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Source / Izvornik: **World, 2024, 5, 1248 - 1266**

Journal article, Published version
Rad u časopisu, Objavljena verzija rada (izdavačev PDF)

https://doi.org/10.3390/world5040064

Permanent link / Trajna poveznica: https://urn.nsk.hr/urn:nbn:hr:277:405527

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Evaluating Consumer Preferences for Sustainable Products: A Comparative Study Across Five Countries

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Abstract: In times of global natural changes, environmental pollution, and the harmful impacts of certain products, it is essential to observe consumer behavior regarding preferences for products with sustainable characteristics. This paper evaluates the process of making decisions about the purchase of sustainable products using the Analytical Hierarchy Process (AHP), as the most common method of multi-criteria decision-making. The aim of the research is to define the influences that change consumer behavior regarding the purchase of sustainable products. The study was conducted on a sample of 880 respondents in Croatia, Spain, Moldova, Turkey, and Ukraine. The results showed that the quality and composition of products, their origin in bioproduction, and their status as local or healthy products are decisive for the purchase of sustainable products. It was also found that consumers in different countries vary; those in Croatia and Spain have similar criteria and priorities, while those in Moldova, Turkey, and Ukraine differ in certain aspects of their preferences.

Keywords: sustainable products; consumer behavior; green shopping habits; AHP method

Citation: Šostar, M.; Ristanović, V. Evaluating Consumer Preferences for Sustainable Products: A Comparative Study Across Five Countries. *World* **2024**, *5*, 1248–1266. https://doi.org/10.3390/world5040064

Academic Editor: Manfred Max Bergman

Received: 31 August 2024
Revised: 13 November 2024
Accepted: 22 November 2024
Published: 2 December 2024

1. Introduction

As the ecosystem is increasingly disrupted by human activities, it becomes essential to care for the environment, reduce harmful impacts, and ensure the well-being of future generations. Communication, education, and information dissemination, which are growing daily, raise awareness among citizens about the importance of sustainable products, organic food, environmental protection, and the sustainable aspects of production that make this world a better place to live. The prices of products, product quality, and other influential factors must be integrated with the concept of sustainability.

A study by Islam and Ali Khan [1] highlights the necessity of addressing environmental issues through consumer behavior and sustainable consumption. The extent to which consumers behave responsibly directly impacts the effectiveness of solutions to environmental issues. Impulsive buying and unplanned purchases play significant roles in generating large amounts of product waste, which is often disposed of inadequately. It is also within the discretion of companies that produce products to focus on the environmental features that matter most to customers rather than those with the strongest environmental impact [2]. Companies and other stakeholders have an obligation to communicate adequately with consumers. Digital platforms, with an emphasis on social media, are crucial for nurturing responsible behavior in individuals [3]. The topic of green products must be communicated, especially by companies seeking to strengthen their market image, while authorities are obliged to support and promote the culture of green products [4]. Nonverbal communication is also an important factor, one in which the relationship with the customer created by the seller through sustainable product dress significantly encourages a change in individuals' attitudes [5]. Authors Butar et al. [6] emphasize that research on green products and green awareness is mainly centered on three main areas: (1) consumption,

green consumption, and manufacturers; (2) green purchase behavior, green purchasing, and environmental knowledge; and (3) policymakers, the Theory of Planned Behavior (TPB), and perception.

The research objectives of this study are related to examining the relevant motives and factors and analyzing the impacts of these factors on consumers' behavior when purchasing sustainable products. Through the research, the priorities of customers when buying these products are determined, and the behaviors of consumers from five countries (Croatia, Moldova, Spain, Turkey, and Ukraine) are compared in order to identify differences and similarities in behaviors and criteria that are decisive for purchasing sustainable products. The idea was to include as many EU countries and potential candidates as possible. Surveys were sent to people in Scandinavian countries and the countries of the Western Balkans and Central Europe. Despite the twice-extended deadline for submitting the survey results, only the potential respondents in these five countries have fully fulfilled the task. This study aims to understand consumer behavior when purchasing sustainable products. Addressing these challenges will provide deeper insights into consumer preferences and behavior, which can help manufacturers, retailers, and policymakers develop more effective strategies for promoting sustainable products and supporting sustainable development.

Methodologically, extensive detailed research was conducted. The implementation of the survey questionnaire was carried out using the Analytical Hierarchical Process (AHP method). This is a general theory of measurement. Consumer buying behavior is very often evaluated by using different multi-criteria decision-making methods (MCDM). These have proven to be excellent for evaluating decision-making. The most widespread is the AHP method. The creator of the AHP method is Saaty (1987). The hierarchical structure enables simple application, as it can be adapted to different research schemes. In its general form, AHP is a nonlinear framework for performing inference by considering several factors simultaneously and making numerical trade-offs to arrive at a synthesis and conclusion. This method has shown its widest application in multi-criteria decision-making, planning and distribution of resources, and conflict resolution [7]. Salem [8] uses this method to make group decisions within companies. In evaluating numerous decisions within a company, the AHP proved to be an excellent help and a useful tool in everyday business [9,10]. It was used to analyze the impacts of various factors on customer behavior during the COVID pandemic [11,12]. Ristanović et al. [13] use it in the analysis of distribution channels of agricultural products of small farms in Eastern European countries (Moldova, Romania, and Serbia). As in previous experiences, in this research, the AHP method was used to assess consumer purchasing behavior with respect to sustainable products. Data from a sample of 880 surveys were used. Our goal was to examine which motives and factors are key for the consumer when purchasing this type of product.

2. Literature Review

2.1. The Impact of Income on the Purchase of Sustainable Products

Analyzing demographic variables and consumer behaviors, differences are indeed visible. Namely, the results of a study conducted by Baviskar et al. [14] show that environmentally conscious consumers prefer sustainable products, yet consumers often choose non-recyclable plastic. When considering differences between men and women, research by Šálková et al. [15] and Cam [16] indicate that women are more aware of the importance of health and more likely to support sustainable food, compared to conventional food. On the other hand, young people are hedonists driven by taste and aesthetics and do not pay much attention to environmentally friendly product attributes, while older respondents are economical and pragmatic buyers for whom energy efficiency and product durability are of particular importance [17].

