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# Perceptions of the Polish Customer on Socially or Ecologically Labelled Food Products: Findings of the Research

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## ABSTRACT

**Objective:** The article aims to identify the characteristics that consumers attribute to food products labelled with eco-labels or social labels.

**Research Design & Methods:** A critical literature analysis and a survey using a proprietary research tool were conducted. Data from 801 respondents was collected using PAPI, CAWI, and CATI techniques. Pearson's  $\chi^2$  test and the data mining technique of association analysis were used to analyse the data.

**Findings:** Consumers' perceptions of food products with eco-labels or social labels, differentiated by gender, age, education, and occupational status, were determined. Determinants of trust in products with eco-labels or social labels, and consumers' willingness to pay a higher price for such products were indicated.

**Implications/Recommendations:** The research findings have practical value and may enable businesses to more effectively influence consumer purchasing behaviours by designing marketing communications that appeal to the characteristics of food products with eco-labels or social labels. Companies may implement the recommendations outlined in the article to contribute to increasing sales volume and profitability.

**Contribution:** Research findings contribute to the current debate on the perception of food products labelled with eco-labels or social labels. They indicate the determinants of consumer trust in products with eco-labels or social labels and tendencies to pay a higher price for them. They also serve as guidelines for employees of businesses responsible for creating marketing communications regarding products with environmental or social designations.

**Article type:** original article.

**Keywords:** eco-label, social label, association analysis, consumer purchasing behaviour, food industry.

**JEL Classification:** M14, M31, L66.

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## 1. Introduction

Ecolabelling and social labelling involve providing additional (non-legally required) information on labels regarding specific social or environmental responsibility principles, considering the entire product lifecycle (often including the supply chain). Ecolabelling may pertain to ecological protection principles, sourcing raw materials and semi-finished products used in the production process, and the potential for reusing packaging materials after food consumption. Social labelling, on the other hand, can convey information such as the absence of child labour, fair wages for workers, and safe and hygienic working conditions without compulsory overtime work during the production process of a particular product. Social labelling can also symbolise a company's commitment to raising awareness of social issues and attempting to mitigate them. Both eco-labels and social labels aim to distinguish products from others available on the market and provide consumers with information about the product, reducing information asymmetry between producers and consumers (Murali, Lim & Petruzzi, 2019).

An example of an eco-label is the EU Ecolabel (awarded based on a product's life cycle assessment); Euroleaf (mandatory on packaged organic products produced within the EU that meet established community standards); the Green Dot (indicating that the producer contributes to the recycling and recovery of packaging, often through a licensed scheme); Ekoland label (designating organic and environmentally friendly food products that ensure sustainable and eco-conscious production practices).

Among social labels, notable examples include *Mamo, tato, wolę wodę!* (Mom, dad, I prefer water!), which promotes healthy dietary habits with an emphasis on the role of water in children's daily diets; *W ciąży nie piję alkoholu* (I don't drink alcohol while pregnant) and *Alkohol. Tylko dla pełnoletnich* (Alcohol for adults only), both of which draw attention to the risks of alcohol consumption by pregnant women or minors, often placed on beer packaging; *Podziel się posiłkiem* (Share

your meal), which promotes the fight against child hunger by encouraging food donations to organisations and institutions involved in child nutrition programmes.

The FairTrade label is also worth mentioning, as it addresses both ecological and social criteria, ensuring that products are produced under fair working conditions and with environmental care (Zadek, Lingayah & Forstater, 1998).

Consumers are showing interest in environmental protection issues. They are concerned about how human activities contribute to the natural environment's ongoing degradation. Consumers also indirectly influence how the economy affects the natural environment (Zhang, 2022). Firstly, they expect businesses to operate in a manner that minimises their negative environmental impact. Secondly, consumers know that their purchasing decisions partially determine how companies operate and produce their goods (Tao *et al.*, 2023). When deciding which product to buy, consumers consider whether companies take pro-environmental actions (Chmielewski *et al.*, 2023a) and choose products labelled with environmental symbols.

