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Factors Determining Buying Behavior on the Organic Food Market in the Visegrad Group Countries—Using Canonical Correlation Analysis

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Abstract: Consumers are increasingly seeking ecological, organic, minimally processed food from certified organic farms. Consumer purchasing decisions in the organic food market are determined by various factors. The main objective of the article is to identify the range and direction of multidimensional relationships between the frequency of purchasing organic food and the factors that determine purchasing decisions. For this purpose, a canonical analysis was performed. Statistical data were obtained from survey research conducted in Poland, Czechia, Slovakia, and Hungary (600 questionnaires filled in each country) from December 2023 to March 2024. Research shows that the key factor that influences purchasing decisions with respect to organic food is its high quality. In countries such as Poland, Czechia, and Slovakia, this feature received the highest percentage of indications as very important, 53%, 44%, and 54%, respectively. In the second place, respondents indicated production without agricultural chemicals and food additives (in Hungary, this factor was considered the most important, with a percentage of indications at the level of 77%). In all the countries of the Visegrad Group, the influence of famous people, celebrities, and bloggers seems to be the least important—40.7% of respondents in Slovakia considered them completely unimportant, and as many as 73% in Hungary. Fashion was similarly rated low. In the case of this factor, the percentage of indications as unimportant ranged from 31% (Slovakia) to 76% (Hungary).

Keywords: organic agriculture; organic food; motives; organic consumption; European consumers; organic markets

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1. Introduction

The organic food market is the most dynamically developing sector of food production in the world [1–3], resulting from growing consumer awareness of a healthy lifestyle and the benefits of organic farming. Consumers pay special attention to the health benefits of organic products [4–6] and their high quality of health promotion. Organic products are perceived as a healthier alternative to conventional food, which is becoming a key factor influencing their purchasing decisions [7,8]. One of the significant factors that influence consumers could be the deterioration of their health; therefore, consumers see their purchases

as an investment in good health [9]. However, in a study by Lang and Rodrigues [10], taste is another reason why consumers buy organic foods. Organic farming methods that limit the use of pesticides, chemical fertilizers, and artificial additives are appreciated by consumers who are increasingly looking for foods free from harmful substances. In addition to health aspects, environmental and ethical aspects of food production are also gaining importance [11,12], making the organic food market not only a place for exchanging goods but also a space for experiencing values and social responsibility. Organic food consumers are interested in who has produced the food items they consume and where they originate. Organic food consumers may also be inspired by knowing and supporting the individual who has produced their food rather than supporting a faceless corporation or distant producer [13]. The increase in demand for organic food products not only supports the development of this branch of the economy but also encourages farmers to adopt more sustainable cultivation practices. In this way, consumers contribute to creating a healthier and more responsible food system.

In several studies on the organic food market, the authors indicate significant limitations to the growth in demand for these products. Many still perceive organic food as a more expensive category [14–16]. Respondents indicated higher prices for organic products compared to their conventional counterparts, which may be a barrier to their purchase [17,18]. Despite growing awareness of the health and environmental benefits of organic farming, many people still believe that the high price is a significant factor that limits the availability of these products [19,20]. The prices of organic food compared to conventional food are influenced by the higher production costs of organic food, market maturity, supply and demand relations, distribution channels, and degree of product processing [21–26]. As a result, organic food remains often a luxury, not an everyday choice, for a wide range of consumers. Padel and Foster [27] indicate that consumers will be willing to pay more for organic food when they believe that the price is justified due to higher quality or other benefits for consumers choosing this food. Another significant obstacle is the limited availability of organic products [28,29], especially in smaller towns, where the choice can be very limited. There are also problems with the stable distribution of organic products and their relatively high seasonality of supply [30]. Another factor limiting demand is the poor commercial offer—buyers are increasingly looking for ready-to-eat food, while farmers most often offer unprocessed goods [31]. Additionally, a lack of knowledge of the benefits of an organic-based diet [32], as well as doubts about the authenticity of organic certificates [33], may affect consumers' purchasing uncertainty. Finally, eating habits and traditions may also constitute a barrier [34–36], as many people prefer well-known, tested flavors and products.

The growing interest of consumers, the promotion of healthy lifestyles, and the support resulting from EU regulations on sustainable development are key factors that may contribute to the further development of this industry.

In the international literature, there is empirical evidence of the factors that influence organic food purchases [37–43]. These main research findings indicate that in the last few years, both research and theory on the adoption of organic food and the relationship in its purchase have been strengthened. However, although there are findings supporting research lines and theoretical models to interpret, understand, and explain the purchase of organic food, no research processes have been conducted in the Visegrad Group. Moreover, the literature review conducted by the authors of this study allows us to state that the applied, quite advanced method of statistical data exploration remains one of the less frequently used statistical tools in social sciences (in the assessment of the occurring relationships, analyses using classical tools such as correlation analysis, multiple regression, or variance analysis dominate). Therefore, it is also a seldom used tool in the context

of organic farming and factors that determine the level of this phenomenon. In Central Europe, apart from the research of the authors of this study, such analyses have probably not been carried out. The main objective of the article is to identify the range and direction of multidimensional relationships between the frequency of purchasing organic food and the factors that determine purchasing decisions. For this purpose, a canonical analysis was conducted. Therefore, the authors asked the following research questions that allowed them to realize the stated objective:

RQ1: Is the set of factors that determine the purchase of organic food in all countries similar, or are there differences?

RQ2: If there are differences, what factors influence the decision to purchase organic products in the Visegrad Group countries?

The primary research method used was an advanced statistical data mining method—canonical analysis. The canonical analysis allows for the assessment of the simultaneous impact of many independent variables on a set of dependent variables. It provides analytical indicators that indicate which variables from both groups are most strongly related and create functional relationships. Statistical data were obtained from surveys conducted in Poland, Czechia, Slovakia, and Hungary between December 2023 and March 2024. A total of 2400 questionnaires were analyzed (600 in each Visegrad Group country).

2. Literature Review

Organic Food Market

According to the adopted definition, organic food is food produced without the use of artificial fertilizers (on soils fertilized with organic fertilizers only), without pesticides, growth regulators, antibiotics, hormones, and many other chemicals, and processed without the use of chemical additives and preservatives, which are used in the modern food industry [44]. Food production using organic methods plays a key role in the widely promoted idea of sustainable development. This strategy should strive to achieve social, economic, and ecological goals. It integrates activities aimed at meeting the basic needs of society, improving the quality of life, and providing an adequate amount of goods and services with initiatives focused on environmental protection and preserving its resources [45].

The organic food market is currently one of the fastest-growing sectors of the food market in the world, especially in the member states of the European Union. This is evidenced by both the number of organic farms and the dynamics of the growth of the utilized area of organic farms. The interest in organic farming in particular EU member states varies greatly. The organic agriculture area in the EU in 2022 covered 16.87 million hectares of agricultural land, which constitutes 10.54% of the total agricultural area in the EU. In 2012–2022, the share of organic farming in the EU increased from 5.9% to 10.5% of the total agricultural area, and according to the European Commission's "from farm to fork" strategy, in 2030, it should amount to 25% of agricultural land. However, some countries achieve far higher shares: Austria (19.4%), Estonia (23.44%), and Sweden (19.87%). More than 10% of agricultural land in 14 countries is organic (including Czechia—15.96% and Slovakia—13.25%). In turn, the share of organic farming in five EU countries in 2022 was below 5%, with the lowest share in Malta (0.62%), Bulgaria, and Ireland (2% in both cases). In 2022, the largest area of organic farming was distinguished by large agricultural countries of the European Union, such as France (2.87 million ha), Spain (2.67 million ha), and Italy (2.34 million ha). Among the Visegrad Group countries in 2022, Czechia had the largest organic farming area (562,394.60 ha), followed by Poland (509,286 ha) and Hungary (293,597 ha), and the smallest area was recorded in Slovakia (162,565 ha). The average European per capita expenditure on organic food in 2022 was EUR 64 and varies depending on the country. Spending per person on organic food was the highest in Denmark (EUR 365),

Austria (EUR 274), and Sweden (EUR 248). In the Visegrad Group countries, the Czechs spent the most on organic food (EUR 22), the Poles (EUR 8), and the Hungarians the least (EUR 3) [1]. The most important products on the global organic food market are fruits and vegetables, followed by dairy products [18].

Globalization processes influence changes in the modern world, and the pace of civilization's progress impacts consumer behavior. As a result of these changes, there is a rapid increase in consumption and the dominance of materialistic value systems. Along with the increase in consumption, critical attitudes toward this phenomenon begin to appear, manifested in the desire to limit the acquisition of new goods and the search for and consumption of products and services that do not negatively affect the natural environment. One of the trends in modern consumption is its ecologization, which results from the growing ecological awareness of society in the face of threats to the state of the natural environment [46–49]. The growing environmental awareness of modern consumers associated with the increasing importance of the quality of consumed products, as well as the growing interest in the role of the state of the environment in food production, causes them to gradually move from the selfish pursuit of satisfying their own needs at all costs to behavior dictated by ecological and social premises. Eco-consumption primarily includes the consumption of organic food but also pro-environmental behaviors in the functioning of the household [50]. Green consumers buy eco-friendly products not because of fashion but because of interest and concern for ecological issues [51]. Such a consumer checks the label to see if the product is eco-friendly. They are motivated to buy an environmentally friendly product, even if it is of lower quality and has a higher price than substitute products. This group of consumers makes every effort to look for environmentally friendly products. In the face of global challenges related to environmental protection, greening consumption is becoming a fashionable trend and a necessary step toward a sustainable future. As society's environmental awareness increases, we can expect further development of this phenomenon and the introduction of innovative solutions that will help protect our planet.

