CONSUMER DECISION-MAKING AND SUSTAINABILITY IN THE FOOD INDUSTRY

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Abstract

The aim of this article is to explore the impact of sustainability certification and climate-friendly labels on consumer food purchasing decisions in Slovakia. The research examines two main aspects: the behaviour of environmentally conscious consumers in response to sustainability labels and the willingness of price-sensitive consumers to prefer sustainable products. The theoretical part describes sustainability principles, consumer behaviour patterns, and trends in the development of the food industry, while the empirical part analyses consumer attitudes and preferences based on primary research data. The results show that sustainability certification has a significant impact on consumer choices, and price sensitivity is less significant in case of environmentally conscious consumers. The conclusions of the study offer strategic recommendations for strengthening sustainability communication and improving corporate practices in the food industry. Additionally, the study highlights the need for enhanced consumer education and targeted marketing strategies to better address diverse consumer segments and promote sustainable purchasing habits, thereby encouraging a shift towards more sustainable consumption patterns within the Slovak food market.

Key words: sustainability, consumer decisions, food industry, price sensitivity

JEL Code: Q01, Q18, D12

Introduction

Sustainability has become a key issue in the 21st century, transforming industries and reshaping consumer behaviour. Nowhere is this change more apparent than in the food industry, where consumer choices are increasingly influenced by organic labels and certifications. As global efforts to combat climate change intensify, it is vital to understand how these certifications influence purchasing habits. The aim of this study is to explore the interaction between sustainability certification and price sensitivity and to provide insights into how the food industry can promote more environmentally conscious consumption.

1 Theoretical overview

The theoretical part provides an overview of environmentally conscious consumer behaviour, highlighting its crucial role in promoting sustainability and combating climate change. It also discusses the increasing willingness of consumers to accept premium pricing for eco-labelled products, with a particular focus on the food industry, and explores the links between price sensitivity and sustainability objectives. It also presents the European Union's Farm to Fork strategy to shift to sustainable food systems and reduce the industry's environmental impact (Mura, 2012).

Environmentally conscious consumers believe that their actions can actively contribute to halting environmental degradation and believe that it is possible to combat climate change, for example by taking action to reduce carbon emissions. Research in recent years has confirmed that environmentally responsible consumer behaviour is essential to tackle environmental challenges. This behaviour is multi-layered, including socially responsible consumption, environmental considerations and responsible purchasing decisions. Researchers have distinguished between the traditional socially conscious and the environmentally conscious consumer, emphasising that the latter has certain demographic and socio-psychological characteristics to a greater extent. Environmental consciousness develops through different attitudinal stages - including cognitive, emotional and behavioural aspects. These attitudes are continuously developed by consumers as information, experiences and emotions about products and companies shape their purchasing decisions (Kautish & Sharma, 2019; Drichoutis et al., 2016).

Previous research has shown that consumer commitment to the environment in Slovakia is low, despite the deteriorating state of the environment. Only 20.8% of respondents are sure to choose environmentally friendly products. Although environmentally friendly products for everyday consumption are more frequently purchased, longer-term products such as energy-saving and chemical-free products are less frequently added to the shopping basket. The positive impact on health is the main motive for buying organic products, rather than environmental protection. The main barriers to purchase are higher prices and lack of faith in the quality of the products (Musova et al., 2018).

1.1 Impact of eco-labels on price sensitivity and willingness to pay

Technologies for sustainable development often come at a higher cost, resulting in a significant price gap between green and conventional products (Ingenbleek, 2015).

A number of studies have shown that consumers are willing to pay higher prices for eco-labelled products, especially for foods such as coffee (Sorqvist et al., 2013), chocolate (Vecchio & Annunziata, 2015), tuna (Zhou et al, 2016), seafood (Fonner & Sylvia, 2014), and wine (Delmas & Grant, 2014). Environmental labels offer a number of benefits for consumers and businesses seeking sustainability. They authenticate the sustainability of products as third-party certificates, thus increasing trust and reducing information asymmetries, helping consumers to make environmentally conscious decisions. In addition, they reduce search costs by making it easy to identify sustainable products, which is particularly important in low-commitment shopping situations, such as when buying food. Increased confidence in labelled products contributes to an increase in consumers' willingness to pay, with consumers being willing to pay up to 20% more for these products. In addition, eco-labels increase environmental awareness by informing consumers about sustainable production methods and environmental benefits (Sigurdsson et al., 2022). However, although consumers often emphasise that they are willing to pay higher prices for sustainable products, actual purchasing patterns indicate that many consumers choose cheaper alternatives. This suggests that an effective marketing strategy to address sustainability pricing and higher costs has not yet been developed (Ingenbleek, 2015; Sánta et al., 2020).