Consumers are also becoming increasingly aware of social issues and that companies can take socially responsible actions to address them. Although this is not the primary goal of business activities, consumers expect them to take such actions (Kiliańska & Pajęcki, 2023). When purchasing food products, they consider whether they come from companies implementing pro-social initiatives (Vicente-Molina, Fernández-Sáinz & Izagirre-Olaizola, 2013).

According to research (Michaud & Llerena, 2011), consumers who are informed about product characteristics are more inclined to purchase them. Placing environmental or social labels on products encourages consumers to make sustainable purchasing decisions. As a result, some companies strive to facilitate consumers' access to information about their environmental and social actions by incorporating appropriate labelling on their products (Lin *et al.*, 2015).

Unfortunately, some companies place misleading and false claims about the environmental impact of food products, deceiving customers; these actions are known as greenwashing. To combat this issue, the European Parliament adopted the Green Claims Directive (Directive (EU) 2024/825 of the European Parliament and of the Council of 28 February 2024), which addresses environmental claims. The Green Claims Directive serves as a tool to effectively limit the use of unjustified eco-labels on products available to EU consumers.

Although research literature (Nikolaou & Tsalis, 2018) addresses the topic of consumer perception of products with environmental or social labels, scholars tend to focus more on environmental labels. Chmielewski *et al.* (2023b) emphasise that studies regarding products with social labels are scarce. Issues related to social labelling and the perception of products labelled with them are not adequately recognised. This constitutes a clear research gap that encourages exploration of

the topic. The identified research gap guided the direction of the study, providing the basis for designing and conducting primary research, the results of which are discussed in the article. The article aims to determine the perception of food products with eco-labels or social labels.

The paper comprises both theoretical and empirical parts. The theoretical section critically analyses the literature concerning eco-labels and social labels, serving as the foundation for designing the primary research. Subsequently, the research methodology and its main findings are presented. The article concludes with a synthetic discussion of the conclusions, indicating the research's implications and limitations.

## 2. Literature Review

According to numerous studies (De Canio, Martinelli & Endrighi, 2021; Riskos *et al.*, 2021; Rossi & Rivetti, 2023), information displayed on packaging can positively influence consumers' perceptions of product attributes and thereby shape their purchasing behaviours. Ecological certifications related to sustainable development placed on products lead to more favourable consumer perceptions (Prell *et al.*, 2020). Brécard (2014) demonstrated that consumers prefer to buy products with eco-labels because they signal higher product quality. A similar conclusion was reached by Łuczka-Bakuła (2011). Organic food is perceived as healthier (Schuldt & Hannahan, 2013), leading to a higher propensity for purchase (Dang *et al.*, 2021). Other studies (Woś *et al.*, 2022) conducted among Polish consumers confirm that organic products are perceived as healthier and free from harmful substances (Soroka & Wojciechowska-Solis, 2019).

According to Bryła (2016), the perception of products with eco-labels as tastier and healthier is the most important motivation for Polish consumers to purchase organic food. Czudec, Miś, and Zajac (2022) add that high quality and concern for the natural environment also strongly motivate consumers to purchase such food. When buying organic products, consumers feel that they contribute to environmental preservation (Hong & Guo, 2019; Sharma, 2021). Some studies (Cooley, 2021, p. 42) confirm a strong relationship between purchasing intentions and environmentally friendly production. However, conclusions from other research (Donato & D'Aniello, 2021) provide insight that consumers buy products with eco-labels primarily because they perceive them as healthier and safer, with environmental benefits being less of a priority for consumers.

Dangi, Gupta, and Narula (2020) analysed 91 studies conducted between 2001 and 2020, and found that ecolabelling on products leads consumers to perceive them as trustworthy, increasing their willingness to purchase. Trust in eco-labels positively influences consumer purchasing behaviour (Taufique, Vocino & Polonsky, 2017). However, it should be noted that according to the results of other studies, consumers' knowledge about eco-labels and their trust in them varies (Sonntag

*et al.*, 2023), among other factors, depending on the country (Rejman *et al.*, 2023). Consumers' trust in organic products contributes to accepting their higher prices (Perrini *et al.*, 2010).