When it comes to motivating customers to make a purchase decision, trust in the products offered is a key factor. In the organic food industry, trust can be a significant strategic advantage because consumers often do not have sufficient skills to independently assess the benefits of organic products. Therefore, producers and retailers can use various types of certificates to strengthen trust in their products, contributing to increased demand for organic products. It is important to consumers that organic farming has strictly defined production criteria, which have been included in legal acts issued at the EU level. The production of organic food is regulated by legal regulations, namely Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on organic production and labeling of organic products and repealing Council Regulation (EC) No 834/2007 [52]. This Regulation states that "organic" means originating from organic production only. This applies to both raw materials and processed products. In practice, a processed product can only be considered organic if all or almost all of its agricultural ingredients are organic. It has been assumed that at least 95% of the agricultural ingredients in the manufactured product must be organic.

Additionally, organic processed products should be manufactured using methods that ensure compliance with the principles of organic production and maintain the essential characteristics of the product at all stages of production. This means that organic food can be manufactured on the same technological lines as conventional products, provided that the production of both types of products is separated in time. Before the production of organic food, in the case where a non-organic product was previously produced, the production equipment should be thoroughly cleaned.

Since 1 July 2010, a common symbol for organic food, known as the Euroleaf, has been in force throughout the EU. Labeling food products with certification symbols is an important element of a marketing strategy to influence consumer purchasing decisions. The EU organic logo gives organic products a uniform visual identity throughout the Community, making it easier for consumers to identify them and supporting farmers in distributing these products throughout the European Union. The logo can only be used for products that have been certified organic by an authorized certification body or control authority. This means that such products must meet strict production, processing, transport, and storage standards. The logo can only be used on products containing at least 95% organic ingredients, and the remaining 5% must also meet certain requirements. An ingredient cannot be offered both organically and non-organically. The packaging of a product with the EU organic logo should also show the number of the certification body and information on the place of production of agricultural raw materials [53].

3. Data and Methodology

3.1. Study Site

The research was carried out in Poland, Czechia, Slovakia, and Hungary, using the native languages of the individual countries.

3.2. Type of Research

The research was carried out in a survey format. Data collection lasted from December 2023 to March 2024 and was carried out using the questionnaire method.

3.3. Participants and Selection Criteria

The research was carried out using the "mall intercepts" method. This method is quite commonly considered optimal, as it is relatively cheap and reflects the population structure quite well (but does not include, for example, sick people). Trained interviewers were hired to collect the data. The research was carried out in various types of commercial places, such as shopping malls, markets, and local stores).

3.4. Instruments and Measurement Scales

Information on the adopted scope of the investigation was obtained using a survey questionnaire containing 22 main questions (both open and closed) and 10 metric questions related to the demographic data of the respondents. To assess the reliability of the questionnaire in individual countries, the Cronbach Alpha coefficient (internal consistency) was determined. It was at a level of about 0.85 (the highest in the case of Poland (0.89) and the lowest for the data from Hungary (less than 0.86), where it is quite commonly assumed that results above 0.6 are acceptable.

All partial variables used in the analysis were measured on an ordinal scale.

3.5. Study Variables

In order to describe the factors determining purchasing decisions on the organic food market in the Visegrad Group, a set of 25 variables was proposed (rated on a scale of 1 to 5, where 1—not at all important and 5—very important), as follows:

DPD1—Production without the use of agricultural chemicals and food additives; DPD2—No genetically modified organisms; DPD3—Quantity of nutrients; DPD4—High quality; DPD5—Controlled production; DPD6—Production based on natural, traditional methods; DPD7—Local production; DPD8—Visual and sensory values (smell, structure); DPD9—Ethical production methods (taking care of animal welfare, fair trade); DPD10—Supporting environmental protection; DPD11—Leading a healthy lifestyle;

DPD12—Influence of family/friends; DPD13—Influence of famous people, celebrities, bloggers; DPD14—Curiosity; DPD15—Fashion; DPD16—Price; DPD17—Taste; DPD18—Expiration date; DPD19—Product range; DPD20—Availability; DPD21—Information about organic food; DPD22—Credibility; DPD23—Packaging appearance; DPD24—Product recognition; DPD25—Promotional activities.

The second set of variables considered refers to the frequency (5—at least once a week, 4—at least once a month, 3—at least once a year, 2—less than once a year, 1—never) of purchasing organic products, consisting of 16 variables: FP1—Fruits; FP2—Vegetables; FP3—Fruit products (including juices); FP4—Vegetable products; FP5—Meat; FP6—Cold cuts; FP7—Dairy products; FP8—Eggs; FP9—Fish, seafood; FP10—Bread; FP11—Sweets, snacks, dried fruit; FP12—Spices, herbs; FP13—Tea, coffee; FP14—Vegetable oils; FP15—Honey; FP16—Baby food.

3.6. Sampling Method

The minimum number of people who participated in the study in each country was determined based on an appropriate formula [54].

$$n = \frac{P(1-P)}{\frac{e^2}{Z_\alpha{}^2} + \frac{P(1-P)'}{Ni}} \quad (1)$$

where n—sample size, e—admissible error size, Ni—population size (population) in individual countries of the V4 group (i = 1, . . .,4), $Z\alpha$—size resulting from the confidence level adopted, and P—structure index reflecting the estimated proportion in the population.

The minimum sample size in each Visegrad Group country was determined using the same assumptions:

- Confidence level of 95% (for a 95% confidence level, $Z\alpha$ is 1.96);
- Maximum error e = 4%;
- Structure index P at 50% (for this value, the numerator in the above formula assumes the highest value);
- The total size of the entire group of respondents (population) in Poland, Czechia, Slovakia, and Hungary according to Eurostat data [55] (as of 1 January 2023) are 36,753,736 (N1), 10,827,529 (N2), 5,428,792 (N3), and 9,599,744 (N4), respectively.

Based on the above assumptions, it was determined that the number of respondents in each of the Visegrad groups was 600 people. The study only covered adults. Women dominated among study participants in each country (Table 1). At the level of the entire Visegrad Group, they constituted almost 67%—the highest percentage of women among the respondents was identified in Poland (73%), and the lowest in Czechia (slightly more than 62%).

Table 1. Distribution of the research sample in individual Visegrad Group countries by gender.

Specification	Number of People				
	Total				
	Poland	Czechia	Slovakia	Hungary	V4 in Total
Male	162	227	222	185	796
Female	438	373	378	415	1604
Total	600	600	600	600	2400
	Organic food purchasers				
Male	68	81	101	89	339
Female	144	161	221	244	770
Total	212	242	322	333	1109

Table 1. *Cont.*

Specification	Percentage				
	Poland	**Czechia**	**Slovakia**	**Hungary**	**V4 in total**
			Total		
Male	27.00	37.83	37.00	30.83	33.17
Female	73.00	62.17	63.00	69.17	66.83
Total	100.00	100.00	100.00	100.00	100.00
			Organic Food Buyers		
Male	11.33	13.50	16.83	14.83	14.13
Female	24.00	26.83	36.83	40.67	32.08
Total	35.33	40.33	53.67	55.50	46.21

Source: own study.

In each country, the number of responses collected was different and particularly excessive in Czechia (791). In order to eliminate redundancy and diversity in the size of the research sample in individual countries, and after verifying the completeness of the completed questionnaires, the minimum sample size was determined. Within each country, a simple random sampling without replacement was carried out (collected survey questionnaires were drawn, not respondents). For this purpose, a random number generator built into the Microsoft Excel spreadsheet was used (Excel 2019-Microsoft, Dedmond, WA, USA).

3.7. Statistical Analysis

Canonical analysis, used for the purposes of this article, is an extension of classical linear multiple regression to two sets of variables, enabling the modeling of complex relationships between them. The essence of this technique is to study the relationships between two sets of variables by analyzing the relationships between two new types of variables (so-called canonical variables), which are constructed as weighted sums for the sets of explanatory and explained variables. These weights are determined to maximize the correlation between the calculated canonical variables [56–59]. In the case of considering $x = x^T \hat{w}_x$ and $y = y^T \hat{w}_y$, the aim is to maximize the expression:

$$r_l = \frac{\left(w_x^T R_{xy} w_y\right)}{\sqrt{\left(w_x^T R_{xx} w_x w_y^T R_{yy} w_y\right)}}, \tag{2}$$

where *Rxx*—correlation matrix of explanatory variables (concerning purchasing determinants); *Ryy*—correlation matrix of explained variables (related to the frequency of purchasing individual groups of organic products); *Rxy*—correlation matrix of both types of variables; and *wx*, *wy*—weights for canonical variables of the first and second type.

The categories analyzed in this study are multifaceted, which, taking into account the adopted goal of the research, justifies the use of a multifaceted statistical data exploration technique, which is canonical analysis. Limiting the analysis to traditional dependency methods, such as the popular Pearson correlation analysis between pairs of variables, would be insufficient because it does not consider relationships within the sets of explanatory and explained variables. In order to determine the statistical significance of all canonical variables generated in the course of the research [60], the Λ-Wilks test was used. In order to verify the significance of pairs of canonical variables, the test statistic for the set of *s-k* variables was used:

$$\Lambda_k = \prod_{l=k}^{s} (1 - r_l^2), \tag{3}$$

where *s*—number of canonical variables.