People with higher financial means are more open to accepting environmentally friendly and sustainable products, despite their typically higher prices compared to conventional products [18]. The findings of Nath and Agrawal [19] show that obstacles such as low willingness to pay, low functional efficiency, limited availability of sustainable

products, and difficulties in integrating these products into regular shopping routines significantly and negatively affect the intention to purchase sustainable products. Yadav's analysis [20] reveals that accessibility, brand, and quality are key factors in determining demand for environmentally friendly products, along with additional variables like price, accessibility, and product knowledge. However, not all consumers are aware of the purpose of environmentally friendly products, due to their high cost, making them less accessible, though the upper class tends to gravitate towards them, assuming that these products offer quality, despite differing perceptions. It is evident that individuals' incomes changed during the COVID-19 pandemic, during which the purchasing levels of certain products increased while those of others decreased. The pandemic significantly influenced changes in consumer thinking and behavior, regarding both general goods and environmentally friendly ones. During the COVID-19 pandemic, the internet became the primary medium of commerce, and people panic-bought products out of fear of shortages, likely without considering environmentally friendly products [12]. It often happens that past consumer behavior determines planned future behavior, which also impacts the emergence of sustainable products and the intention to purchase them [21]. Research on consumer behavior in the context of encouraging the purchase of environmentally friendly products reveals that such encouragement has the greatest impact when communication uses psychological factors such as social influence, habit formation, self-individuality, feelings and cognition, and tangibility [22]. Marketing experts need to balance their efforts through the stages of motivation, adoption, and maintenance comprising the sustainable consumer journey, considering cognitive, emotional, and behavioral factors. Focusing on building trust, satisfaction, and relationships with consumers is crucial for the long-term maintenance of sustainable consumer behavior [23]. Research [24] reveals that green consumption values and attitudes towards sustainable food logistics significantly influence green purchasing intentions and environmentally conscious behavior, introducing new multidimensional constructs for measuring the attitudes of green consumers, helping managers and researchers understand the benefits and opportunities for companies in food production as to the adoption of sustainable logistics practices. In their study, [25] identifies that the key drivers of environmentally sustainable consumer behavior are green value, connection with nature, perceived efficacy, ecological social responsibility (CSR), expected pride and guilt, green image, pro-ecological behavior in daily life, ecological knowledge, attachment to green products, and descriptive social norms. Research by Khachatryan et al. [26] shows that urban consumers in Kazakhstan, Azerbaijan, and the Russian Federation are not sufficiently ready to adopt "green consumption," showing their greatest willingness is as to the purchase of products that do not harm human health. At the same time, the purchase of products, the disposal of which does not harm the environment, is the least attractive to consumers. Consumers who rely on social networks are more likely to purchase sustainable products, indicating that social media users are a relevant customer segment and an effective target for promoting sustainable products, as dependence on social networks positively influences perceived trust in information related to product sustainability [27]. Accordingly, targeted communication is key to changing consumer habits in the segment of sustainable products [28,29]. In their research, Zhang and Dong [30] highlight that the factors influencing green consumers can be categorized into three dimensions: individual factors, product attributes and marketing strategy, and social factors, with most relevant research focusing on individual factors. To prove the impact of personal income, the hypothesis "Countries with higher income levels spend more money on sustainable food products" is introduced.

2.2. The Importance of Product Quality for Consumers

Consumers highly value companies that emphasize their commitment to producing environmentally friendly products, while consumers with greater ecological knowledge are more likely to choose products with environmentally friendly characteristics [31,32]. The findings of Ghali-Zinoubi and Toukabri [33] show that customers in Tunisia intend

to purchase organic olive oil out of concern for health and environmental preservation and are willing to pay high prices for regional organic products to take advantage of their safety, traceability, and high quality. Four key packaging elements that influence purchase decisions are country of origin, product content label, graphics, and color [34]. Bryła [35] emphasizes that for most Polish consumers, the information about the country of origin on food packaging is important, with ethnocentrism being a key factor, and men and older consumers are more likely to consider it the most important attribute during their first product purchase. The findings of Hien et al. [36] and Shirvani et al. [37] show that the image of the country of origin positively influences brand image, brand evaluation, and purchase intention, with brand image and evaluation also positively influencing purchase intention. Additionally, brand image and evaluation mediate the relationship between country-of-origin image and purchase intention, leading to the discussed implications and proposed directions for future research. Research findings [38] indicate that the importance of the country of origin in product evaluation is not primarily driven by consumer ethnocentrism or animosity, except among frequent buyers, among whom higher levels of ethnocentrism or animosity are associated with increased importance of the country of origin in product evaluation. It is extremely important to observe ethnocentric tendencies in consumer behavior, especially when it comes to the origin of the food they consume [39]. The country of origin, brand perception, and social status significantly influence consumers' purchase intention, with brand perception and social status mediating the relationship between COO and purchase intention, sequentially [40]. A study by Wang et al. [41] finds that aligning stereotypes about the country of origin of the product with brand positioning increases purchase intention, especially when brands emphasize competence, while misalignment increases cognitive conflict, highlighting the importance of aligning brand and country image. Research on Chinese consumers [42] showed that product quality, online reviews, delivery speed, price, and brand reputation are more significant factors than country of origin when choosing products. Brand origin (BO) and country of manufacture (COM) affect different institutional perceptions: BO triggers perceptions of legitimacy and regulatory perceptions, while COM triggers normative and regulatory perceptions; their combination affects how institutional quality is communicated, influencing consumer perceptions of legitimacy, preferences, and willingness to pay a premium [43]. If the country of origin is mentioned before the product is tasted, the region of origin influences perceptions, expectations, and perceived quality [44]. Labels should meet consumer expectations, which presents a challenge for entrepreneurs and organizations in the food industry, requiring manufacturers and retailers to focus on effective communication with consumers when developing policies and strategies [45]. Research by Petrescu et al. [46] emphasizes the importance of product ingredients, nutritional values, and additives, with consumers in Belgium and Romania emphasizing that visible indicators of quality and health on product packaging play a significant role in their purchasing decisions. Florack et al. [47] highlight that emphasizing the positive aspects of a product's composition can significantly improve its acceptance by consumers. Research by Ikonen et al. [48] shows that highlighting product content on packaging helps consumers identify healthier products, while also limiting and reducing the purchase of products that negatively affect an individual's health. Certain studies [49] show that the longer consumers observe the composition of a product on the packaging, the more likely they are to purchase that product. The findings of Zhao et al. [50] indicate a statistically significant relationship between product price and packaging and the customer's decision-making process. Steiner and Florack [51] and Martinez et al. [52] emphasize that the color of product packaging is a key element in the decision-making process. Research by Naiek [53] and Omamuzo and Okeke [54] indicates that product packaging elements have a statistically significant impact on consumer purchase perception; however, the background element of the packaging does not have a statistically significant effect on purchase perception. Some studies [55] reveal that the material used for product packaging affects consumer behavior, showing that tin has the highest quality, followed by glass and plastic, with user satisfaction differing significantly between ergonomic attributes

and technical attributes. Consumers seek to determine the indicators of quality that a brand incorporates into its packaging, which can be communicated through key design elements such as color, shape, images, material, and practicality [56]. In line with the above, the hypothesis "Product quality is important to customers" is introduced.