Various researchers (Hong & Guo, 2019; Sharma, 2021) argue that consumers are willing to pay higher prices for eco-label products. Other studies (Nielsen, 2015) additionally show that the willingness to pay a higher price for products with eco-label decreases with consumers' age. According to a study conducted among Poles, as many as 70% of them are willing to purchase environmentally friendly products, even if they cost more ([http://ec.europa.eu/public\\_opinion/archives/ebs/ebs\\_365\\_pres\\_en.pdf](http://ec.europa.eu/public_opinion/archives/ebs/ebs_365_pres_en.pdf), accessed: 12.10.2023). Consumers' willingness to pay a higher price for an ecological product has also been of interest to Tilikidou (2007). The conclusions from her research indicate that consumers often choose an ecological product if its price does not significantly differ from the prices of alternative products.

Research from 2019 (Forum Odpowiedzialnego Biznesu, 2020) shows that 70% of consumers expect businesses to address social issues and contribute to local communities' development. 56% avoid purchasing products from entities that hurt society or the environment. Consumers with a prominent level of altruism are more willing to buy products that provide benefits to themselves and indirectly to others (Barbarossa & de Pelsmacker, 2016). They are willing to pay more for products with a social mission to contribute to the well-being of others (Teng, Wu & Liu, 2015).

Research (Hiscox & Smyth, 2011) conducted in New York demonstrates that when products (such as towels or candles) feature a social label indicating compliance with labour standards, demand for them increases. Furthermore, consumers stated they would pay up to 20% more for a labelled product than one without a social label. An experiment (Hiscox & Smyth, 2011) examining consumers' willingness to pay a higher price for clothing items showed that approximately 25% of consumers were willing to pay a higher price for a product with a social label.

Consumers who have a positive attitude towards environmentally friendly products or products with a social mission are more likely to purchase pro-environmental products (Vu *et al.*, 2022) or products that have a positive impact on society (Hojnik, Ruzzier & Manolova, 2020; Nguyen *et al.*, 2020).

### **3. Materials and Methods**

Based on the theoretical part of the synthetic literature review presented in the article, research gaps were identified regarding insufficient recognition of how food products with eco-labels or social labels. Additionally, there is insufficient exploration of the relationship between attributes of products with eco-labels or social labels. Therefore, five research hypotheses were formulated:

H1: Food products with an eco-label are more likely to evoke consumer trust than products with a social label.

H2: Socio-demographic characteristics of consumers influence the perception of food products with an eco-label and social label.

H3: Trust in food products with an eco-label stems from customers' belief that they are of high quality and healthier than products without an eco-label.

H4: Trust in food products with a social label stems from customers' belief that their purchase allows them to participate in critical decision-making.

H5: Consumers' willingness to pay a higher price for food products with an eco-label is higher than for products with a social label.

A primary study was designed and conducted to achieve the set goal and verify the research hypotheses. This study used a diagnostic survey method, utilising a custom questionnaire. Participants were asked to indicate their agreement or disagreement on a dichotomous scale with six statements related to food products with eco-labels or social labels (Table 1). These statements were developed based on a literature review on the subject.

Table 1. Legend of Symbols Corresponding to Statements Included in the Study

Symbol	Statement
Decision-making	Buying products with such a label allows for participation in critical decision-making
Trust	Products with such a label inspire my trust
Environment	This label indicates a lesser negative impact of the product on the environment than others lacking such a label
Healthier	Products with this label are healthier than products without it
Quality	Products with this label are characterised by higher quality than products without it
Price	I will pay a higher price for a product with this label than for a product without it

Source: own elaboration.

A purposive sampling method was used to select units for the research sample, and two control characteristics were determined: gender and year of birth. Data from respondents were collected using PAPI, CAWI, and CATI techniques between December 2019 and February 2020, as well as November 2020 and March 2021 (the break was due to the outbreak of the COVID-19 pandemic). After formal checks, the data cleaning and coding process was conducted. Data from 801 respondents (residents of the Świętokrzyskie voivodeship) were included in the analysis (Table 2). The study involved 52% women and 48% men. The majority of respondents were aged 55 and over (40%) and had completed secondary education (43%) or higher education (42%). The most significant portion of respondents were employed (62%).