One of the limitations of canonical analysis is its sensitivity to outliers. To identify the outliers, a modified "3 sigma" rule was used [61], which removes observations that do not meet the condition:

$$\frac{x_{i-M}}{MAD} > |\pm 3|, \quad (4)$$

where *MAD*—average deviation, *M*—median (second quartile), and x_i—feature value.

In the case of outliers identified, they were replaced with median values calculated for all observations in a given Visegrad Group country. In the case of the set of variables related to purchasing determinants, such a necessity occurred for data concerning Poland 5 times (including 3 times due to exceeding the upper limit of the permissible range), Czechia 3 times (in each case due to exceeding the lower limit of the permissible range), Slovakia 4 times (in each case due to exceeding the lower limit of the permissible range), and Hungary 12 times (6 times each due to exceeding the lower and upper limits of the permissible range). In the set of variables related to the frequency of purchasing individual groups of organic products, such a situation occurred in 5 cases for data concerning Czechia (due to exceeding the lower limit of the permissible range), Slovakia twice (one case each due to exceeding the lower and upper limits of the permissible range), and Hungary three times (including two times due to exceeding the lower limit of the permissible range). In this set of variables, no "outliers" were identified for the data concerning Poland. All variables included in the canonical analysis should show a normal distribution. The compliance of the distribution of variables with the normal distribution was verified using the Shapiro–Wilk test. For variables that did not meet this assumption, the Box–Cox transformation [62] was applied to approximate their distribution to the maximum normal. The transformation parameter was selected using the maximum likelihood method from the interval assumed customarily $[-5, 5]$.

3.8. Software Used

All calculations were performed in Excel 2019 (Microsoft, Dedmond, WA, USA) and Statistica 13.3 (Tibco Software Inc., Palo Alto, CA, USA).

4. Results

Research co nducted shows that the key factor influencing purchasing decisions about organic food is its high quality (Table 2). In countries such as Poland, Czechia, and Slovakia, this feature received the highest percentage of indications as very important, 53%, 44%, and 54%, respectively. Second, respondents indicated production without agricultural chemicals and food additives (in Hungary, this factor was considered the most important, with a percentage of indications at the level of 77%). In all the countries of the Visegrad Group, the influence of famous people, celebrities, and bloggers seems to be the least important—40.7% of respondents in Slovakia considered them completely unimportant, and up to 73% in Hungary. This is due to the specificity of the market for organic products, as the roles of the entity that advertises the qualities of these foods are performed by the Ministry of Agriculture and Rural Development or the Institutes of Organic Agriculture of the countries studied. Fashion was similarly rated low. In the case of this factor, the percentage of indications as irrelevant ranged from 31% (Slovakia) to 76% (Hungary). These results correlate with the analyses of other researchers. Olech and Kuboń [63] indicate that the basic premise for purchasing organic food was the belief in its health benefits, while Kucińska et al. research [64] proves that in the case of organic food, the most important attributes for Poland residents were health safety, low level of generated pollution, and high quality. Consumers have high confidence in the health benefits of organic food, which translates into their willingness to buy it [65].

Table 2. Factors determining food purchasing decisions (in %).

Specification	Poland					Czechia					Poland			Czechia		
	Not at all Important	Not very Important	Moderately Important	Important	Very Important	Not at all Important	Not very Important	Moderately Important	Important	Very Important	I	II	III	I	II	III
Produced without agricultural chemicals and food additives	3.30	9.43	21.70	12.74	52.83	2.89	5.79	15.70	35.12	40.50	5	4.02	1.19	5	4.05	1.03
Does not contain GMOs	10.85	14.62	24.06	16.04	34.43	9.09	11.98	23.14	29.34	26.45	5	3.49	1.38	5	3.52	1.25
Has more nutrients	2.36	8.02	25.47	19.34	44.81	3.31	5.37	19.83	40.08	31.40	5	3.96	1.11	5	3.91	1.01
High quality	1.89	4.72	19.34	21.23	52.83	1.24	4.13	7.85	42.98	43.80	5	4.18	1.03	5	4.24	0.86
Controlled production	4.25	8.49	25.94	22.64	38.68	3.31	7.02	21.49	40.91	27.27	5	3.83	1.16	5	3.82	1.02
Produced using natural, traditional methods	8.96	11.32	21.23	21.70	36.79	3.31	9.50	14.05	42.56	30.58	5	3.66	1.32	5	3.88	1.06
Produced locally	11.79	16.04	25.00	19.81	27.36	5.79	6.20	16.12	36.78	35.12	5	3.35	1.35	5	3.89	1.13
Visual and sensory values (appearance, smell, structure)	7.55	9.91	21.70	25.00	35.85	2.89	2.89	14.46	41.32	38.43	5	3.72	1.26	5	4.1	0.95
Ethical production methods (taking care of animal welfare, fair trade)	6.60	14.15	23.11	19.81	36.32	3.31	6.61	24.38	35.12	30.58	5	3.65	1.28	5	3.83	1.04
Promotes environmental protection	3.77	11.32	24.53	24.06	36.32	3.72	8.26	21.90	38.84	27.27	5	3.78	1.17	5	3.78	1.05
Having a healthy lifestyle	4.25	7.55	24.06	22.64	41.51	1.65	7.02	18.60	40.91	31.82	5	3.9	1.16	5	3.94	0.97
Influence of family/friends	24.06	16.98	21.23	21.70	16.04	17.36	18.18	24.79	26.45	13.22	1	2.89	1.41	1	3	1.29
Influence of famous people, celebrities, bloggers	53.77	15.09	16.51	8.49	6.13	46.28	16.53	16.53	14.46	6.20	1	1.98	1.27	1	2.18	1.32
Curiosity	23.58	17.92	27.36	18.40	12.74	15.29	17.36	26.45	29.34	11.57	3	2.79	1.33	3	3.05	1.24
Fashion	51.42	19.34	15.09	8.02	6.13	45.45	17.36	14.46	16.12	6.61	1	1.98	1.24	1	2.21	1.34

Table 2. *Cont.*

Specification	Slovakia					Hungary					Slovakia			Hungary		
	Not at all Important	Not very Important	Moderately Important	Important	Very Important	Not at all Important	Not very Important	Moderately Important	Important	Very Important	I	II	III	I	II	III
Produced without agricultural chemicals and food additives	3.11	9.94	27.02	29.19	30.75	1.50	3.00	5.71	12.91	76.88	5	3.75	1.09	5	4.61	0.85
Does not contain GMOs	8.70	16.15	32.61	20.81	21.74	4.80	5.11	15.62	14.71	59.76	3	3.31	1.22	5	4.2	1.16
Has more nutrients	2.17	6.21	20.50	35.40	35.71	5.41	4.20	16.82	26.13	47.45	5	3.96	1	5	4.06	1.14
High quality	1.24	2.17	11.80	30.43	54.35	2.70	3.60	15.02	30.33	48.35	5	4.34	0.86	5	4.18	1
Controlled production	6.21	19.88	33.85	21.74	18.32	2.40	3.90	14.71	24.02	54.95	3	3.26	1.15	5	4.25	1
Produced using traditional natural methods	9.63	22.98	34.78	22.05	10.56	2.40	7.21	16.82	25.53	48.05	3	3.01	1.12	5	4.1	1.07
Produced locally	6.21	9.32	26.71	33.85	23.91	3.30	6.61	19.82	27.93	42.34	4	3.6	1.13	5	3.99	1.09
Visual and sensory values (appearance, smell, structure)	1.24	5.28	20.81	30.43	42.24	3.90	6.91	18.32	34.83	36.04	5	4.07	0.98	5	3.92	1.08
Ethical production methods (taking care of animal welfare, fair trade)	4.66	11.49	28.88	31.06	23.91	3.60	6.01	17.12	27.03	46.25	4	3.58	1.11	5	4.06	1.09
Promotes environmental protection	3.42	12.73	27.95	35.09	20.81	2.40	4.20	12.91	21.02	59.46	4	3.57	1.06	5	4.31	1.01
Having a healthy lifestyle	1.86	7.14	19.88	37.58	33.54	2.10	3.30	9.31	20.12	65.17	4	3.94	0.99	5	4.43	0.94
Influence of family/friends	8.70	15.22	31.06	29.19	15.84	36.94	22.22	21.02	11.41	8.41	3	3.28	1.16	1	2.32	1.3
Influence of famous people, celebrities, bloggers	40.68	24.22	21.43	9.32	4.35	72.97	12.31	8.71	3.30	2.70	1	2.12	1.17	1	1.5	0.97
Curiosity	9.94	15.22	33.54	26.71	14.60	37.24	23.12	22.22	11.11	6.31	3	3.21	1.17	1	2.26	1.24
Fashion	30.75	27.95	24.22	13.66	3.42	75.68	13.51	7.21	2.70	0.90	1	2.31	1.15	1	1.40	0.81

I—MODE, II—arithmetic mean, III—standard deviation.