2.3. Consumer Awareness of Sustainable Product Purchases

Brand image significantly influences consumer behavior, acting as an intermediary factor that affects the perception of product quality and the final purchase decision [57–59]. Trust is built through quality, which ultimately leads to customer loyalty [60]. Some studies [61] suggest that product quality does not have as significant an impact on consumers as the price of the product. According to research by Sari et al. [62], their findings show that product quality and brand image have a direct, positive, and significant effect on brand trust and purchase decisions; that brand trust alone has a direct, positive, and significant effect on purchase decisions; and that product quality and brand image positively and significantly affect purchase decisions through brand trust. A study by Firdaus [63] reveals that environmental awareness, ecological attitude, and willingness to pay positively and significantly influence the purchase of green products, while ecological knowledge does not significantly impact green purchases. Research by Ciobanu et al. [64] finds that there is a significant and positive relationship between environmental factors (such as pollution reduction and greenhouse gas reduction) and the decision to purchase organic products, but Romanian consumers are less willing to pay high prices for green products. Research by Alamsyah et al. [65] shows that customers consider green advertising important and that it can improve their environmental awareness. Studying student behavior, Ansu-Mensah [66] concludes that price and high quality are key factors in the decision to purchase green products. Research by Al-Kumaim et al. [67] suggests that various factors, including environmental concern, awareness of green products, government support, perceived environmental value, green community practices, and purchase intention, all influence consumers in Malaysia, encouraging them to buy green products. When it comes to purchasing smart homes and installing environmentally friendly equipment, environmental knowledge, tolerance for ambiguity, and compatibility positively influence consumers' intention to adopt smart homes [68]. Consumers believe that environmentally friendly products are now widely available, making them easier to purchase, and that their proliferation into all areas of our lives has caused a significant shift in business [69]. On the other hand, impulsive buying triggered by personalized advertising on social media can increase waste generation, highlighting the need for strategies that encourage more sustainable consumer decisions [70,71]. Impulse buying has significant post-purchase effects on consumers, society, and the environment, including emotional consequences, financial difficulties, and environmental issues, highlighting the need to promote more sustainable consumption and responsible business practices [72].

This study aims, on the one hand, to determine whether there has been an increase in consumer awareness as to purchasing sustainable products and whether this awareness is higher in certain countries. For this reason, two additional hypotheses are introduced: "There is an increased awareness of buying sustainable food" and "The residents of EU countries buy more sustainable food products".

3. Materials and Methods

3.1. Materials

In this research, an analysis of secondary existing data was conducted through a detailed review of the existing literature in the field of consumer behavior and consumer purchasing habits, with an emphasis on product sustainability and preferences related to green, ecological, healthy, and local themes. Based on theoretical analysis, the following research hypotheses were defined:

Hypothesis 1 (H1): *There is an increased awareness of buying sustainable food;*

Hypothesis 2 (H2): *The residents of EU countries buy more sustainable food products;*

Hypothesis 3 (H3): *Product quality is important to customers;*

Hypothesis 4 (H4): *Countries with higher income levels spend more money on sustainable food products.*

The research was conducted during 2024 in the form of a survey questionnaire, which was administered to a randomly selected sample of 880 respondents across five countries (Croatia, Spain, Moldova, Turkey, and Ukraine). The survey was conducted via social media using Google Forms. Social media provided access to a broad and diverse population, allowing the inclusion of respondents from various demographic groups and geographical locations, as well as of different socio-economic statuses. The approach of selecting respondents through a random sample was chosen because it ensures the representativeness of data, reducing bias and subjectivity in respondent selection, and thereby allowing the generalization of results to the broader population. It also enabled the application of statistical methods based on probability theory, which increases the reliability and validity of the research. To determine the sample size in the research, the method of sample size calculation was used, considering several key factors: population size, a 95% confidence level, the margin of error, and the expected variability within the population. The obtained results were statistically processed, and the AHP method was used in the continuation of the research and in testing the stated hypotheses (see Figure 1).

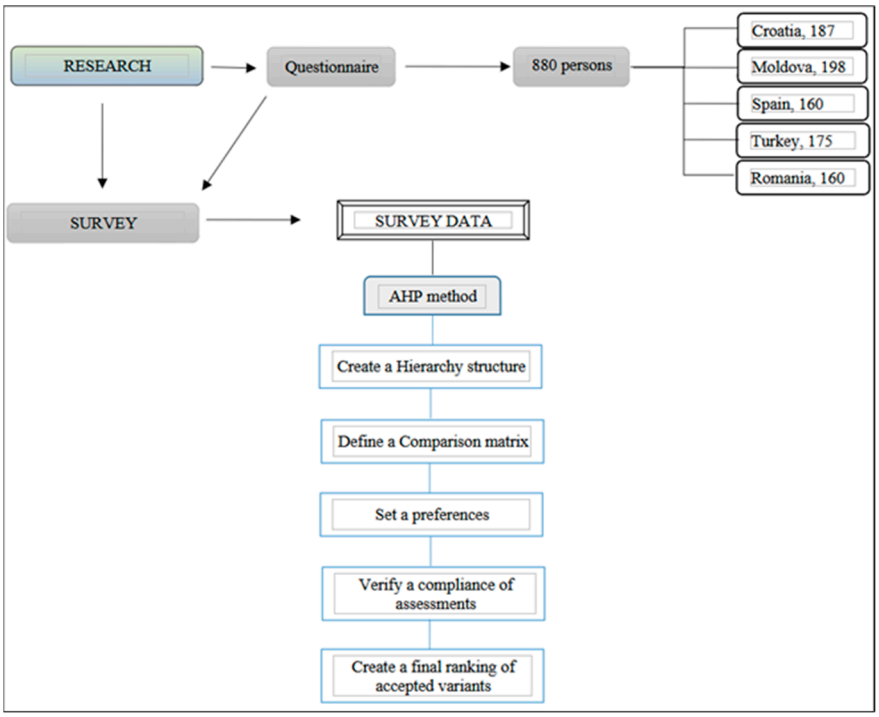

Figure 1. Survey implementation scheme and methodology.