Table 2. Structure of the Research Sample (Total  $N = 801$ )

Specification	$N$	%
Gender		
Woman	415	52
Man	386	48
Socio-occupational status		
Business owner	64	8
Employee	427	54
Student	57	7
Retiree/Pensioner	177	22
Unemployed	76	9
Age		
18–34	214	27
35–54	264	33
55 and older	323	40
Education		
Primary	38	5
Vocational	82	10
Secondary	345	43
Higher	336	42

Source: own elaboration.

The data obtained from consumers were subjected to frequency analysis, cross-tabulation, and statistical testing. All calculations were performed using Statistica 13.3 software and the interactive programming environment YupiterLab. To determine the statistical significance of the diversity of the variables studied, Pearson's chi-square test ( $\chi^2$ ) was utilised, with a significance level ( $\alpha$ ) set at 0.05. The strength of the relationship between variables was assessed using the Phi-Yule ( $\phi$ ) coefficient and Cramer's  $V$ . Data mining techniques such as association analysis were employed to examine the characteristics attributed to products labelled with eco-labels or social labels by consumers. This allowed for the exploratory discovery of relationships between variables and the detection of rules and associations guiding the dataset. The relationships between the data were described using association rules in the form of "if-then" statements and three quality measures of the rule. Support determines the percentage of consumer responses in which the rule's antecedent and consequent occurred relative to the total number of respondents. Confidence indicates the conditional probability of choosing the consequent if the antecedent is chosen. Lift represents the probability of choosing one response given

the choice of another response. If this measure exceeds 1, the responses are complementary to each other.

## 4. Results

### 4.1. Perception of Food Products with Eco-labels or Social Labels by Consumers

The distribution of responses from the entire consumer base is presented in Table 3. According to consumers, purchasing food products with an eco-label and those with a social label allows for co-decision-making on essential matters – approximately 75% of consumers agreed with this statement. A more significant proportion of consumers acknowledged that they trust products with an eco-label (78%) more than those with a social label (70%), confirming research hypothesis H1. Consumers were significantly more likely to agree with statements indicating that food products with an eco-label have a lesser negative impact on the natural environment (80%), are healthier (74%), and are of higher quality (71%) compared to goods without an eco-label than with similar statements referring to food products with a social label. The corresponding percentages of responses for products with a social label were 61%, 54%, and 57%, respectively.

Table 3. Perception of Food Products with Eco-labels or Social Labels – Distribution of Responses (in %)

Specification		Product with a Social Label	Product with an Eco-label	
Statement	Decision-making	I agree	75	74
		I disagree	25	26
	Trust	I agree	70	78
		I disagree	30	22
	Environment	I agree	61	80
		I disagree	39	20
	Healthier	I agree	54	74
		I disagree	46	26
	Quality	I agree	57	71
		I disagree	43	29

Source: own elaboration.

To verify whether the socio-demographic characteristics of consumers differentiate the way they perceive food products with eco-labels or social labels, Pearson's  $\chi^2$  tests were conducted. Based on the data provided in Table 4, it can be concluded

that gender is statistically significantly associated with the perception of products with a social label in the context of two statements: purchasing food products allows participation in important decisions ( $\chi^2 = 12.52, p = 0.001$ ); products inspire trust ( $\chi^2 = 10.37, p = 0.001$ ). The relationship between the analysed variables is weak. Gender also exhibits a weak, though statistically significant, association with the statement that food products labelled with an eco-label are of higher quality than products without such labelling ( $\chi^2 = 6.37, p = 0.012$ ). In the case of all three statements mentioned above, women tended to agree with them more often.

The research findings regarding the perception of food products with eco-labels are consistent with those of studies conducted by Brécard (2014), Łuczka-Bakuła (2011), Schuldt and Hannahan (2013), and Woś *et al.* (2022). According to a study (Chekima *et al.*, 2016), gender matters in purchasing decisions regarding eco-labelled products. Women are more likely to buy such products.