As part of the canonical analysis, 16 canonical roots were obtained, corresponding to the number of variables included in the set that describe the frequency of purchasing individual groups of organic products (Table 3). The first pair of canonical variables synthetically describes the interactions between the analyzed sets of variables, explaining the largest part of the mutual connections, which makes researchers focus their attention on the correlation of the first canonical variable. Of all the estimated canonical correlation coefficients, the first coefficient, having the highest value, refers to the maximum relationship between the combinations of explanatory and explained variables. It should be noted that the first pair of canonical variables do not fully explain the relationships between the variables considered, which may justify the designation of subsequent pairs of canonical variables that describe connections in less important dimensions. With each subsequent pair of variables, the explained variability decreases, which is reflected in the gradual decrease in the values of the estimated canonical correlations. For the data in the individual Visegrad Group countries, a different number of statistically significant canonical correlations (p-value < 0.05) was obtained—the highest for Czechia (5) and the lowest for the data from Hungary (2). Considering that in Slovakia and Hungary, the highest value of the canonical correlation coefficient did not exceed 0.53, to unify the analyses, we limited ourselves only to the first statistically significant canonical variables in all Visegrad Group countries. The highest canonical correlation value was identified in the case of Poland, and it is greater than 0.75. The value of Wilks' lambda test, which checks the significance of the highest canonical correlation, is 0.027. It should be noted that the value of the canonical correlation coefficient cannot be directly compared to the classical correlation coefficient (such as Pearson's). It is a correlation between weighted values in each set with weights calculated for subsequent canonical variables. The determined canonical correlation coefficients are in the range between 0 and 1. The value of 0 means that there is no relationship between linear combinations of variables for the adopted sets of variables describing the frequency of purchasing organic food and the determinants of purchasing decisions. On the other hand, the value of 1 means a perfect correlation between linear combinations.

Table 3. Results of the canonical roots significance testing.

Removed Root	Poland				Czechia				Slovakia				Hungary			
	CC	χ^2	p	λ	CC	χ^2	p	λ	CC	χ^2	p	λ	CC	χ^2	p	λ
0	0.753	682.828	0.000	0.027	0.667	663.018	0.000	0.049	0.514	522.813	0.000	0.176	0.528	531.348	0.000	0.181
1	0.649	523.645	0.000	0.064	0.583	533.395	0.000	0.089	0.480	430.653	0.001	0.239	0.489	429.552	0.007	0.251
2	0.596	419.739	0.000	0.110	0.557	441.881	0.000	0.134	0.436	351.857	0.044	0.310	0.447	344.570	0.187	0.330
3	0.535	336.498	0.022	0.170	0.519	360.158	0.002	0.195	0.393	288.595	0.248	0.383	0.395	275.074	0.668	0.413
4	0.497	272.448	0.181	0.238	0.479	290.983	0.047	0.266	0.376	238.223	0.520	0.453	0.374	222.341	0.910	0.489
5	0.453	218.608	0.514	0.316	0.447	233.675	0.252	0.346	0.323	192.311	0.789	0.527	0.350	175.574	0.987	0.569
6	0.410	174.862	0.777	0.398	0.407	184.737	0.594	0.432	0.312	159.205	0.865	0.589	0.314	134.934	0.999	0.648
7	0.383	139.924	0.894	0.479	0.403	144.802	0.829	0.518	0.301	128.499	0.925	0.652	0.298	102.661	1.000	0.719
8	0.367	109.730	0.952	0.561	0.360	105.749	0.974	0.618	0.289	100.021	0.968	0.717	0.254	73.788	1.000	0.789
9	0.329	82.277	0.984	0.649	0.308	75.185	0.997	0.711	0.284	73.863	0.991	0.782	0.209	53.086	1.000	0.843
10	0.304	60.494	0.993	0.727	0.284	53.265	0.999	0.785	0.241	48.528	0.999	0.851	0.201	39.224	1.000	0.882
11	0.258	42.045	0.997	0.801	0.230	34.814	1.000	0.854	0.187	30.548	1.000	0.903	0.178	26.350	1.000	0.919
12	0.243	28.945	0.996	0.859	0.210	22.814	1.000	0.901	0.156	19.827	1.000	0.936	0.142	16.296	1.000	0.949
13	0.218	17.425	0.996	0.912	0.166	12.881	1.000	0.943	0.147	12.386	1.000	0.960	0.122	9.988	1.000	0.968
14	0.176	8.181	0.997	0.958	0.133	6.708	0.999	0.970	0.118	5.828	0.999	0.981	0.108	5.310	1.000	0.983
15	0.107	2.195	0.995	0.989	0.112	2.770	0.986	0.987	0.073	1.594	0.996	0.995	0.073	1.666	0.998	0.995

CC—canonical correlation; Velue test χ^2; p—probability level for p for test χ^2; λ—Wilks' lambda statistic value. Source: own elaboration.

In the analysis of the relationships between multiaspect categories, such as purchasing conditions and the frequency of purchasing organic products, it is important to examine the structure of relationships between the analyzed sets of variables (describing these phenomena). The calculated canonical weights (Table 4) for both sets facilitate the understanding of the structure of the canonical variables by showing the specific contribution of each variable to the weighted sum. The higher the absolute value, the greater the contribution to the generation of the canonical variable. These weights created for standardized sets of variables are equivalent to beta coefficients in multiple regression.

For the data obtained among respondents in Poland, for the most significant canonical variable, the highest (absolute) weight values have the variables DPD22 (0.44) and FP1 (−0.77), which means that the creation of this canonical variable was more influenced by credibility and purchasing fruit. On the other hand, for the Czech data, among the considered partial variables in determining the most statistically significant canonical variable, the greatest contribution was made by the variables DPD15 (0.59) related to fashion and the variable FP11 (0.63) related to sweets, snacks, and dried fruit. Based on the data obtained in Slovakia, it can be noticed that the highest (absolute) weight values have variables DPD17 (−0.44) and FP6 (−0.97) related to taste values and purchasing cold cuts, while in Hungary, variables DPD1 (0.57) and FP2 (−0.91) related to the importance of production without the use of agricultural chemicals and food additives and purchasing vegetables.

Table 4. Canonical weights and factor loadings.

Variables Related to Factors Determining Purchasing Decisions	Canonical Weights				Factor Loadings			
	Canonical Variables *							
	UP_1	**UC_1**	**US_1**	**UH_1**	**UP_1**	**UC_1**	**US_1**	**UH_1**
DPD1	−0.047	0.317	0.054	*0.571*	−0.281	0.131	−0.144	−0.445
DPD2	−0.093	−0.305	*−0.320*	−0.010	−0.062	0.201	−0.488	−0.158
DPD3	0.004	0.216	*−0.199*	−0.053	0.064	0.253	−0.404	−0.001
DPD4	−0.086	−0.083	−0.104	0.200	0.143	0.066	−0.188	0.138
DPD5	−0.041	0.097	0.016	0.283	−0.238	0.262	−0.137	0.172
DPD6	0.176	−0.192	−0.057	0.306	0.216	0.108	−0.110	0.078
DPD7	0.152	0.121	−0.158	−0.089	0.333	0.293	−0.300	−0.058
DPD8	0.169	−0.033	0.167	−0.159	0.298	0.088	0.033	−0.027
DPD9	−0.167	0.064	0.312	0.179	−0.325	0.267	0.058	−0.100
DPD10	*0.329*	−0.029	−0.027	−0.464	−0.428	0.204	−0.107	−0.221
DPD11	0.232	0.130	−0.212	0.238	0.243	0.171	−0.278	−0.069
DPD12	0.086	*0.148*	0.199	−0.129	0.113	0.497	0.065	0.257
DPD13	−0.037	*0.252*	0.272	*0.471*	0.008	0.419	0.053	0.438
DPD14	*0.008*	−0.090	−0.186	0.321	0.409	0.320	−0.094	0.392
DPD15	0.158	*0.585*	0.097	−0.456	0.315	0.616	−0.095	0.215
DPD16	−0.188	0.021	*−0.166*	−0.149	−0.278	0.180	−0.506	−0.182
DPD17	−0.034	0.203	*−0.435*	0.004	0.005	0.210	−0.662	0.230
DPD18	−0.329	0.154	*−0.229*	−0.115	−0.281	0.272	−0.499	0.039
DPD19	0.124	−0.143	*−0.005*	−0.283	0.180	−0.222	−0.430	−0.199
DPD20	0.106	−0.434	−0.069	−0.069	0.389	−0.393	−0.363	−0.127
DPD21	0.046	−0.005	*−0.167*	0.094	0.325	−0.043	−0.410	0.258
DPD22	*0.441*	−0.178	0.094	0.035	0.631	0.030	−0.283	0.274
DPD23	−0.085	*0.383*	−0.011	*0.155*	0.224	0.433	−0.274	0.401
DPD24	*0.073*	−0.341	−0.100	*0.107*	0.525	0.054	−0.207	0.402
DPD25	0.046	*0.411*	0.054	*0.311*	0.358	0.408	−0.144	0.443