Table 1 provides an interesting insight into the demographic characteristics of respondents from Croatia, Spain, Turkey, Ukraine, and Moldova. It is noticeable that in most countries, with the exception being Croatia, the number of women exceeds the number of men among respondents, indicating a significant representation of the female gender in the survey. Regarding marital status, most respondents are unmarried, an aspect which is particularly evident in Turkey and Moldova, while in Spain, the number of married and unmarried respondents is almost equal. Employment varies between countries, with Spain having the highest number of employed respondents, while Turkey and Moldova have

significantly higher numbers of unemployed respondents. When it comes to age, most respondents in Turkey and Moldova are under 30 years old, whereas in Croatia and Spain, the middle age group of 31 to 50 years prevails. Regarding monthly income, respondents from Croatia and Spain have significantly higher incomes compared to other countries, while Ukraine and Moldova have the highest proportion of respondents with incomes of up to EUR 300. These data provide a basis for further analysis of the socio-economic conditions and demographic characteristics in these countries.

Table 1. Responders' demographic characteristics.

Variables	Croatia	Spain	Turkey	Ukraine	Moldova	Total
Gender						
Men	85	56	20	26	87	274
Women	102	104	155	134	111	606
Marital Status						
Married	60	84	40	61	18	263
Unmarried	127	76	135	99	180	880
Employment Status						
Employed	80	148	50	92	114	484
Unemployed	107	12	125	68	84	396
Age						
Up to 30	67	24	135	88	177	491
31–50	90	64	40	54	21	269
51+	30	72	0	18	0	120
Monthly Income in EUR						
Up to 300	35	4	95	99	81	314
301–700	16	4	25	49	81	175
700+	136	152	55	12	36	391

3.2. Methods

Basically, the AHP is a measurement theory utilizing pairwise comparisons, and it relies on the judgments of experts to derive priority scales [9]. The implementation of the AHP method implies a hierarchical approach to problem solving. In other words, the principle of phased problem solving is respected—from defining the problem, criteria, and alternatives, through matrix analysis, pairwise comparison, and consistency assessment, to proposing possible solution options and choosing one of the options [73]. Descending along this hierarchy structure, we encounter various criteria, and ultimately, the decision alternatives at the base. By breaking down complex decisions into a series of pairwise comparisons, the AHP model provides a structured yet flexible approach to prioritizing competing factors. A clear goal hierarchy ensures that all subsequent comparisons are aligned with the ultimate objective. Saaty [7] emphasizes that paired comparisons are performed throughout the hierarchy, including on the alternatives in the lowest level of the hierarchy, with respect to the criteria in the level above. Such a model will allow us to evaluate criteria according to the importance of sustainability and product quality in consumer habits.

There are numerous advantages of the AHP method. First, a logical structure enables efficient decisions. Second, the decision-making process is accelerated. Also, the hierarchical structure is practical and suitable for adapting to any management problem. The method also manages to quantify the relationships between the objective, criteria, and alternatives. It offers solutions for various issues involving a wide range of indicators and

all relevant criteria. Finally, the AHP method helps in more efficient decision-making in ranking criteria by importance. In addition to the highlighted advantages, there is also a disadvantage of the model, which is the subjectivity of those who model. This could be a limitation as to making a business decision, especially if the assessment is performed by insufficiently experienced persons. However, the AHP method manages to solve this problem by transforming subjective judgments into objective measures by including more criteria in the decision-making process. The hierarchical structure of the AHP method is presented in Figure 2.

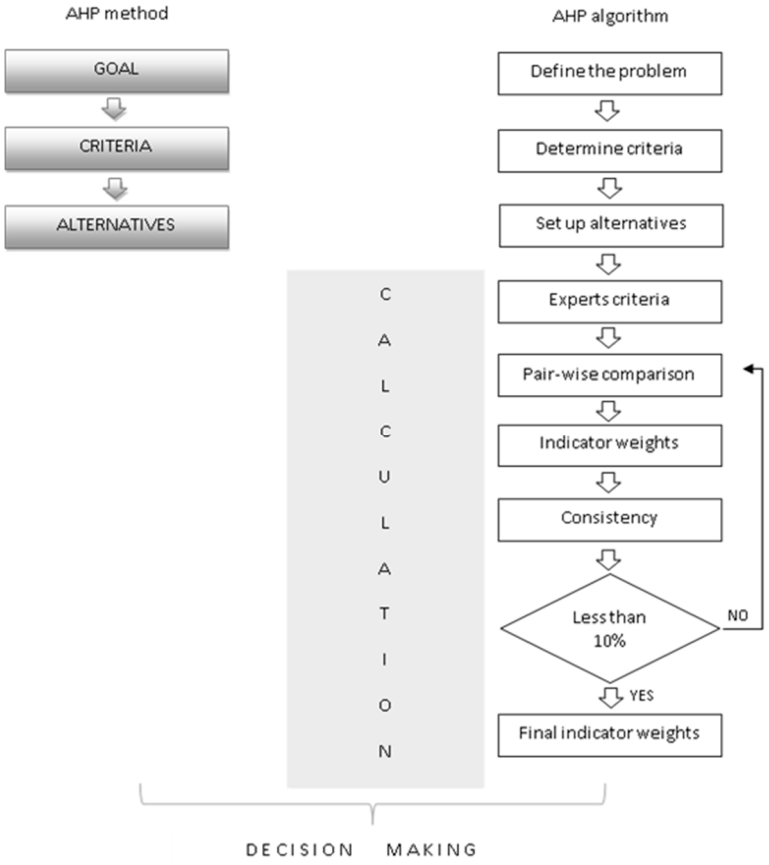

Figure 2. AHP hierarchy.

In this study, we have set up hypotheses to test whether all the factors influencing consumer behavior have an equal impact, or whether some of them dominate. For this purpose, four hypotheses were tested:

Hypothesis 1 (H1): *There is an increased awareness of buying sustainable food;*

Hypothesis 2 (H2): *The residents of EU countries buy more sustainable food products;*

Hypothesis 3 (H3): *Product quality is important to customers;*

Hypothesis 4 (H4): *Countries with higher income levels spend more money on sustainable food products.*

This approach can benefit decision-makers in several trade- or manufacturing-related sectors. It will also define consumer habits regarding sustainable products. It will be helpful for marketing departments in companies, assisting them to more easily adapt marketing strategies to consumer trends.

