture. *Health Educ. Behav.* **2009**, *36*, 91S–110S. [\[CrossRef\]](#) [\[PubMed\]](#)
22. Carrington, M.J.; Neville, B.A.; Whitwell, G.J. Why ethical consumers don't walk their talk: Towards a framework for understanding the gap between the ethical purchase intentions and actual buying behavior of ethically minded consumers. *J. Bus. Ethics* **2010**, *97*, 139–158. [\[CrossRef\]](#)
23. Masoom, M.R.; Pasha, S.H.A.; Rahman, S.M.A. Factors affecting the consumer purchasing decisions of perishable foods: Exploring the attitudes and the preferences. *Manag. Dyn. Knowl. Econ.* **2015**, *3*, 509–553.
24. Ohen, S.B.; Umeze, G.E.; Inyang, E.O. Consumer Purchasing Behavior for Fruits and Vegetables among Civil Servants in Essien Udim Local Government Area, Akwa Ibom State, Nigeria. *Food Sci. Qual. Manag.* **2014**, *23*, 55–64.
25. Herath, U.S. Consumer Behavior and Attitudes in Purchasing Vegetables. *Agric. Res. Tech. Open Access J.* **2019**, *20*, 556123. [\[CrossRef\]](#)
26. Balaji, P. Retail Store Choice for Fruits and Vegetables: A Study on Perception, Preferences and Buying Behavior of Consumers. Available online: <http://krishikosh.egranth.ac.in/handle/1/5810012506> (accessed on 29 March 2020).
27. Grimmer, M.; Miles, M.P. With the best of intentions: A large sample test of the intention-behaviour gap in pro-environmental consumer behaviour. *Int. J. Consum. Stud.* **2016**, *41*, 2–10. [\[CrossRef\]](#)
28. Kollmuss, A.; Agyeman, J. Mind the Gap: Why do people act environmentally and what are the barriers to pro-environmental behavior? *Environ. Educ. Res.* **2002**, *8*, 239–260. [\[CrossRef\]](#)
29. Gupta, S.; Ogden, D.T. To buy or not to buy? A social dilemma perspective on green buying. *J. Consum. Mark.* **2009**, *26*, 378–393. [\[CrossRef\]](#)
30. Pickett-Backer, J.; Ozaki, R. Pro-environmental products. Marketing influence on consumer purchase decision. *J. Consum. Mark.* **2008**, *25*, 281–293. [\[CrossRef\]](#)
31. Peattie, K.; Crane, A. Green marketing: Legend, myth, farce or prophesy? *Qual. Mark. Res. Int. J.* **2005**, *8*, 357–370. [\[CrossRef\]](#)
32. Ianole-Călin, R.; Rădulescu, M.; Druică, E. Sustainable Consumption Behavior Among Romanian Students. *Sustain. Environ. Better Future* **2020**, *10*, 159–174. [\[CrossRef\]](#)
33. White, K.; Habib, R.; Hardisty, D.J. How to SHIFT Consumer Behaviors to be More Sustainable: A Literature Review and Guiding Framework. *J. Mark.* **2019**, *83*, 22–49. [\[CrossRef\]](#)
34. Smith, J.; Terry, D.J.; Manstead, A.S.; Louis, W.R.; Kotterman, D.; Wolfs, J. The Attitude–Behavior Relationship in Consumer Conduct: The Role of Norms, Past Behavior, and Self-Identity. *J. Soc. Psychol.* **2008**, *148*, 311–333. [\[CrossRef\]](#) [\[PubMed\]](#)
35. Peslak, A.; Ceccucci, W.; Sendall, P. An Empirical Study of Instant Messaging (IM) Behavior Using Theory of Reasoned Action. *JBAM* **2010**, *11*, 263–278. [\[CrossRef\]](#)