Table 4. *Cont.*

Variables Related to Frequency of Purchasing Organic Products	Canonical Weights				Factor Loadings			
	Canonical Variables *							
	VP_1	**VC_1**	**VS_1**	**VH_1**	**VP_1**	**VC_1**	**VS_1**	**VH_1**
FP1	−0.773	0.257	*−0.277*	0.196	−0.346	0.046	−0.595	−0.200
FP2	0.335	−0.593	*−0.019*	−0.914	0.008	−0.075	−0.553	−0.301
FP3	*0.028*	0.087	−0.097	0.103	0.459	0.112	−0.372	0.219
FP4	*0.266*	−0.061	*−0.070*	0.494	0.587	0.091	−0.407	0.353
FP5	*0.254*	0.188	*0.466*	0.010	0.603	0.268	−0.654	0.207
FP6	*0.143*	−0.162	*−0.968*	−0.061	0.640	0.204	−0.851	0.221
FP7	−0.126	0.353	*−0.188*	−0.342	0.136	0.142	−0.617	−0.132
FP8	−0.196	−0.155	*−0.065*	0.155	−0.021	0.101	−0.528	0.216
FP9	*0.125*	0.075	*−0.198*	*0.553*	0.520	0.175	−0.510	0.581
FP10	0.071	−0.086	*−0.222*	0.063	0.308	0.157	−0.577	0.234
FP11	*0.083*	*0.626*	0.200	−0.098	0.535	0.519	−0.312	0.121
FP12	*0.232*	0.006	*−0.032*	0.174	0.633	0.083	−0.408	0.300
FP13	*0.006*	−0.107	0.074	−0.203	0.480	0.048	−0.338	0.025
FP14	*0.020*	−0.412	0.025	0.042	0.515	−0.086	−0.304	0.176
FP15	0.160	0.439	0.139	*0.296*	0.325	0.389	−0.024	0.422
FP16	−0.025	*0.542*	0.128	−0.058	0.302	0.667	0.028	0.068

UP_1, UC_1, US_1, and UH_1—canonical variable referring to the set of factors determining purchasing decisions in Poland, Czechia, Slovakia, and Hungary, respectively. VP_1, VC_1, VS_1, and VH_1—canonical variable referring to the frequency of purchasing organic products in Poland, Czechia, Slovakia, and Hungary, respectively. * Only the first statistically significant canonical variable was included. Canonical weights for which factor loadings exceed 0.40 are marked in italics. Source: own study.

In order to deepen the analysis of the structure of the first statistically significant canonical roots, canonical factor loadings were calculated, which correspond to the correlation coefficients between the canonical variable and the output variables. The higher the absolute value of this coefficient, the greater the significance of the given variable in interpreting the relationship. For further analyses, the critical value of the correlation coefficient was assumed at the level of 0.40.

Among the variables that describe the factors that determine purchasing decisions for the data obtained among respondents in Poland, the highest factor loading is provided by the variable DPD22 (0.63), referring to credibility. For the Czech data, the variable DPD15 (0.62) relates to fashion; for the Slovak data, the variable DPD17 (−0.66) describes taste values, and for the Hungary data, the variable DPD25 (0.44) refers to promotional activities.

In turn, in the set of variables related to the frequency of purchasing organic products, for the Polish data, the highest factor loading was shown by the variable FP6 (0.64), which refers to the frequency of purchasing cold cuts; for the Czech data, the variable FP16 (0.67), food for children; and for the data obtained among the respondents in Hungary, the variable FP9 (0.58), which refers to the frequency of purchasing fish and seafood.

There is no complete agreement in the literature on the question of whether the interpretation of the occurring dependencies should be guided by the values of factor loadings or canonical weights [66]. In this context, their relatively intuitive interpretation justifies the use of canonical factor loadings. It is worth noting that the values of these coefficients reflect the correlations of individual input variables with canonical variables, and, unlike canonical weights, they do not take into account the effects of covariation within the set of input variables. Interpreting canonical roots based on the correlations of individual variables may, therefore, lead to different conclusions than a more "multidimensional" analysis based on canonical weights. The latter approach was used in this paper.

Based on the values of the canonical weights and factor loadings (Table 4), it can be stated that the first statistically significant canonical root explained the following relationships that occur among consumers in Poland:

- The desire to support environmental protection has a positive effect on increasing the frequency of purchasing fruit products (FP3); vegetable products (FP4); meat (FP3); cold cuts (FP6); fish and seafood (FP9); sweets, snacks, dried fruit (FP11); spices and herbs (FP12); tea and coffee (FP13); and vegetable fats (FP14);
- The higher the product recognition (DPD24), the higher the frequency of the above-mentioned product groups;
- Improved credibility (DPD22) and curiosity (DPD14) positively increase the frequency of purchasing the above-mentioned groups of ecological products.

Analyzing the values of factor loadings and canonical weights for the first canonical variable for the Czech data, the following can be seen:

- The influence of family and/or friends (DPD12) and famous people, celebrities, and bloggers (DPD13) has a positive effect on the frequency of purchasing sweets, snacks and dried fruit (FP11), and food for children (FP16);
- Fashion (DPD15), packaging appearance (DPD23), and promotional activities also positively affect the frequency of purchasing the above-mentioned groups of organic products.

Based on the loading values and canonical weights generated for the first canonical root for the Slovak data, the following can be stated:

- With a decrease in price (DPD16), the frequency of purchasing fruit (FP1), vegetables (FP2), vegetable products (FP4), meat (FP5), cold cuts (FP6), dairy products (FP7), eggs (FP8), fish and seafood (FP9), bread (FP10), and spices and herbs (FP12) decreases. This is probably because higher prices are associated with higher quality by consumers;
- The lack of genetically modified organisms (DPD2) and the amount of nutrients (DPD3) have a positive effect on the frequency of purchasing the groups mentioned above of organic products;
- Taste qualities (DPD17), expiry date (DPD18), range of products (DPD19), and information about organic food (DPD21) are also positively correlated with the frequency of purchasing the groups of organic products, as mentioned earlier.

On the other hand, based on the canonical weights and factor loading values generated for the Hungarian data, it can be stated that the first statistically significant canonical root explained the following relationships:

- Production without the use of agricultural chemicals and food additives (DPD1) has a positive effect on the increase in the frequency of purchasing fish and seafood (FP9) and honey (FP15);
- The influence of famous people, celebrities, and bloggers (DPD13) has a positive effect on the increase in the frequency of purchasing fish and seafood (FP9) and honey (FP15);
- The appearance of the packaging (DPD23), product recognition (DPD24), and promotional activities (DPD25) are positively correlated with the frequency of purchasing fish and seafood (FP9) and honey (FP15).

By squaring the factor loadings that reflect correlation, we obtain the proportion of the variance of a given variable explained by the canonical variate. Then, by calculating the average of these proportions for all variables, we learn which percentage of the variance is explained on average by a given canonical variate in the analyzed data set. We call this value the extracted variance. On the other hand, the eigenvalues (which are the squares of successive canonical correlations) of the matrix associated with the correlation matrix

of the variables of both sets, multiplied by the square of the canonical correlation, create a new indicator called the redundancy of a given set of variables with respect to the other set (Table 5). This indicator informs us about what part of the average variance in one set is explained by a specific canonical variate, taking into account knowledge of the variables from the other set. This allows us to understand to what extent one data set is redundant with respect to the other. Total redundancy is the sum of the redundancies calculated for all canonical variates.

Table 5. Extracted variances and redundancies for the first canonical variate in individual countries in the Visegrad Group countries.

Specification	A Set of Variables Relating to Factors Determining Purchasing Decisions		A Set of Variables Relating to the Frequency of Purchasing Organic Products	
	Extracted Variance	Redundancy	Extracted Variance	Redundancy
Poland	0.093	0.053	0.201	0.114
Czechia	0.082	0.037	0.069	0.031
Slovakia	0.097	0.026	0.240	0.063
Hungary	0.064	0.018	0.073	0.020

Source: own elaboration.

The most statistically significant canonical variable for Polish data extracts more than 20% of the variance in the set of variables relating to the frequency of purchasing organic products and more than 9% in the set relating to purchasing conditions. Similar results were obtained for the Slovak data (24% in the set of variables describing environmental conditions and almost 10% in the second set considered). For the Czech and Hungarian data, the value of this indicator did not exceed 9% in any of the sets. In the next step of the analysis, redundancy indices were determined for the first statistically significant canonical variables in the individual Visegrad Group countries. For the Polish data, with the adopted variables describing the frequency of purchasing individual groups of organic products, only 5.3% of the variance of the variables in the second adopted set (describing purchasing determinants) can be explained based on the first canonical variable. Similarly, with the data of variables describing purchase determinants, only 11.4% of the variance related to the frequency of purchasing organic products can be explained based on the first canonical variable. In the case of the other Visegrad Group countries, the redundancy indices were even lower, and in none of the sets did they exceed 6.5% (in the case of Hungary, even 2%). Furthermore, the values of total redundancy were determined. The value of this indicator informs the average percentage of the variance that is explained in one set of variables with a given second set based on all the canonical variables. Calculations show that with knowledge of the values of variables that describe purchase determinants, 28.87% of the variance of the variables in the set that describe the frequency of purchasing organic food in Poland can be explained. The value of this indicator can be assessed as relatively high. The value of this indicator was lower for the Czechia data and amounted to 18.00%. In the other two countries of the V4 Group, the value of this indicator was more than twice as low—in Slovakia 13.21%, and in Hungary 12.73%. This value should be assessed as weak. In order to obtain higher indicators, it is worth conducting additional research in the future, such as using a different set of input variables or changing their number.

As part of the analysis, scatterplots of the first statistically significant canonical roots (i.e., the one with the greatest contribution to explaining the connections between the adopted sets of input variables) were also created in the individual Visegrad Group countries (Figure 1). These graphs illustrate the relationships between the values of the newly created variables, representing purchasing conditions (axis of abscissas) and the frequency of purchasing ecological products (axis of ordinates).