The model was prepared using the usual steps of AHP hierarchical structure, as performed by other authors [9–11,13,74]. The process begins with the construction of a hierarchy, establishing the goal at the apex, and with the structure cascading down through the various criteria that influence the decision and culminating in the possible choices (alternatives). Once the hierarchy is established, AHP employs pairwise comparisons to quantify the decision-makers' preferences. These comparisons generate a set of matrices, each representing the relative importance of certain criteria and alternatives. The intensity of preferences is expressed using Saaty's scale, typically ranging from 1 (equal importance) to 9 (extreme importance), encapsulating the nuanced judgments of the decision-makers (Table 2).

Table 2. Saaty's (1987) fundamental scale [7].

Intensity of Importance and Absolute Scale	Definition	Explanation
1	Equal importance	Two activities contribute equally to the objective
3	Moderate importance of one over another	Experience and judgment slightly favor one activity over another
5	Essential or strong importance	Experience and judgment strongly favor one activity over another
7	Very strong importance	An activity is strongly favored, and its dominance is demonstrated in practice
9	Extreme importance	The evidence favoring one activity over another is of the highest possible order of affirmation
2, 4, 6, 8	Intermediate values between two adjacent judgments	When compromise is needed
Reciprocity	If activity i has one of the above numbers assigned to it when compared with activity j, then j has the reciprocal value when compared with i	
Rationales	Ratios arising from the scale	If consistency were to be forced by obtaining n numerical values to span the matrix

Note: When the elements being compared are closer together than indicated by the scale, one can use the scale 1.1, 1.2. . . For a finer scale, one can use an appropriate even-finer refinement.

In terms of criteria, we make comparisons by using a number scale that shows how many times one element is more dominant than another. Each minor element has an inverse value in its relation to the majority. Then, in terms of alternatives, we carry out the same procedure, making pairwise comparisons, in relation to the characteristic of a specific criterion. The overall result for a given alternative is the weighted sum of the results obtained in relation to all criteria. Ranks are defined by size, i.e., from highest (1) to lowest (5) weight.

In Table 3, we show and explain how we determined the weight vectors for each criterion and alternative and, finally, the general weight vectors. Procedures for assigning weights via pairwise comparisons and standardized matrices are clearly explained. The equations used to calculate all weight vectors are also shown.

Once the matrix is populated, the priority weights are calculated, typically by using eigenvector techniques. This step is akin to distilling raw data into actionable insights, revealing the criteria that hold the most sway in the decision process.

The consistency of responses is calculated in two steps. First, the eigenvector or relative weightings and λmax are calculated for each matrix of order n (Equation (1)), and then the consistency index (CI) for each matrix of order n (Equation (2)). A value of the consistency ratio (CR in Equation (3)) below 10% is considered acceptable (Saaty, [7]).

$$Aw = \lambda_{max} w \tag{1}$$

$$CI = \frac{\lambda_{max} - n}{n - 1} \tag{2}$$

$$CR = \frac{CI}{RI} \quad (3)$$

where *RI* is a random index, the value of which is determined according to the number of criteria used in the analysis (Table 4).

Table 3. Assigning weights to criteria and alternatives.

Weight	Explanation	Result	Method	Equation
Criteria	The weights are calculated from the individual criteria based on the pairwise comparison	The standardized matrix of criteria	Pairwise comparison Standardized matrix	C1 = average (c11/Σc11 + . . . + c14/Σc14) . . . C8 = average (c81/Σc81 + . . . + c84/Σc84)
Alternatives	The weights are calculated from the individual alternative based on the pairwise comparison for each criterion	The standardized matrix of alternatives for each criterion	Pairwise comparison Standardized matrix	W1 = average (w11/Σw11 + . . . + w18/Σw18) . . . W5 = average (w51/Σw51 + . . . + w58/Σw58)
Criteria and Alternatives	The final weight vectors are obtained by adding the weighted product (alternative × criteria) within the observed criteria	The general matrix of alternatives and criteria	Pairwise comparison Standardized matrix Weighted product	A1 = sum (W1 × C1 + . . . + W5 × C1) . . . A5 = sum (W1 × C5 + . . . + W5 × C5)

Source: Authors' description.

Table 4. The value of the random index (RI) (Saaty, [7]).

n	1	2	3	4	5	6	7	8	9	10	11	12	13	14
RI	0	0	0.58	0.89	1.11	1.25	1.35	1.40	1.45	1.49	1.51	1.48	1.56	1.57

Saaty's methodology is underpinned by the consistency ratio (CR), a diagnostic tool used to ensure the reliability of the comparisons. A CR below the threshold of 0.1 indicates that the pairwise comparisons are consistent, reinforcing the robustness of the derived priorities. Should the CR exceed this threshold, it signals the need for a reassessment. The final step is synthesizing the priorities across the hierarchy, integrating the weighted criteria to rank the alternatives. The weighted sum of the alternatives' scores yields a composite score, guiding the final decision.

Analyzing the numerous works in the literature in the field of customer preferences for sustainable products and the selected literature described in the References section, we identified the criteria that were used the most; these were designated as the most important for the purchase decision. When choosing the criteria, our main motive was the specificity of the product. Namely, during the analysis, we noticed that the main characteristics of sustainable products were high prices, limited quantities, and inelastic demand. This is why we considered criteria that were uncommon among general products, but at the same time were sufficiently relevant, representative, and quantitatively measurable. The weighting procedure requires the selection of the most adequate criteria. For example, we noticed that the assessments of the quality and source of sustainable products go beyond the usual criteria: price or brand. That is why we rejected the last criterion of the three as crucial when deciding on sustainable products. Therefore, we considered it necessary to evaluate the relative importance of all criteria. The case is the same with alternatives showing measures for decision-makers or customers. Five of them are distinguished by their importance. Involving experts in the evaluation process also helped to create a whole

structure, as to both criteria and alternatives. Otherwise, the top of the structure is intended for the problem, that is, the objective of the assessment.

At the first level, the general goal of 'Customer Decisions' is set. The second level consists of eight criteria that contribute to the goal, while on the third level, five alternatives are evaluated according to the criteria from the previous level.

We have chosen the following criteria:

C1. Products from local farmers;
C2. Bio production;
C3. GMO product;
C4. Recyclable packaging;
C5. Consumer's wage level;
C6. The season;
C7. Product price;
C8. Certification.

Additionally, we have selected the following alternatives:

A1. Origin of the product;
A2. Health;
A3. Product composition;
A4. Buyer's responsibility;
A5. Product quality.