1.2 Promoting the sustainability of the food industry

On 20 May 2020, the European Commission announced the Farm to Fork (F2F) strategy, part of the European Green Deal, which aims to promote the transition to sustainable food systems. The strategy covers many areas of the food chain, including livestock, crop production, food labelling and international trade. The F2F objective is to increase the sustainability of the food industry and reduce its negative impact on the environment. The European Commission plans to introduce harmonised mandatory nutrition labelling on the front of packs to encourage consumers to make healthier and more sustainable food choices (Felkai & Kuti, 2022).

2 Methodology

The aim of this article is to explore the impact of sustainability certification and climate-friendly labels on the food purchasing decisions of consumers in Slovakia. The research examines two main aspects: the behaviour of environmentally conscious consumers in relation to the impact of sustainability labels and the willingness of price-sensitive consumers to prefer sustainable products.

During the research, primary data collection was carried out, for which a questionnaire survey was chosen as one of the quantitative methods. As a sampling technique, we used the snowball technique, which is a non-probability sampling technique where current participants are offered new respondents for the survey. The questionnaire was first sent to some acquaintances and then forwarded by them to other potential participants. In the end, 255 responses were received, all of which could be used for analysis after data cleaning.

The main part of the study is the hypothesis testing. Each hypothesis test is based on two contradictory hypotheses: the null hypothesis (H_0) and the alternative hypothesis (H_1). The null hypothesis generally assumes that there is no relationship between the data or distributions, while the alternative hypothesis claims the opposite. Our aim is to reject the null hypothesis, which may provide indirect evidence for the correctness of the alternative hypothesis. While the confirmation of the alternative hypothesis is important, the refutation of the null hypothesis also provides essential information for understanding the relationships. The first hypothesis of our research (H1) is formulated as follows:

H1: The rise in the price of sustainable food has a positive impact on consumers' commitment to the environment.

- $H1_0$: There is no link between the price of environmentally friendly products and the commitment to sustainable food consumption.
- $H1_1$: There is a link between the price of environmentally friendly products and the commitment to sustainable food consumption.

The formulation of our first hypothesis is based on the research of Popic et al. (2019), who analysed the factors influencing sustainable food consumption. The research paid particular attention to the role of price and found that environmentally friendly packaging often entails a higher price, which has a negative impact on consumer behaviour. In the light of these findings, it is interesting to examine how this phenomenon influences environmental commitment.

Our second hypothesis (H2) was the following:

H2: Consumers who always read food labels looking for information about sustainability or climate-friendly practices are more concerned about the effects of climate change on our planet.

- $H2_0$: There is no link between monitoring food labels and climate change concerns.
- $H2_1$: There is a link between monitoring food labels and climate change concerns.

Research by Van Loo et al. (2017) found that consumers who are particularly concerned about the sustainability of food production place a higher value on such products and spend more time carefully checking sustainability information when choosing food. These findings formed the basis of our second hypothesis.

Pearson's chi-squared tests were used in H1 and H2, but we had to check the basic rule that a maximum of 20% of all cells could have an expected frequency of less than 5. It was fulfilled in the case of H1 and H2 too. A significance level of α=0.05 – which is the generally accepted threshold for assessing significance – was used. If the results made it necessary, we also calculated the Gamma coefficient to examine the strength and direction of the relationship. IBM SPSS software was used for hypotheses testing.

3 Results

This chapter presents the demographic characteristics of the respondents to the survey and the results of the statistical analysis of the two hypotheses. The chapter discusses in detail the results of the Pearson's chi-square test and the calculation of the Gamma coefficient to assess the significance and strength of the relationships between the variables under study.

The demographic characteristics of the respondents to the survey give a broad picture of the respondent group. These are detailed in Table 1.

Tab. 1: Demographic characteristics of the sample (n = 255)

Demographic category	Sub-category	Percent
Gender	Female	49.8%
	Male	50.2%
Age	18-25	12.5%
	26-35	34.5%
	36-49	34.9%
	50-63	16.1%
	64+	0.8%
Residence	Village	46.3%
	Town	46.3%
	Capital city	7.4%
Education	Primary school	3.0%
	Vocational school	21.1%
	High school with certificate	40.9%
	University	35.0%

Number of persons living in the household	1	4.1%
	2	12.3%
	3	27.1%
	4	35.2%
	5	18.2%
	6	3.1%
Net monthly income	Highest income	2 500 €
	Lowest income	0 €
	Average income	1 370 €
	Median	1 500 €
	Mode	1 200 €

Source: own processing

The gender distribution is almost evenly balanced, with 50.2% of respondents being male and 49.8% female. In terms of age, the 36-49 age group represented the largest proportion (34.9%), while the oldest respondents, aged 64 and over, represented only 0.8% of the total. In terms of place of residence, almost half of the respondents, 46.3%, live in a village, the same proportion in a town, while 7.4% live in the capital. In terms of household size, households of 4 persons (35.2%) were the most common, while households of 1 (4.1%) or 6 (3.1%) persons were the least common. In terms of educational attainment, most respondents have a secondary school leaving certificate (40.9%), but there is also a significant proportion of those with a university degree (35.0%). The average net monthly income is €1 370. The highest income was €2,500 and the lowest €0, mainly due to student respondents.