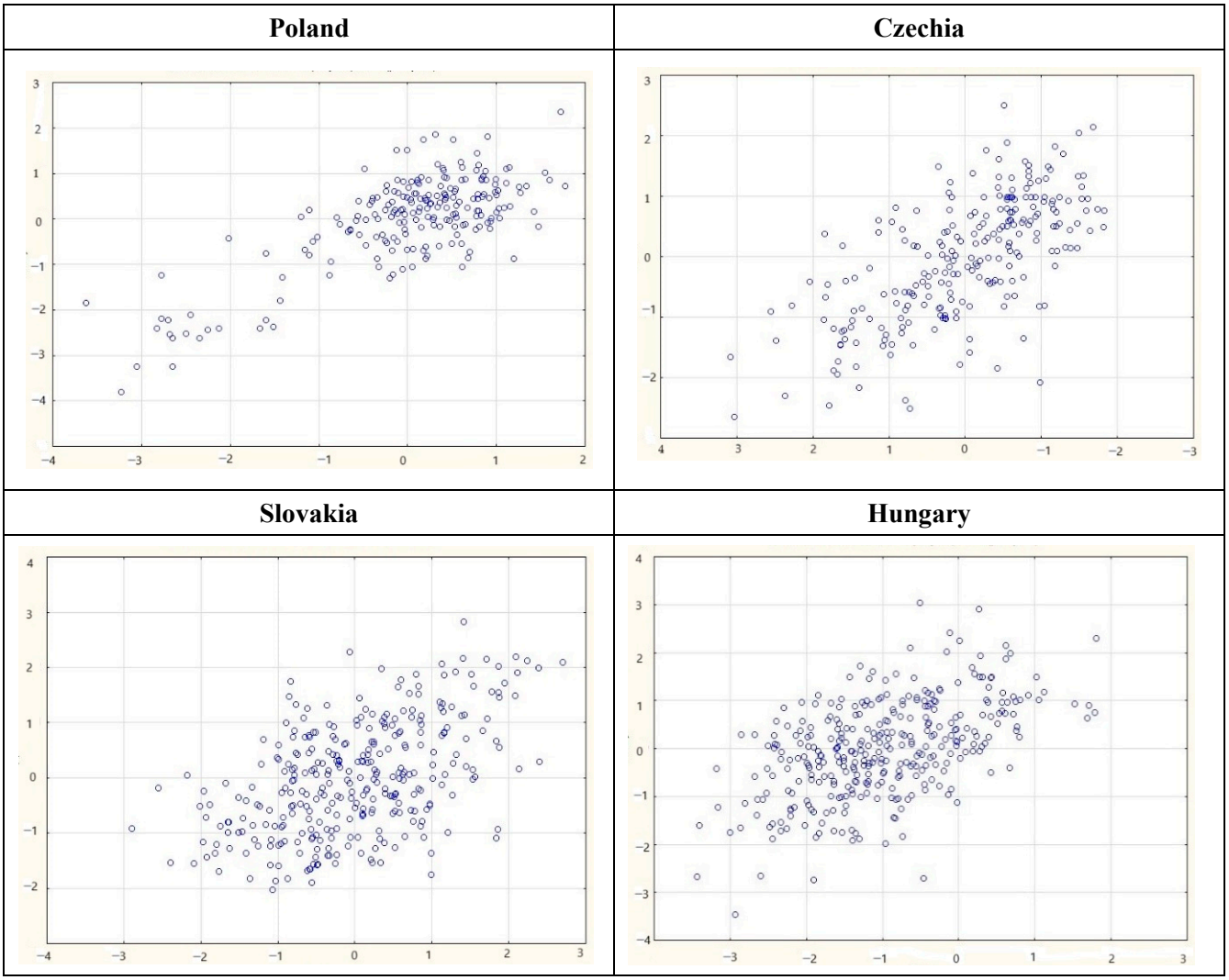

Figure 1. Scatterplot of the first statistically significant canonical variables in individual Visegrad Group countries. Source: own elaboration.

For the data collected among respondents in Poland, in the case of the first statistically significant canonical variable, there is no too strong scatter of points (representing the respondents analyzed). These points are arranged quite clearly along a line to a straight line (with a positive slope). It can be assumed that the generated pairs of canonical variables carry a significant part of the information about the covariation of the two considered sets of input variables—with an increase in the value for the group of causes (purchase determinants), the values of effects (frequency of purchasing individual groups of organic food) increase together, and this relationship is clearly linear, as illustrated in the above graph. On the scatterplot prepared for the data from Czechia, the points representing the analyzed objects are also arranged along a positively sloped straight line but are more scattered. This pair of canonical variables carries a smaller part of the information about the covariation of the two considered variables compared to the data from Poland. For the data obtained among respondents in Slovakia and Hungary, the aforementioned "scatter of points" is even greater. In the case of these two countries, the points are no longer as clearly arranged around the regression line as in the case of the Polish data. This suggests that other statistically significant pairs of canonical variables explain the connections between the adopted sets of variables. However, as mentioned above, only the first statistically significant canonical variables were subjected to in-depth analysis.

5. Discussion and Conclusions

Consumers are increasingly seeking trustworthy, sustainably produced, and environmentally friendly products as the European organic market accelerates its development. The growing purchasing power of consumers from Visegrad Group countries and knowledge of consumption mean that consumers are gradually demanding safer and healthier products. This has been influenced to some extent by the COVID-19 pandemic [34,67–69]. The conscious consumer is increasingly turning their attention to organic products, also applying the principle of "Buy less but more quality products", a phenomenon Ghufran et al. [67] called "consumer migration" (from conventional products toward organic products).

The main goal of this paper was to determine the multidimensional relationships between purchasing determinants and purchasing organic food. The results presented in the paper show that the key factor in purchasing organic food is its high quality and safe production without adding agricultural chemicals. The results obtained among consumers in V4 countries are supported by the results obtained among researchers in other countries, such as the United States [70], Italy [4], the Netherlands [71], and India [72].

The results regarding the significance of the influence of famous people, bloggers, and celebrities showed a contradiction with the research conducted by Quesada Baena et al. [73] in Austria, where the market for organic products is mature. Austrian researchers focused on a sample of very young consumers who have not yet entered the labor market and have limited income. However, research conducted by Amudha and Thaiyalnayaki [74] confirmed the results obtained by the authors. Chetioui et al. [75], approaching the phenomenon globally, even emphasize the importance of promoting organic products by celebrities and bloggers with followers. They emphasize that companies involved in the trade of organic products must choose skillfully talented celebrities because they see the future in the power of this medium.

The results within the V4 group of countries are varied. In Poland, credibility (DPD22) was an important feature of organic products when buying fruit. Murphy et al. [76] also emphasize the importance of this feature in consumers' choices in European countries such as Germany, Italy, Poland, and the U.K. This selection of countries in the study resulted from reporting cases of pseudo-organic food. In Czechia, fashion was important for choosing organic sweets, snacks, and dried fruit (DPD15), which is consistent with the results obtained by Song et al. [77]. For Slovaks and Danes [78], taste values (DPD17) played a significant role when buying cold cuts. For Hungarians, the lack of agricultural chemicals and additives (DPD25) was the most important factor when choosing organic vegetables. Consumers in Italy expressed a similar opinion [79], a country that prides itself on the quality level of its organic products; in addition, the Italian organic food market ranks seventh in the world [1].

5.1. Practical and Scientific Implications

The results contribute to knowledge of what values are important for consumers of historically and culturally related countries. Although they have much in common, consumption habits are different, as evidenced by the above-mentioned results. Marketing companies and advertising agencies can use the results to create appropriate advertising blocks for consumers in each country studied. The gap in the influence of only some values on purchasing decisions may indicate deficiencies in education. Institutions responsible for education and social campaigns should expand educational programs on organic products among young people because generations Z and Alpha will soon enter the labor market and decide what they buy and what companies/farmers should produce.

5.2. Future Research

The analyses carried out show that with the knowledge of the adopted set of variables, it is possible to explain from less than 13% (in Hungary) to about 29% (in Poland) of the variance of variables from the set describing the frequency of purchasing individual groups of organic products. In the case of Poland, we can speak of a relatively strong connection between the adopted sets of variables. On the other hand, the frequency of purchasing organic food in the different countries of the Visegrad Group is determined by conditions other than those included in the study, which causes dissatisfaction and is an excellent incentive to conduct further research. The continuation and extension of research with other factors are also supported by environmental changes, such as the policy of shortening the supply chains of organic food, issues around traceability (certification systems), outdoor advertising, and educational programs. The discussed topic deserves further research to determine what guides the consumer when choosing food products, especially considering the complexity of the current economic and political situation of the world.

5.3. Limitations

The analyses carried out show that with the knowledge of the adopted set of variables, it is possible to explain from less than 13% (in Hungary) to about 29% (in Poland) of the variance of variables from the set describing the frequency of purchasing individual groups of organic products. In the case of Poland, this proves a relatively strong connection between the adopted sets of variables. However, the frequency of buying organic food in the different countries of the Visegrad Group is determined by conditions other than those included in the study.

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Data Availability Statement: The data presented in this study are available on request from the corresponding author.