4. Results and Discussion

We conducted the decision analysis in two phases. First, we assessed priorities for the total sample of 880 respondents. In the second phase, using the same priority-evaluation procedure, we analyzed each country separately (Croatia, Moldova, Spain, Turkey, and Ukraine). The results confirm the hypotheses that there is an increased awareness of buying sustainable food (H1), that residents of EU countries buy more sustainable food products (H2), that product quality is important to customers (H3), and that countries with higher income levels spend more money on sustainable food products (H4).

First phase. The additive normalization method was applied to determine the priority vector for each criterion matrix in the AHP structure. According to the data (see Figure 3), food products produced using ecological or bio production (bio) have a dominant place in the consumer basket, and this criterion is the most important objective criterion. In second place is the certification criterion (ser); certification provides a confirmation that it is a quality product that meets the characteristics of a sustainable product. Products being purchased directly from local farmers (lf) is the third-ranking criterion. Other criteria are rated lower, but contribute to the overall score. For example, the awareness of the importance of a sustainable food product comes from the packaging (a) and the rural character of agricultural products (s), but also from the economic criteria of the prices of sustainable food products (p) and the purchasing power of individuals (w). The most valued criteria relate to GMO products (GMO). The low value reflects the reluctance to purchase such products, which contain modifications that may be harmful to the health of individuals. This matrix is correctly generated because the relationships are set correctly. The rating values are consistent, which is confirmed by a high real eigenvector ($\lambda max = 8.857$) and a consistency ratio of less than 10% (CR = 0.087).

The final priority vectors of the alternatives in relation to the criteria and in relation to the goal are shown in Figure 4. They are obtained by multiplying the priority vector of certain criteria (level 2) with the values of the priority vector of alternatives (level 3) in relation to the given criteria (from level 2).

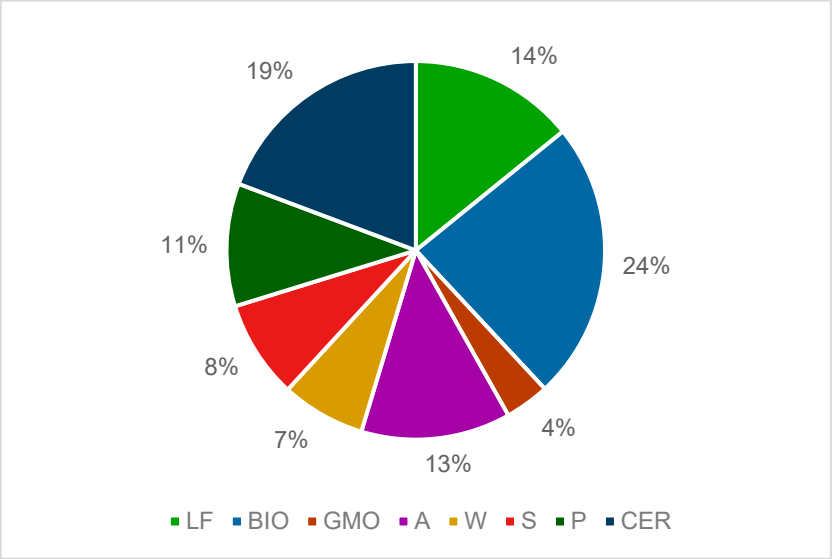

Figure 3. Priority vectors for the criteria in the standard AHP method. Note: LF—Products from local farmers, BIO—BIO production, GMO—GMO product, A—Recyclable packaging, W—Consumer's wage level, S—The season, P—Product price, CER—Certification.

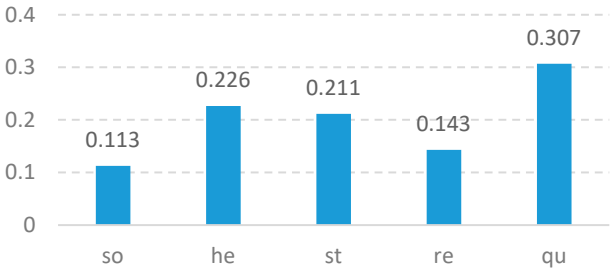

Figure 4. Final priority vectors in the standard AHP method. Note: so—Origin of the product, he—Health, st—Product composition, re—Buyer's responsibility, qu—Product quality.

The data undoubtedly show that the quality of the food product (qu) is a key factor of importance for the customer. Also, it is important that the determinations of customers are largely based on the question of how healthy (he) the products are for humans. Directly related to the previous two is the composition of the product (st), which is the third-most-important for the customer when purchasing sustainable agricultural products. Customer response (re) exists, but it is ranked lower, and the least important factor considers where the sustainable agricultural product comes from (so).

We begin the second phase of the analysis with general comments on consumer behavior, based on general questions from the questionnaire. Spaniards spend a maximum of 31–60 minutes a day shopping, while in the other four countries up to 30 minutes are spent. It is interesting that every fourth Croatian (28.34%) spends more than one hour per day shopping. Spaniards and Turks shop once a week (almost 50%) or several times a week (although not every day). Shopping several times a week is dominant in Ukraine (71.88%). Almost every fourth Croatian goes shopping every day. This might be attributed to the fact that their salaries/pensions are lower compared to Spaniards, so they postpone purchases, or that there is a greater availability of small shops, or that they have a habit of doing so. For the purchase of healthy products (sustainable, organic, green, etc.) the highest percentage category, up to EUR 100, is allocated in all countries, but Turkey (85.71%), Ukraine (71.88%), and Moldova (71.21%) dominate. It is logical that more money is allocated for these products in EU countries, with up to EUR 300 in Spain and over EUR 300 in Croatia.

The following table (Table 5) shows the final priority vectors, overall and by country. Most of the comments on the results obtained will be presented based on these vectors

and their ranks are determined from the table. For the interpretation of the results, we also use other tables (Statistical data available on request: pairwise comparison, standardized matrix, and CR and CI worksheets.), which are available to those interested upon request.

Table 5. Total weights ranking.