36. Trudel, R.; Cotte, J. Does It Pay to Be Good? *MIT Sloan Manag. Rev.* **2009**, *50*, 61.
37. Auger, P.; Timothy, M. Devinney, Do What Consumers Say Matter? The Misalignment of Preferences with Unconstrained Ethical Intentions. *J. Bus. Ethics* **2007**, *76*, 361–383. [\[CrossRef\]](#)
38. Gatersleben, B.; Steg, L.; Vlek, C. Measurement and Determinants of Environmentally Significant Consumer Behavior. *Environ. Behav.* **2002**, *34*, 335–362. [\[CrossRef\]](#)
39. Rejman, K.; Kaczorowska, J.; Halicka, E.; Laskowski, W. Do Europeans consider sustainability when making food choices? A survey of Polish city-dwellers. *Public Health Nutr.* **2019**, *22*, 1–10. [\[CrossRef\]](#)
40. Grunert, K.G. Sustainability in the food sector: A consumer behaviour perspective. *Int. J. Food Syst. Dyn.* **2011**, *2*, 207–218.



41. Vermeir, I.; Verbeke, W. Sustainable food consumption: Exploring the consumer 'attitude-behavioral intention' gap. *J. Agric. Environ. Ethics* **2006**, *19*, 169–194. [CrossRef]
42. Zander, K.; Hamm, U. Consumer preferences for additional ethical attributes of organic food. *Food Qual. Prefer.* **2010**, *21*, 495–503. [CrossRef]
43. Trudel, R. Sustainable consumer behavior. *Consum. Psychol. Rev.* **2018**, *2*, 85–96. [CrossRef]
44. Nurul Fardini, Z.; Abdul Rahim, H.; Paim, L.; Nurul Farhana, Z. The Mediating Effect of Sustainable Consumption Attitude on Association between Perception of Sustainable Lifestyle and Sustainable Consumption Practice. *Asian Soc. Sci.* **2019**, *15*. [CrossRef]
45. Markova-Nenova, N.; Wätzold, F. Fair to the cow or fair to the farmer? The preferences of conventional milk buyers for ethical attributes of milk. *Land Use Policy* **2018**, *79*, 223–239. [CrossRef]
46. Bucic, T.; Harris, J.; Arli, D.I. Ethical Consumers Among the Millennials: A Cross-National Study. *J. Bus. Ethics* **2012**, *110*, 113–131. [CrossRef]
47. Corallo, A.; Latino, M.E.; Menegoli, M.; Spennato, A. A Survey to Discover Current Food Choice Behaviors. *Sustainability* **2019**, *11*, 5041. [CrossRef]
48. Seyfang, G. Ecological citizenship and sustainable consumption: Examining local organic food networks. *J. Rural. Stud.* **2006**, *22*, 383–395. [CrossRef]
49. Alexander, G. Welcome to the Planetary Citizenship Stream of T171 on the PlaNet Weblog. Available online: <http://www.planetarycitizen.open.ac.uk> (accessed on 6 March 2020).
50. Albayrak, T.; Aksoy, Ş.; Caber, M. The effect of environmental concern and scepticism on green purchase behaviour. *Mark. Intell. Plan.* **2013**, *31*, 27–39. [CrossRef]
51. Kostadinova, E. Sustainable Consumer Behavior: Literature Overview. 2016. Available online: <https://www.semanticscholar.org/paper/Sustainable-Consumer-Behavior%3A-Literature-Overview-Kostadinova/8d4fad638d651829f3a8f485d5c13a0d6b237e1> (accessed on 22 December 2020).
52. Jackson, T. Motivating Sustainable Consumption a Review of Evidence on Consumer Behavior and Behavioral Change. Centre for Environmental Strategy University of Surrey SDRN. 2005. Available online: [http://sustainablelifestyles.ac.uk/sites/default/files/motivating\\_sc\\_final.pdf](http://sustainablelifestyles.ac.uk/sites/default/files/motivating_sc_final.pdf) (accessed on 6 March 2020).