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References

1. Willer, H.; Trávníček, J.; Schlatter, B. The World of Organic Agriculture Statistics and Emerging Trends 2024. FiBL. Available online: https://orgprints.org/id/eprint/52272/1/1747-organic-world-2024_light.pdf (accessed on 15 October 2024).
2. Reganold, J.P.; Wachter, J.M. Organic agriculture in the twenty-first century. *Nat. Plants* **2016**, *2*, 15221. [CrossRef]
3. Peng, M. The growing market of organic foods: Impact on the US and global economy. In *Safety and Practice for Organic Food*; Academic Press: Cambridge, MA, USA, 2019; Volume 2, pp. 3–22.
4. Rizzo, G.; Borrello, M.; DaraGuccione, G.; Schifani, G.; Cembalo, L. Organic food consumption: The relevance of the health attribute. *Sustainability* **2020**, *12*, 595. [CrossRef]
5. Kushwah, S.; Dhir, A.; Sagar, M.; Gupta, B. Determinants of organic food consumption. A systematic literature review on motives and barriers. *Appetite* **2019**, *143*, 104402. [CrossRef] [PubMed]
6. Wijekoon, R.; Sabri, M.F. Determinants that influence green product purchase intention and behavior: A literature review and guiding framework. *Sustainability* **2021**, *13*, 6219. [CrossRef]
7. Vigar, V.; Myers, S.; Oliver, C.; Arellano, J.; Robinson, S.; Leifert, C. A systematic review of organic versus conventional food consumption: Is there a measurable benefit on human health? *Nutrients* **2019**, *12*, 7. [CrossRef]
8. Ditlevsen, K.; Sandøe, P.; Lassen, J. Healthy food is nutritious, but organic food is healthy because it is pure: The negotiation of healthy food choices by Danish consumers of organic food. *Food Qual. Prefer.* **2019**, *71*, 46–53. [CrossRef]
9. Gundala, R.R.; Singh, A. What motivates consumers to buy organic foods? Results of an empirical study in the United States. *PLoS ONE* **2021**, *16*, e0257288. [CrossRef] [PubMed]
10. Lang, M.; Rodrigues, A.C. A comparison of organic-certified versus non-certified natural foods: Perceptions and motives and their influence on purchase behaviors. *Appetite* **2022**, *168*, 105698. [CrossRef]
11. Gazdecki, M.; Goryńska-Goldmann, E.; Kiss, M.; Szakály, Z. Segmentation of Food Consumers Based on Their Sustainable Attitude. *Energies* **2021**, *14*, 3179. [CrossRef]
12. Smoluk-Sikorska, J.; Wojciechowska-Solis, J.; Śmiglak-Krajewska, M.; Malinowski, M. *Rozwój Rynku Żywności Ekologicznej a Zachowania Konsumentów*; Wydawnictwo Naukowe Scholar: Warszawa, Poland, 2024.
13. Nagy-Pércsi, K.; Fogarassy, C. Important influencing and decision factors in organic food purchasing in Hungary. *Sustainability* **2019**, *11*, 6075. [CrossRef]
14. Roh, T.; Seok, J.; Kim, Y. Unveiling ways to reach organic purchase: Green perceived value, perceived knowledge, attitude, subjective norm, and trust. *J. Retail. Consum. Serv.* **2022**, *67*, 102988. [CrossRef]
15. Bryła, P. Organic food consumption in Poland: Motives and barriers. *Appetite* **2016**, *105*, 737–746. [CrossRef]
16. Aschemann-Witzel, J.; Zielke, S. Can't buy me green? A review of consumer perceptions of and behavior toward the price of organic food. *J. Consum. Aff.* **2017**, *51*, 211–251. [CrossRef]
17. Li, S.; Kallas, Z. Meta-analysis of consumers' willingness to pay for sustainable food products. *Appetite* **2021**, *163*, 105239. [CrossRef]
18. Wojciechowska-Solis, J.; Śmiglak-Krajewska, M. Being a product consumer during the COVID-19 pandemic: Profile of the Polish consumer in the organic dairy market. *Br. Food J.* **2023**, *125*, 2350–2367. [CrossRef]
19. Sriwaranun, Y.; Gan, C.; Lee, M.; Cohen, D.A. Consumers' willingness to pay for organic products in Thailand. *Int. J. Soc. Econ.* **2015**, *42*, 480–510. [CrossRef]
20. Bernabéu, R.; Brugarolas, M.; Martínez-Carrasco, L.; Nieto-Villegas, R.; Rabadán, A. The price of organic foods as a limiting factor of the European green deal: The case of tomatoes in Spain. *Sustainability* **2023**, *15*, 3238. [CrossRef]
21. Yiridoe, E.K.; Bonti-Ankomah, S.; Martin, R.C. Comparison of consumer perceptions and preference toward organic versus conventionally produced foods: A review and update of the literature. *Renew. Agric. Food Syst.* **2005**, *20*, 193–205. [CrossRef]
22. Pilarczyk, B.; Nestorowicz, R. *Marketing Ekologicznych Produktów Żywnościowych*; Oficyna a Wolters Kluwer Business: Baltimore, MD, USA, 2010.
23. Shafie, F.A.; Rennie, D. Consumer perceptions towards organic food. *Procedia-Soc. Behav. Sci.* **2012**, *49*, 360–367. [CrossRef]
24. Durham, T.C.; Mizik, T. Comparative economics of conventional, organic, and alternative agricultural production systems. *Economies* **2021**, *9*, 64. [CrossRef]
25. Giampieri, F.; Mazzoni, L.; Cianciosi, D.; Alvarez-Suarez, J.M.; Regolo, L.; Sánchez-González, C.; Battino, M. Organic vs conventional plant-based foods: A review. *Food Chem.* **2022**, *383*, 132352. [CrossRef]
26. Smoluk-Sikorska, J.; Śmiglak-Krajewska, M.; Rojík, S.; Fulnečková, P.R. Prices of organic food—The gap between willingness to pay and price premiums in the organic food market in Poland. *Agriculture* **2024**, *14*, 17. [CrossRef]
27. Padel, S.; Foster, C. Exploring the Gap between Attitudes and Behavior: Understanding why Consumers Buy or Do Not Buy Organic Food. *Br. Food J.* **2005**, *107*, 606–625. [CrossRef]
28. Kaur, J.; Lavuri, R.; Thaichon, P.; Martin, B. Purchase intention of organic foods: Are lifestyles of health and sustainability the reason for my purchase decision? *Asia Pac. J. Mark. Logist.* **2023**, *35*, 1532–1551. [CrossRef]

29. Wojciechowska-Solis, J.; Smoluk-Sikorska, J.; Śmiglak-Krajewska, M.; Malinowski, M.; Krnáčová, P.; Jarossová, M.; Kis, G.G.; Zámková, M.; Rojík, S. *Consumer in the Organic Food Market. Example of the Visegrad Countries*; CeDeWu: Warsaw, Poland, 2024.
30. Blancaneaux, R. Seasonality as value (s) in organic farming: On the conflict on heating greenhouses in France. *Int. Sociol.* **2022**, *37*, 740–757. [CrossRef]
31. Melovic, B.; Cirovic, D.; Dudic, B.; Vulic, T.B.; Gregus, M. The analysis of marketing factors influencing consumers' preferences and acceptance of organic food products—Recommendations for the optimization of the offer in a developing market. *Foods* **2020**, *9*, 259. [CrossRef] [PubMed]
32. Hansmann, R.; Baur, I.; Binder, C.R. Increasing organic food consumption: An integrating model of drivers and barriers. *J. Clean. Prod.* **2020**, *275*, 123058. [CrossRef]
33. Prache, S.; Lebret, B.; Baéza, E.; Martin, B.; Gautron, J.; Feidt, C.; Médale, F.; Corraze, G.; Raulet, M.; Lefèvre, F.; et al. Quality and authentication of organic animal products in Europe. *Animal* **2022**, *16*, 100405. [CrossRef]
34. Śmiglak-Krajewska, M.; Wojciechowska-Solis, J. Consumer versus organic products in the COVID-19 pandemic: Opportunities and barriers to market development. *Energies* **2021**, *14*, 5566. [CrossRef]
35. Tandon, A.; Dhir, A.; Kaur, P.; Kushwah, S.; Salo, J. Behavioral reasoning perspectives on organic food purchase. *Appetite* **2020**, *154*, 104786. [CrossRef]
36. Vermeulen, S.J.; Park, T.; Khoury, C.K.; Béné, C. Changing diets and the transformation of the global food system. *Ann. N. Y. Acad. Sci.* **2020**, *1478*, 3–17. [CrossRef]
37. Rana, J.; Paul, J. Consumer behavior and purchase intention for organic food: A review and research agenda. *J. Retail. Consum. Serv.* **2017**, *38*, 157–165. [CrossRef]
38. Nuttavuthisit, K.; Thøgersen, J. The importance of consumer trust for the emergence of a market for green products: The case of organic food. *J. Bus. Ethics* **2017**, *140*, 323–337. [CrossRef]
39. Eyinade, G.A.; Mushunje, A.; Yusuf, S.F.G. The willingness to consume organic food: A review. *Food Agric. Immunol.* **2021**, *32*, 78–104. [CrossRef]
40. Canova, L.; Bobbio, A.; Manganelli, A.M. Buying organic food products: The role of trust in the theory of planned behavior. *Front. Psychol.* **2020**, *11*, 575820. [CrossRef]
41. Dangi, N.; Gupta, S.K.; Narula, S.A. Consumer buying behaviour and purchase intention of organic food: A conceptual framework. *Manag. Environ. Qual. Int. J.* **2020**, *31*, 1515–1530. [CrossRef]
42. Sultan, P.; Wong, H.Y.; Azam, M.S. How perceived communication source and food value stimulate purchase intention of organic food: An examination of the stimulus-organism-response (SOR) model. *J. Clean. Prod.* **2021**, *312*, 127807. [CrossRef]
43. Sharma, K.; Aswal, C.; Paul, J. Factors affecting green purchase behavior: A systematic literature review. *Bus. Strategy Environ.* **2023**, *32*, 2078–2092. [CrossRef]
44. Smoluk-Sikorska, J.; Malinowski, M. An attempt to apply canonical analysis to investigate the dependencies between the level of organic farming development in Poland and the chosen environmental determinants. *Energies* **2021**, *14*, 8390. [CrossRef]
45. Gamage, A.; Gangahagedara, R.; Gamage, J.; Jayasinghe, N.; Kodikara, N.; Suraweera, P.; Merah, O. Role of organic farming for achieving sustainability in agriculture. *Farming Syst.* **2023**, *1*, 100005. [CrossRef]
46. Testa, F.; Pretner, G.; Iovino, R.; Bianchi, G.; Tessitore, S.; Iraldo, F. Drivers to green consumption: A systematic review. *Environ. Dev. Sustain.* **2021**, *23*, 4826–4880. [CrossRef]
47. Henchion, M.; Moloney, A.P.; Hyland, J.; Zimmermann, J.; McCarthy, S. Trends for meat, milk and egg consumption for the next decades and the role played by livestock systems in the global production of proteins. *Animal* **2021**, *15*, 100287. [CrossRef]
48. Alae-Carew, C.; Green, R.; Stewart, C.; Cook, B.; Dangour, A.D.; Scheelbeek, P.F. The role of plant-based alternative foods in sustainable and healthy food systems: Consumption trends in the UK. *Sci. Total Environ.* **2022**, *807*, 151041. [CrossRef]
49. Nekmahmud, M.; Fekete-Farkas, M. Why not green marketing? Determinates of consumers' intention to green purchase decision in a new developing nation. *Sustainability* **2020**, *12*, 7880. [CrossRef]
50. Sun, J.; Sarfraz, M.; Ozturk, I. Eco-consciousness to eco-consumption: Unraveling the drivers of sustainable consumption behavior under the mediated-moderated Model. *Environ. Sci. Pollut. Res.* **2024**, *31*, 35018–35037. [CrossRef]
51. Chen, S.; Qiu, H.; Xiao, H.; He, W.; Mou, J.; Siponen, M. Consumption behavior of eco-friendly products and applications of ICT innovation. *J. Clean. Prod.* **2021**, *287*, 125436. [CrossRef]
52. Regulation (EU) 2018/848 of the European Parliament and of the Council of 30 May 2018 on Organic Production and Labelling of Organic Products and Repealing Council Regulation (EC) No 834/2007, PE/62/2017/REV/1, OJ L 150, 14.6.2018, p. 1–92. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32018R0848&fbclid=IwY2xjawH09zdleHRuA2FlbQIxMAABHa1JawDl3qGq0rbQbQh_pIL-ZdoKJPvSoCj0iaJq_KrBvWTD3plsFBHqgg_aem_cJPTabdu_-WCQukxsZ__cA (accessed on 22 October 2024).
53. Aims of the Organic Logo. Available online: https://agriculture.ec.europa.eu/farming/organic-farming/organic-logo_en (accessed on 20 October 2024).