	All Countries		**Croatia**		**Moldova**		**Spain**		**Turkey**		**Ukraine**	
CRITERIA												
	Weight	Rank	Weight	Rank	Weight	Rank	Weight	Rank	Weight	Rank	Weight	Rank
C1	0.14	3	0.22	1	0.13	4	0.23	1	0.17	3	0.13	4
C2	0.24	1	0.15	3	0.18	2	0.16	3	0.18	2	0.23	1
C3	0.04	8	0.04	8	0.06	8	0.04	8	0.04	8	0.04	8
C4	0.13	4	0.13	4	0.07	7	0.12	4	0.13	4	0.16	3
C5	0.07	7	0.10	5	0.08	6	0.07	7	0.08	6	0.07	7
C6	0.08	6	0.09	6	0.15	3	0.10	5	0.06	7	0.09	5
C7	0.10	5	0.08	7	0.10	5	0.09	6	0.10	5	0.08	6
C8	0.19	2	0.20	2	0.24	1	0.19	2	0.24	1	0.20	2
ALTERNATIVES												
A1	0.11	5	0.31	1	0.09	5	0.28	1	0.15	4	0.14	5
A2	0.23	2	0.15	4	0.18	3	0.13	5	0.21	2	0.20	3
A3	0.21	3	0.18	3	0.22	2	0.26	2	0.29	1	0.29	1
A4	0.14	4	0.12	5	0.15	4	0.14	4	0.14	5	0.15	4
A5	0.31	1	0.24	2	0.36	1	0.19	3	0.21	3	0.23	2

Note: C1—Local farms, C2—Bio products, C3—GMO, C4—Packaging, C5—Earnings, C6—Season, C7—Price, C8—Certification, A1—Origin, A2—Health, A3—Composition, A4—Responsibility, A5—Quality.

The general impression is that we have two groups of countries. Two are members of the EU (Croatia and Spain), and the rest are Eastern European countries (Turkey, Moldova and Ukraine). A partially important role is played by culture and habits, as well as new approaches and the level of standardization of individual product groups. For Spaniards and Croatians, the most important thing is the origin of a sustainable food product. On the other hand, Ukrainians and Moldovans do not care if these products come from local supply chains or from local farmers or are imported products. The latter countries give greater importance to product sustainability. Ukrainians attach great importance to healthy products, while, for example, Spaniards and Croatians insist more that products be produced in an acceptable ecological and sustainable way. This could be explained by the single market—competition, standardization and regulations that apply in the EU. The structure of food products is particularly important for Spanish customers. Croatia is completely divided on this issue—while almost ¾ of customers avoid GMO products (more than Spaniards), for over 60% of them, nutritional information and product composition are not important. It is interesting that the environmental responsibility of customers (e.g., recycled packaging, plastic bags, and food waste) is completely different in two EU member states, although the same rules apply (it is the highest factor in Spain and the lowest in Croatia). On the other hand, buyers from Ukraine show the highest degree of responsibility compared to other countries. Quality is undoubtedly equally important for all customers. Additionally, priority in the use of seasonal products is dominated by the countries that have access to warm seas, due to the diversity of goods on offer—Spain, Croatia and Turkey, in that order.

The research problem, the assessment of consumer preferences when purchasing sustainable products, is well-posed, as indicated by similar research. At the same time, we can say that the hypotheses are adequately defined because they provide an answer to the

problem we investigated. We intuitively expected that the awareness of sustainable products had increased, that such products are of good quality, and that sustainable products are more dominant in richer countries (EU members). At the same time, the hypotheses guided us through the research and enabled us to evaluate the general regularities from statements about individual cases through inductive reasoning.

When we analyzed the results by country in more detail, we came to some very interesting but different observations. In Croatia, we observed that all four hypotheses were confirmed. In other words, the increased awareness of buying sustainable food is shown by the amount of money spent on everyday shopping, as well as the increase in the share of sustainable products in the basket, primarily due to the quality of these products. The results shown in Table 4 confirm this. Namely, the most important criteria for deciding on the purchase of sustainable products are the origin of food products (C1), that they are certified (C8), and that they come from sustainable production (C2). Among the alternative criteria, origin (A1) is dominant, followed by quality (A5) and product composition (A3). For Spain, we can make almost the same observations because the key criteria for this group are the local origin (C1), certification (C8), and origin from sustainable production (C2); as to the alternative criteria, origin (A1), product composition (A3), and quality (A5) predominate. It is completely clear that there is a high degree of overlap between these two countries and that this is a consequence of the fact that they are members of the EU, where consumer rules are regulated and there are incentives towards sustainability and a higher standard of living.

For the remaining three countries, all four hypotheses were not confirmed. The second and fourth hypotheses were rejected because the countries are in the status of candidates for EU membership and are classified in the group of low-income countries. The first and third hypotheses are confirmed, but there are differences. Buyers in Moldova insist on certification (C8), sustainable production (C2), and seasonality (C6) of food products when purchasing, and quality (A5), composition (A3), and health (A2) are crucial for them. For buyers in Turkey, when deciding to buy a sustainable food product, the criteria differ in their importance. It is very important for them that the products are certified (C8), but unlike the Moldovans, they highlight the origin (C1) and that the products come from sustainable production (C2). Buyers in Turkey are much like customers from Moldova in that they have the same alternatives, although ranked in a different order—composition (A3), healthy and safe for use (A2), and quality (A5) are most important to them. For buyers in Ukraine, as well as for Moldovans and Turks, the most important thing is that these products come from sustainable production (C2) and are certified (C8); unlike all the other groups, however, they largely seek to ensure that the products are in recycled packaging or in a sustainable bag (C4). Like customers in Moldova, customers in Turkey put importance on the fact that the composition of the product is satisfactory (A3), the quality of the product (A5) is sufficient, and that the product is safe to use (A2).

Intuitively, two things are key for a customer when purchasing a sustainable product. It is important that it be of good quality [55,60,62,66] and that it be healthy [33,46,48]. To the latter, it should be added that the structure of the product is important, i.e., certain ingredients make it healthy and sustainable. Weaknesses exist in the social and community sphere [22,24,25,30], and additional efforts are needed there—initiatives should address the areas of government, education, and knowledge [45]. First, customer responsibilities must be raised to a higher level [3,5,6,23]. Some examples might be awareness of product sustainability, as well as the importance of less food waste, recycling, and biodiversity. The second aspect is related to this, namely, the country of origin. This issue proved to be very important during the pandemic, but individuals have already forgotten about the circumstances that were prevailing in the food market. Namely, the production of one's own food represents the protection of the economy and the standards of citizens during times of external shocks. Intuitively, important criteria when choosing a sustainable product include bio production and product certification, while avoiding GMO products [42,45,57]. Economic criteria such as price, salary, and seasonal components are not so important from

the perspective of sustainable products. The market for sustainable products is determined by numerous factors that are less dependent on the customer himself. Also, there are shortcomings in the social component, which should be reflected in initiatives addressing the motives, responsibility, and awareness of customers [23,63,65,67]. Namely, the criteria that need to be focused upon are packaging and recycling, in order to ensure the conditions for sustainable development; also, the origin of the product should be considered, as it protects against external shocks and at the same time guarantees the profitability of farms. Improving the social component can make a significant contribution to the concept of sustainability and eco-friendly and sustainable products [12,20,68].