To explore the relationship between consumers' gender and their perception of food products with eco-labels or social labels, statistical analyses were conducted (see Table 4).

Table 4. The Relationship between the Perception of Food Products with Eco-labels or Social Labels and Consumer Gender

Specification		Women		Men		$\chi^2$	<i>p</i>	$\phi$
		I agree (%)	I disagree (%)	I agree (%)	I disagree (%)			
Social label	Decision-making	80	20	70	30	<b>12.52</b>	<b>0.001</b>	0.125
	Trust	75	25	65	35	<b>10.37</b>	<b>0.001</b>	0.114
	Environment	59	41	63	37	1.47	0.225	0.043
	Healthier	53	47	55	45	0.11	0.740	0.012
	Quality	60	40	54	46	3.30	0.069	0.064
Eco-label	Decision-making	75	25	73	27	0.60	0.440	0.027
	Trust	80	20	76	24	1.72	0.189	0.046
	Environment	79	21	80	20	0.07	0.786	0.009
	Healthier	76	24	71	29	2.48	0.115	0.056
	Quality	74	26	66	34	<b>6.37</b>	<b>0.012</b>	0.089

Notes: Bolded test statistics and *p*-values indicate statistically significant relationships between the analysed variables.

Source: own elaboration.

Table 5 presents the results of Pearson's  $\chi^2$  tests for the relationship between age and consumers' agreement with specific statements. The test results did not confirm statistically significant relationships. This indicates that regardless of age,

consumers perceive food products with eco-labels or social labels similarly. It is worth noting that for the statement “products with an eco-label inspire trust,” the  $p$ -value is 0.052, indicating a statistical trend. It can be observed that consumers aged 35–54 declared less frequently than others that products with an eco-label inspire their trust.

Table 5. The Relationship between the Perception of Food Products with Eco-labels or Social Labels and the Age of Consumers

Specification		Age						$\chi^2$	$p$	$V$
		18–34		35–54		55 and older				
		I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)			
Social label	Decision-making	78	22	72	28	76	24	1.96	0.376	0.494
	Trust	73	27	67	33	72	28	2.86	0.239	0.598
	Environment	61	39	61	39	62	38	0.07	0.964	0.009
	Healthier	52	48	54	46	55	45	0.40	0.819	0.022
	Quality	59	41	57	43	56	44	0.36	0.836	0.021
Eco-label	Decision-making	73	27	70	30	77	23	3.42	0.180	0.065
	Trust	79	21	73	27	81	19	5.90	0.052	0.086
	Environment	78	22	78	22	82	18	2.45	0.293	0.055
	Healthier	69	31	74	26	77	23	3.87	0.145	0.069
	Quality	67	33	71	29	73	27	2.19	0.333	0.052

Source: own elaboration.

No statistically significant relationships were identified between consumers' education level and their perception of food products with eco-labels or social labels. This means that regardless of their level of education, products with special labelling are perceived similarly. A  $p$ -value on the borderline of statistical tendency was obtained for two statements: food products with a social label are healthier than products without it ( $p = 0.060$ ), and food products with an eco-label are healthier than products without it ( $p = 0.508$ ). This indicates that although the relationship is not statistically significant, the agreement among consumers with different education levels regarding these statements is most diverse. Consumers with a higher level of education were the least likely to agree that food products with a social label are healthier than alternatives (49%, compared to an average of 60% for other groups).

Table 6. Relationship between the Perception of Food Products with Eco-labels or Social Labels and the Education Level of Consumers

Specification	Education										$\chi^2$	p	V
	Primary		Vocational		Secondary		Higher						
	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)					
Social label	Decision-making	66	34	72	28	77	23	76	24	2.68	0.443	0.058	
	Trust	55	45	71	29	72	28	70	30	4.70	0.194	0.078	
	Environment	50	50	67	33	63	37	59	41	4.69	0.196	0.765	
	Healthier	61	39	62	38	57	43	49	51	7.39	0.060	0.096	
	Quality	53	47	67	33	59	41	53	47	6.23	0.101	0.088	
Eco-label	Decision-making	61	39	76	24	73	27	76	24	4.26	0.235	0.072	
	Trust	71	29	78	22	81	19	75	25	4.49	0.213	0.075	
	Environment	82	18	78	22	80	20	79	21	0.35	0.949	0.021	
	Healthier	71	29	78	22	75	25	71	29	2.33	0.508	0.539	
	Quality	71	29	77	23	69	31	70	30	1.85	0.605	0.048	

Source: own elaboration.