53. Niva, M.; Mäkelä, J.; Kahma, N.; Kjærnes, U. Eating sustainably? Practices and background factors of ecological food consumption in four Nordic countries. *J. Consum. Policy* **2014**, *37*, 465–484. [CrossRef]
54. Haanpää, L. Consumers? Green commitment: Indication of a postmodern lifestyle? *Int. J. Consum. Stud.* **2007**, *31*, 478–486. [CrossRef]
55. Onyango, B.M.; Hallman, W.K.; Bellows, A.C. Purchasing organic food in US food systems. A study of attitudes and practice. *Br. Food J.* **2007**, *109*, 399–411. [CrossRef]
56. Wier, M.; Jensen, K.O.; Andersen, L.M.; Millock, K. The character of demand in mature organic food markets: Great Britain and Denmark compared. *Food Policy* **2008**, *33*, 406–421. [CrossRef]
57. Alshammari, E.; Williams, M. The Impact of Cultural Similarity on Consumer Ethnocentrism Tendencies Toward Foreign Products. *Arch. Bus. Res.* **2018**, *6*, 250–262. [CrossRef]
58. Balabanis, G.; Siamagka, N.-T. Inconsistencies in the behavioural effects of consumer ethnocentrism. *Int. Mark. Rev.* **2017**, *34*, 166–182. [CrossRef]
59. He, J.; Wang, C.L. Cultural identity and consumer ethnocentrism impacts on preference and purchase of domestic versus import brands: An empirical study in China. *J. Bus. Res.* **2015**, *68*, 1225–1233. [CrossRef]
60. Ma, Q.; Abdeljelil, H.M.; Hu, L. The Influence of the Consumer Ethnocentrism and Cultural Familiarity on Brand Preference: Evidence of Event-Related Potential (ERP). *Front. Hum. Neurosci.* **2019**, *13*. [CrossRef]
61. Garmatjuk, K.; Parts, O. Consumer Ethnocentrism in Estonian Skin Care Products Market. *Proc. Soc. Behav. Sci.* **2015**, *213*, 610–615. [CrossRef]
62. Kaynak, E.; Kara, A. Consumer perceptions of foreign products. An analysis of product-country images and ethnocentrism. *Eur. J. Mark.* **2002**, *36*, 928–949. [CrossRef]
63. Erdogan, B.Z.; Uzkurt, C. Effects of ethnocentric tendency on consumers' perception of product attitudes for foreign and domestic products. *Cross Cult. Manag. Int. J.* **2010**, *17*, 393–406. [CrossRef]
64. Puzakova, H.; Kwak, H.; Andras, T. Mitigating consumer ethnocentrism via advertising and media consumption in a transitional market. A study from Russia. *Int. J. Advert.* **2010**, *29*, 727–764. [CrossRef]
65. Vukasovič, T. Attitudes towards Organic Fruits and Vegetables. *Agric. Econ. Rev.* **2015**, *16*, 20–34.
66. Evanschitzky, H.; Wangenheim, F.V.; Woisetschlager, D.; Blut, M. Consumer ethnocentrism in the German market. *Int. Mark. Rev.* **2008**, *25*, 7–32. [CrossRef]
67. Marcoux, J.-S.; Filiatrault, P.; Chéron, E. The Attitudes Underlying Preferences of Young Urban Educated Polish Consumers Towards Products Made in Western Countries. *J. Int. Consum. Mark.* **1997**, *9*, 5–29. [CrossRef]
68. Bryła, P. Regional Ethnocentrism on the Food Market as a Pattern of Sustainable Consumption. *Sustainability* **2019**, *11*, 6408. [CrossRef]
69. Siemieniako, D.; Kubacki, K.; Glińska, E.; Krot, K. National and regional ethnocentrism: A case study of beer consumers in Poland. *Br. Food J.* **2011**, *113*, 404–418. [CrossRef]

70. Yagci, M. Evaluating the effects of country-of-origin and consumer ethnocentrism: A case of a transplant product. *J. Int. Consum. Mark.* **2001**, *13*, 63–85. [\[CrossRef\]](#)
71. Pagliacci, M.; Manolică, A.; Roman, T.; Boldureanu, G. The consumers of green products. The case of Romanian Moldavia counties. *Amfiteatru Econ.* **2019**, *21*, 653–667.