54. Nanjundeswaraswamy, T.S.; Divakar, S. Determination of Sample Size and Sampling Methods in Applied Research. *Proc. Eng. Sci.* **2021**, *3*, 25–32. [CrossRef]
55. Database. Eurostat. Available online: https://ec.europa.eu/eurostat/data/database (accessed on 10 September 2024).
56. Timm, N.H. *Applied Multivariate Analysis*; Springer Texts in Statistics; Springer: New York, NY, USA, 2002.
57. Hardoon, D.R.; Szedmak, S.; Shawe-Taylor, J. Canonical Correlation Analysis. In *An Overview with Application to Learning Methods*; University of London: London, UK, 2003.
58. Legendre, P.; Legendre, L. *Developments in Environmental Modelling*; Elsevier: Amsterdam, The Netherlands, 2012.
59. Abdi, H.; Guillemot, V.; Eslami, A.; Beaton, D. Canonical Correlation Analysis. In *Encyclopedia of Social Network Analysis and Mining*; Alhajj, R., Rokne, J., Eds.; Springer: New York, NY, USA, 2018.
60. Cliff, O.M.; Novelli, L.; Fulcher, B.D.; Shine, J.M.; Lizier, J.T. Assessing the Significance of Directed and Multivariate Measures of Linear Dependence Between Time Series. *Phys. Rev. Res.* **2021**, *3*, 013145. [CrossRef]
61. Leys, C.; Ley, C.; Klein, O.; Bernard, P.; Licata, L. Detecting outliers: Do not use standard deviation around the mean, use absolute deviation around the median. *J. Exp. Soc. Psychol.* **2013**, *49*, 764–766. [CrossRef]
62. Box, G.E.P.; Cox, D.R. An analysis of transformations. *J. R. Stat. Soc. Ser. B* **1964**, *26*, 211–252. [CrossRef]
63. Olech, E.; Kuboń, M. Motywy wyboru produktów ekologicznych przez konsumentów segmentu demograficznego z terenu Małopolski. *Roczniki* **2015**, *1*, 164–169.
64. Kucińska, K.; Golba, J.; Pelc, I. The role of education and extension services for organic and conventional farming in the region of Podkarpacie, Poland. *Agron. Res.* **2009**, *7*, 625–631.
65. Katt, F.; Meixner, O. A systematic review of drivers influencing consumer willingness to pay for organic food. *Trends Food Sci. Technol.* **2020**, *100*, 374–388. [CrossRef]
66. Panek, T.; Zwierzchowski, J. *Statistical Methods for Multidimensional Benchmarking: Theory and Use Cases*; SGH Publishing House: Warsaw, Poland, 2013.
67. Ghufran, M.; Ali, S.; Ariyesti, F.R.; Nawaz, M.A.; Aldieri, L.; Xiaobao, P. Impact of COVID-19 to customer switching intention in the food segments: The push, pull and mooring effects in consumer migration toward organic food. *Food Qual. Prefer.* **2022**, *99*, 104561. [CrossRef]
68. Benedek, Z.; Baráth, L.; Fertő, I.; Merino-Gaibor, E.; Molnár, A.; Orbán, É.; Nemes, G. Survival strategies of producers involved in short food supply chains following the outbreak of COVID-19 pandemic: A Hungarian case study. *Sociol. Rural.* **2022**, *62*, 68. [CrossRef] [PubMed]
69. Jarossová, M.A.; Ševčíková, R.; Chomová, K. The Slovak Organic Food Market: Development of Organic Agricultural Area, Organic Agricultural Production and Sales of Packaged Organic Food. In *Data-Centric Business and Applications: Advancements in Information and Knowledge Management*; Springer Nature Switzerland: Cham, Switzerland, 2024; Volume 2, pp. 351–370.
70. Bhavsar, H.; Tegegne, F.; Baryeh, K.; Illukpitiya, P. Attitudes and willingness to pay more for organic foods by Tennessee consumers. *J. Agric. Sci.* **2018**, *10*, 33. [CrossRef]
71. van Hilten, M.; Ongena, G.; Ravesteijn, P. Blockchain for organic food traceability: Case studies on drivers and challenges. *Front. Blockchain* **2020**, *3*, 567175. [CrossRef]
72. Singh, S.; Alok, S. Drivers of repurchase intention of organic food in India: Role of perceived consumer social responsibility, price, value, and quality. *J. Int. Food Agribus. Mark.* **2022**, *34*, 246–268. [CrossRef]
73. QuesadaBaena, L.; Binder, A.; Neureiter, A.; Saumer, M.; Matthes, J. "Do you practice what you preach?" The effects of celebrities' pro-environmental messages on social media on young adults' pro-environmental behavior. *Young Consum.* **2024**, *26*, 22–37. [CrossRef]
74. Amudha, M.K.; Thaiyalnayaki, M. Consumer Involvement and Purchase Pattern of Organic Food Products in Chennai City. *Educ. Adm. Theory Pract.* **2024**, *30*, 687–694. [CrossRef]
75. Chetioui, Y.; Butt, I.; Fathani, A.; Lebdaoui, H. Organic food and Instagram health and wellbeing influencers: An emerging country's perspective with gender as a moderator. *Br. Food J.* **2023**, *125*, 1181–1205. [CrossRef]
76. Murphy, B.; Martini, M.; Fedi, A.; Loera, B.L.; Elliott, C.T.; Dean, M. Consumer trust in organic food and organic certifications in four European countries. *Food Control* **2022**, *133*, 108484. [CrossRef]
77. Song, C.; Zheng, L.; Shan, X. Analysis of public opinions regarding Internet-famous food: A 2016–2019 case study on Dianping. *Br. Food J.* **2022**, *124*, 4462–4476. [CrossRef]
78. Ditlevsen, K.; Denver, S.; Christensen, T.; Lassen, J. A taste for locally produced food-Values, opinions and sociodemographic differences among 'organic and 'conventional ' consumers. *Appetite* **2020**, *147*, 104544. [CrossRef]
79. Sinesio, F.; Saba, A.; Moneta, E.; Peparaio, M.; Saggia Civitelli, E.; Paoletti, F. Information on the processing of organic food: Consumers' perception. *Br. Food J.* **2023**, *125*, 4552–4572. [CrossRef]