5. Conclusions

In recent decades, concern for the environment and the future in which we will live has become increasingly important. Environmental issues such as climate change, pollution, and resource depletion are pressing problems for humanity. The response to these challenges lies in sustainable living, production, and consumption of products. Consumer behavior varies and depends on numerous factors, with one of the main decisions being the purchase, consumption, and disposal of products.

What needs to be promoted in the interest of sustainable products comprises a list that includes product quality, health benefits, environmental impact, price, product origin, and everything that affects the quality of life and the future globally. The results of the AHP method show that the awareness of purchasing sustainable food products has increased significantly. Differences between countries exist, but the results for different countries are not completely opposite. On the contrary, the purchase decision mainly refers to the quality of the food product and its composition and origin, as well as whether the product is produced in the context of sustainable (ecological or bio) production. Buyers in EU member countries (Spain and Croatia) have similar criteria and alternatives when deciding to purchase these products. The results of the criteria show that in both economies, residents mostly decide to buy organic bio-products (C2) from local farms (C1). Concerning the total demand for organic products, these two criteria together make up 40% in Spain and 37% in Croatia. The existence of a single market, standardization, and certification, along with rigorous regulations, guide customers when making decisions. These factors are contained in the certification criterion (C8), which is in second place in both EU economies, at 19% in Spain and 20% in Croatia. Spain has been a member and rich economy within the EU for many years, with already established regulations related to a sustainable economy in accord with the highest standards. The application in practice is a consumer society in which shopping concepts correspond to sustainable food production. Product quality meets the highest standards, and sustainability has become an everyday matter controlled by strict and organized rules. Croatia is a newer member of the EU and is becoming an increasingly large importer of food. Old habits are still retained, but ten years of experience and the application of valid regulations and standards are changing the awareness of sustainability and the environment. The rising standard of living allows them to spend more money on food which is healthier, of better quality, and safer. The survey results showed that customers from Spain and Croatia spend more time shopping and spend more money per week, up to EUR 300 and over EUR 300, respectively. From the context of the analysis of alternatives, the results showed that the dominant alternative criteria are origin (A1), quality (A5), and health (A2), and together they account for 60% in Spain and even 70% in Croatia. Significant differences exist in the composition of alternative (A3) because the scope of the use of GMOs is within the structure of this alternative, something which is mostly allowed in Spain, more so than in Croatia.

The remaining three countries (Moldova, Turkey, and Ukraine) are in a different competitive environment, which, along with tradition (political and cultural) and experience, leads to slightly different criteria and alternatives for purchasing sustainable food products. The assessment results of the criteria show that in all three economies, residents mostly decide to buy certified (C8) organic bio-products (C2). Concerning the total demand for

organic products, these two criteria together dominate, with 42% in all three countries. These countries do not have large and developed markets, because they are countries with lower income levels (measured by GDP per capita), with loose regulations, unstable standards, and insufficient practical knowledge compared to developed member countries. Awareness of sustainability is limited by salary, level of education, available knowledge, expensive sustainable production, prices of sustainable products, etc. The survey results show that residents of these three countries spend up to EUR 100 per week on sustainable products. Therefore, it can be concluded that buyers of sustainable food products are mainly guided by a desire for healthy and quality products from sustainable production. From the context of the analysis of alternative criteria, the results showed that the quality (A5) and composition (A3) of organic products are dominant, accounting for 58% in Moldova, 50% in Turkey, and 51% in Ukraine. In addition to the quality and safety of the composition of organic products, customers in these three countries give approximately the same importance to health (A2), about 20%.

To specify the results of the analysis, it is necessary to set forth an overview of the countries included. Buyers in Spain are interested in reliable, sustainable domestic products (the value of A1 is 28%) from well-known manufacturers (the value of C1 is 22%). Similarly, customers in Croatia are interested in reliable, sustainable domestic products (the value of A1 is 31%) from well-known manufacturers (the value of C1 is 22%). Buyers in Moldova buy quality (the value of A1 is 36%) and certified sustainable products (the value of C8 is 24%). Buyers in Turkey insist that sustainable products be as good as possible in terms of composition (the value of A3 is 29%) and certification (the value of C8 is 24%). Buyers in Ukraine insist on composition (the value of A3 is 29%) and organic production (the value of C2 is 23%) when buying sustainable products. The results confirm the hypotheses that there is an increased awareness of buying sustainable food (H1), that residents of EU countries buy more sustainable food products (H2), that product quality is important to customers (H3), and that countries with higher income levels spend more money on sustainable food products (H4).

Sustainability is a global issue. It basically refers to the sustainability of knowledge, innovation, climate, society, food, technology, institutions, etc. In other words, any social category is encompassed. Sustainability is followed by the circular economy, the green economy, the blue economy, biodiversity, and the environment, forming a global concept around which everyone is engaged. The application of sustainability offers unlimited possibilities for development because there is always space for some kind of progress, innovations, or inventions relevant to society and the environment. This study has also several limitations that should be considered when interpreting the results. First, the use of a survey questionnaire may lead to response bias, as participants' answers could be influenced by social desirability or their limited awareness of sustainable products. Additionally, the sample was restricted to five countries, which may limit the generalizability of findings across other regions with different cultural or economic contexts. Furthermore, variations in socioeconomic conditions and consumer awareness levels among the selected countries may have impacted responses, potentially skewing the comparative analysis. Finally, while the study identifies key factors influencing sustainable purchasing decisions, it does not account for the possible influence of other variables, such as policy changes or market availability, variables which future research could explore in greater detail.

Author Contributions: Conceptualization, M.Š.; methodology, V.R. and M.Š.; formal analysis, V.R. and M.Š.; investigation, M.Š.; resources, V.R. and M.Š.; data curation, V.R.; writing—original draft preparation, V.R. and M.Š.; writing—review and editing, M.Š.; supervision, V.R.; project administration, M.Š.; funding acquisition, M.Š. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: All authors have approved the manuscript.

Data Availability Statement: We confirm that neither the manuscript nor any part of its content are currently under consideration or published in another journal.

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

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