Table 7. Relationship between the Perception of Food Products with Eco-labels or Social Labels and the Socio-occupational Status of Consumers

Specification	Decision-making		Trust		Environment		Healthier		Quality	
	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)	I agree (%)	I disagree (%)
Social label										
Business owner	80	20	73	27	63	27	61	39	58	42
Employee	75	25	67	33	60	40	52	48	56	44
Student	65	35	70	30	63	27	54	46	47	53
Retiree/pensioner	75	25	73	27	58	42	51	49	57	43
Unemployed	82	18	79	21	72	28	68	32	72	28
Socio-occupational status	$\chi^2$	5.631	5.918		5.436		9.139		<b>9.776</b>	
	$p$	0.228	0.213		0.253		0.058		<b>0.044</b>	
	$V$	0.084	0.085		0.081		0.106		0.110	
Eco-label										
Business owner	77	23	77	23	84	16	70	30	75	25
Employee	72	28	75	25	80	20	74	26	67	33
Student	68	32	74	26	68	32	67	33	63	37
Retiree/pensioner	82	18	84	16	78	22	73	27	76	24
Unemployed	66	34	83	17	88	12	84	16	79	21
Socio-occupational status	$\chi^2$	<b>10.275</b>	6.654		9.019		6.237		9.239	
	$p$	<b>0.036</b>	0.155		0.061		0.182		0.055	
	$V$	0.113	0.091		0.106		0.088		0.107	

Notes: Bolded test statistics and  $p$ -values indicate statistically significant relationships between the analysed variables.

Source: own elaboration.

However, food products with an eco-label are perceived as healthier, especially by consumers with vocational education (78%, compared to an average of 72% for other groups). Such a conclusion is consistent with Chan's (1999) findings, which confirm that people with higher education are more likely than others to perceive products with an eco-label as healthier.

No statistically significant relationship was identified between education level and the perception of food products with eco-labels or social labels (see Table 6). However, it is worth noting that consumers with vocational education (78%) slightly more often than other respondents (an average of 72%) agreed that food products with an eco-label are healthier than products without labelling.

Occupational status significantly differentiates consumers' responses regarding one statement: food products with a social label are of higher quality than products without labelling (see Table 7). Students were least likely to agree with this statement (47%), while the unemployed were most likely to agree (72%). Statistical testing revealed a weak association between consumers' occupational status and whether they believe food products with an eco-label allow them to participate in critical decision-making. The unemployed (66%) and students (68%) were least likely to agree with this statement, while retirees/pensioners were most likely to agree with it (82%). There were no statistically significant differences in consumer responses regarding other statements.

Based on the above analyses, we can partially confirm research hypothesis H2. Gender and socio-professional status influence the perception of food products with eco-labels or social labels. However, age and education do not show such an influence.

The findings on the perception of eco-labelled food products are consistent with those of Brécard (2014), Łuczka-Bakuła (2011), Schuldt and Hannahan (2013), and Bernard, Bertrandias and Elgaaiied-Gambier (2015). Studies (Rodríguez-Bermúdez *et al.*, 2020; Woś *et al.*, 2022) have also found that organic foods – including those with an eco-label – are perceived to be healthier and of high quality.

According to the studies (Prothero, 1990; Chekima *et al.*, 2016), gender matters in purchasing decisions regarding products with an eco-label – women are more likely to buy such products. This conclusion is consistent with the results of the study described in this article. However, it is worth noting that other studies (Mehraj *et al.*, 2023) show that gender does not differentiate purchasing behaviour regarding eco-labelled products.