72. Lakatos, E.S.; Cioca, L.-I.; Dan, V.; Ciomos, A.O.; Crisan, O.A.; Barsan, G. Studies and Investigation about the Attitude towards Sustainable Production, Consumption and Waste Generation in Line with Circular Economy in Romania. *Sustainability* **2018**, *10*, 865. [\[CrossRef\]](#)
73. Voinea, L.; Popescu, D.V.; Bucur, M.; Negrea, T.M.; Dina, R.; Enache, C. Reshaping the Traditional Pattern of Food Consumption in Romania through the Integration of Sustainable Diet Principles. A Qualitative Study. *Sustainability* **2020**, *12*, 5826. [\[CrossRef\]](#)
74. Roos, G.; Johansson, L.; Kasmel, A.; Klumbienė, J.; Prättälä, R. Disparities in vegetable and fruit consumption: European cases from the north to the south. *Public Health Nutr.* **2001**, *4*, 35–43. [\[CrossRef\]](#)
75. Stea, T.H.; Nordheim, O.; Bere, E.; Stornes, P.; Eikemo, T.A. Fruit and vegetable consumption in Europe according to gender, educational attainment and regional affiliation—A cross-sectional study in 21 European countries. *PLoS ONE* **2020**, *15*, e0232521. [\[CrossRef\]](#) [\[PubMed\]](#)
76. Ramjan, M.; Ansari, M.T. Factors affecting of fruits, vegetables and its quality. *J. Med. Plants Stud.* **2018**, *6*, 16–18.
77. Briggs, F. Shoppers Willing to Buy Imperfect Fruit and Vegetables but Need a Discount to Incentivize Them, Blue Yonder Finds, Retail Times, 28 February 2017. Available online: <https://www.retailtimes.co.uk/shoppers-willing-buy-imperfect-fruit-vegetables-needdiscount-incentivize-blue-yonder-finds/> (accessed on 22 December 2020).
78. Lombart, C.; Millan, E.; Normand, J.-M.; Verhulst, A.; Labbé-Pinlon, B.; Moreau, G. Consumer perceptions and purchase behavior toward imperfect fruits and vegetables in an immersive virtual reality grocery store. *J. Retail. Consum. Serv.* **2019**, *48*, 28–40. [\[CrossRef\]](#)
79. De Hooge, I.E.; Oostindjer, M.; Aschemann-Witzel, J.; Normann, A.; Loose, S.M.; Almlı, V.L. This apple is too ugly for me!: Consumer preferences for suboptimal food products in the supermarket and at home. *Food Qual. Prefer.* **2017**, *56*, 80–92. [\[CrossRef\]](#)
80. Barbe, F.G.T.; von Dewitz, P.; Triay, M.M.G. Understanding consumer behavior to develop competitive advantage: A case study exploring the attitudes of German consumers towards fruits with cosmetic flaws. *Int. J. Acad. Res. Bus. Soc. Sci.* **2017**, *7*, 554–580.
81. El-Mesery, H.S.; Mao, H.; Abomohra, A.E.-F. Applications of Non-destructive Technologies for Agricultural and Food Products Quality Inspection. *Sensors* **2019**, *19*, 846. [\[CrossRef\]](#)
82. Zalega, T. New consumer trends. In *Towards a Green Economy. From Ideas to Practice*; Burchard-Dziubińska, M., Ed.; Wydawnictwo Uniwersytetu Łódzkiego: Łódź, Poland, 2015.
83. Stefler, D.; Pajak, A.; Malyutina, S.; Kubinova, R.; Bobak, M.; Brunner, E.J. Comparison of food and nutrient intakes between cohorts of the HAPIEE and Whitehall II studies. *Eur. J. Public Health* **2016**, *26*, 628–634. [\[CrossRef\]](#) [\[PubMed\]](#)
84. Mackenbach, J.D.; Brage, S.; Forouhi, N.G.; Griffin, S.J.; Wareham, N.J.; Monsivais, P. Does the importance of dietary costs for fruit and vegetable intake vary by socioeconomic position? *Br. J. Nutr.* **2015**, *114*, 1464–1470. [\[CrossRef\]](#) [\[PubMed\]](#)
85. Schermelleh-Engel, K.; Moosbrugger, H.; Müller, H. Evaluating the Fit of Structural Equation Models: Tests of Significance and Descriptive Goodness-of-Fit Measures. *Methods Psychol. Res.* **2003**, *8*, 23–74.