A study by Mehraj *et al.* (2023) found that education influences the propensity to buy eco-labelled products. Another study (Chekima *et al.*, 2016) also showed that people with higher education are more likely to buy products with an eco-label. Additionally, Chan's (1999) research confirms that people with higher education are more likely than others to perceive products with an eco-label as healthier. The findings described in this article did not confirm such a relationship.

## 4.2. Consumer Trust in Food Products with Eco-labels or Social Labels

Association analysis was conducted to gather information about the co-selection of individual responses, which can help examine the relationships between them. Association rules were evaluated, selecting those with high-quality measures. Subsequently, the rules were grouped to verify the research hypotheses. Table 8 presents selected association rules regarding consumer trust in food products with eco-labels or social labels. According to rule 1, 91% of consumers who declare trust in food products with a social label also express trust in food products with an eco-label. Rule 2 concerns the same elements as rule 1, but the antecedent and consequent were reversed. The confidence for rule 2 was lower than for rule 1, reaching 0.820. This allows us to conclude that among consumers who trust food products labelled with eco-labels or social labels, a more oversized proportion trusts food products with an eco-label – providing additional confirmation of hypothesis H1.

Table 8. Form of Association Rules along with Measures of Their Quality – Consumer Trust

No.	Antecedent	Successor	Quality Measures of the Rule
1	Food products with a social label inspire my trust	Food products with an eco-label inspire my trust	Confidence: 0.906 Support: 0.638 Lift: 1.165
2	Food products with an eco-label inspire my trust	Food products with a social label inspire my trust	Confidence: 0.820 Support: 0.638 Lift: 1.165
3	Food products with an eco-label are of higher quality; food products with an eco-label are healthier than products without such a label	Food products with an eco-label inspire my trust	Confidence: 0.867 Support: 0.537 Lift: 1.115
4	Purchasing food products with a social label allows me to participate in critical decision-making	Food products with a social label inspire my trust	Confidence: 0.847 Support: 0.638 Lift: 1.204

Source: own elaboration.

Rules 3 and 4 allowed us to identify the characteristics of food products with eco-labels or social labels that contribute to building consumer trust towards food products with a social or eco-label. Based on the analysis results, it can be concluded that food products with an eco-label inspire trust because consumers perceive them as being of high quality and healthier than food products without an eco-label. This is confirmed by the high support (0.537) and confidence (0.867) measures of associative rule 3. 64% of consumers simultaneously declared that purchasing food products with a social label allows them to participate in critical decision-making

processes and that food products with this label inspire trust. Almost 85% of consumers who agreed that buying food products with a social label allows them to influence critical issues also agreed that these products inspire their trust (rule 4). The analysis results confirm hypotheses H3 and H4.

### 4.3. Willingness to Pay a Higher Price for Food Products with Eco-labels or Social Labels

Some association rules pertained to consumers' willingness to pay a higher price for food products with eco-labels or social labels (Table 9). Rule 1 demonstrates that the percent of responses indicating consumers' willingness to pay a higher price for food products with eco-label and social labels is 44%. Additionally, 90% of consumers who declared they would incur a higher cost for purchasing product with eco-label also admitted their willingness to pay a higher price for a food product with a social label. The confidence measure of rule 2 is lower than that of rule 1. The low lift quality measure for rules 1 and 2 does not suggest a strong relationship between the elements of these rules. This indicates that consumers more frequently declared readiness to incur a higher purchasing cost for food products with an eco-label than a social one, confirming hypothesis H5.

Table 9. Form of Association Rules along with Measures of Their Quality – Willingness to Pay a Higher Price

No.	Antecedent	Successor	Quality Measures of the Rule
1	I will pay a higher price for a food product with a social label	I will pay a higher price for a food product with an eco-label	Confidence: 0.899 Support: 0.435 Lift: 1.045
2	I will pay a higher price for a food product with an eco-label	I will pay a higher price for a food product with a social label	Confidence: 0.685 Support: 0.435 Lift: 1.045
3	I will pay a higher price for a food product with an eco-label	Food products with an eco-label are healthier	Confidence: 0.843 Support: 0.534 Lift: 1.244
4	I will pay a higher price for a food product with an eco-label	Food products with an eco-label are of higher quality; food products with an eco-label have a low negative impact on the natural environment	Confidence: 0.804 Support: 0.503 Lift: 1.268

Source: own elaboration.

Association analysis revealed what influences consumers' willingness to pay a higher price for a food product with an eco-label. Rule 3 confirms that consumers

are willing to incur a higher purchasing cost for a food product with an eco-label because they perceive it as healthier. Over half of the respondents agreed that food products labelled with an eco-label are healthier and they are willing to pay a higher price. Remarkably, 84% of consumers who declared their willingness to pay a higher price for goods with an eco-label also acknowledged perceiving them as healthier than products without such a label. The high value of the lift for rule 3 allows us to conclude that these responses are complementary to each other.

Rule 4 demonstrates that over 80% of respondents declare such willingness because they believe that such food products signify higher quality and simultaneously have a lesser negative impact on the natural environment than products without an eco-label. The increase in the rule confirms that the elements of this rule are complementary.

Previous research (Hiscox & Smyth, 2011; Nielsen, 2015; Teng, Wu & Liu, 2015; Hong & Guo, 2019; Sharma, 2021), show that customers are willing to pay a higher price for a product with eco-labels or social labels.

A study by Biswas (2016) identified factors influencing customers' willingness to pay a higher price for organic products. The results of the analysis lead to the conclusion that price, availability and quality have the greatest impact on customers' willingness to pay for organic products. Another study (Kirmani & Khan, 2018) aimed at identifying important determinants of customers' willingness to pay a higher price for organic products showed that such a characteristic is the willingness to care about the environment. The results of the research presented in this article are in line with the conclusions of the studies of the aforementioned authors and confirm that customers are willing to pay a higher price for products with an eco-label because they believe they have higher quality and less negative impact on the environment than products without the label.

Biswas (2016) proved that consumers' willingness to pay will increase with their trust in these products. Other authors (Britwum, Bernard & Albrecht, 2021) have also proven that customers who trust organic food products are willing to pay a higher price for them. However, this was not confirmed in the research described in this article.

## 5. Conclusions

Food products with an eco-label are primarily perceived as having a more negligible, negative environmental impact, healthier than products without an eco-label, and inspiring trust. Food products with a social label are often perceived as goods that allow consumers to participate in decision-making on prominent issues through their purchase and inspire trust. Food products with an eco-label are more trusted by consumers than products with a social label.

It has been shown that trust in food products with an eco-label stems from the perception of them as high-quality and healthier than products without an ecological designation. In the case of food products with a social label, the determinant of trust is primarily the ability to participate in important matters by purchasing such a product. Companies should focus on these mentioned features in their communications about food products with an eco-label and a social label. This will reinforce consumers' belief that these labelled products possess trustworthy qualities. Additionally, such communications can more effectively shape consumer purchasing behaviour. This increases the chances of attracting new consumers, retaining existing ones, and increasing company sales volume and profits.

The analysis did not show a relationship between the perception of food products with eco-labels or social labels and the age and education of consumers. However, it was demonstrated that gender and socio-economic status slightly differentiate the way consumers perceive these products. Companies may consider conducting an informational campaign (in collaboration with schools or NGOs) about their environmental and social initiatives to encourage consumers to buy their products. The campaign should include pictograms and short textual information about these initiatives on the products.

A more significant proportion of consumers accept a higher price for eco-label food products than a social label. Therefore, companies should adjust their pricing policy for products with these labels differently. Companies should reinforce consumers' belief that labelled food products contribute to solving environmental and social problems to strengthen their willingness to pay a higher price.

Although the study was limited to a few characteristics of food products with eco-labels or social labels, it provides valuable insights for companies. The study can be seen as a pilot study, especially regarding the perception of food products with a social label. The author intends to expand the study to other characteristics of products labelled with eco-labels or social labels. Allowing consumers to respond on a scale other than dichotomous (agree/disagree) would be beneficial. Qualitative research may also be worth considering, giving consumers more freedom in expressing how they perceive food products with eco-labels or social labels.

### **Conflict of Interest**

The author declares no conflict of interest.

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