3.1 Hypotheses Testing

In testing the hypothesis H1, we used the degree of importance of price as the independent variable and the degree of commitment to sustainable food consumption as the dependent variable, thus using two ordinal variables.

Tab. 2: Chi-square test - testing Hypothesis 1

	Value	**df**	**Asymptotic Significance (2-sided)**
Pearson Chi-Square	**66,955[a]**	8	**<0.001**
Likelihood Ratio	72,503	8	<0.001
Linear-by-Linear Association	43,010	1	<0.001
N of Valid Cases	**255**		

Source: own processing

The results of Pearson's chi-square test (Table 1) indicate a significant relationship between price importance and commitment to sustainable food consumption, with an empirical significance level <0.001.These results allow us to reject the null hypothesis and accept the alternative hypothesis, consistent with our original hypothesis H1 that an increase in the price of sustainable food will positively affect consumers' commitment to environmental protection. Since we have found a significant relationship between the two ordinal variables, we calculated the Gamma coefficient.

Tab. 3: Analysis of the Gamma coefficient - H1

		Value	Asymptotic Standard Error	Approximate	Approximate Significance
Ordinal by ordinal	**Gamma**	**0.532**	0.066	7.343	<0.001
N of Valid Cases		**255**			

Source: own processing

The obtained value of 0.532 indicates a moderately strong positive relationship between the variables we are examining. This implies that as the price of sustainable food increases, consumer commitment increases, suggesting that higher prices may increase, rather than decrease, the commitment to sustainability among certain groups of consumers.

In the case of H2, the independent variable is identified as the group of consumers who regularly read food labels, while the dependent variable represents the level of concern about the effects of climate change on our planet. As only one cell had an expected value below 5, representing 11.1% of the cells, we were able to perform the test.

Tab. 4: Chi-square test - testing Hypothesis 2

	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	15,745	4	**<0.003**
Likelihood Ratio	15,843	4	<0.003
Linear-by-Linear Association	12,259	1	<0.001
N of Valid Cases	255		

Source: own processing

Based on the results of the chi-square test (Table 3), there is a significant relationship between the frequency of reading and checking food labels and the level of consumer concern about climate change, as the empirical significance level (0.003) is below the 5% significance level. On this basis, we can reject the null hypothesis and accept our alternative hypothesis, in

line with our original hypothesis H2. After finding a significant relationship between the two ordinal variables, the Gamma coefficient was calculated.

Tab. 5: Analysis of the Gamma coefficient – H2

		Value	Asymptotic Standard Error	Approximate	Approximate Significance
Ordinal by ordinal	**Gamma**	**-0.339**	0.092	-3.540	<0.001
N of Valid Cases		**255**			

Source: own processing

The Gamma coefficient of -0.339 shows a negative correlation between the two variables, meaning that the more often consumers read food labels with sustainability or climate-friendly information, the lower their concern about the impact of climate change on the planet.

Conclusion

In our study we tested two hypotheses, and in both cases we used Pearson's chi-square test to assess the relationship between the variables. The results of the statistical test supported our first hypothesis (H1) that an increase in the price of sustainable food has a positive effect on consumers' commitment to environmental protection. The Gamma coefficient of 0.532 showed a moderately strong positive correlation, suggesting that higher prices of sustainable food are associated with an increase in consumer engagement. This result is in contrast to the research of Popic et al. (2019), who found that the higher price of environmentally friendly packaging has a negative effect on consumer behaviour. The discrepancy may be due to the fact that while Popic et al. focused mainly on price-sensitive consumer groups, our research suggests that consumers who are more committed to sustainability are willing to pay a higher price for products that are in line with their environmental values. Thus, higher price tends to trigger increased commitment and preference among certain consumer groups, rather than act as a disincentive.

The second hypothesis (H2) of the research examined whether consumers who regularly read food labels for sustainability information show greater concern about the effects of climate change on the planet. Pearson's chi-squared test showed a significant relationship, but a Gamma coefficient of -0.339 indicated a negative correlation. This suggests that the more often consumers read labels, the less concerned they are about the effects of climate change. Although research by Van Loo et al. (2017) found that consumers who show concern pay more attention

to labels, our results suggest that consumers who read labels frequently are better informed and therefore less concerned.

Based on the results of the research, we recommend that companies emphasise the underlying environmental benefits of higher prices for sustainable products, as this can increase customer engagement. It is also important to use targeted marketing to reach consumers who are committed to sustainability, highlighting the environmental impacts of products. In addition, it is worth launching education campaigns on the importance of sustainability labels, as frequent reading of labels increases consumer awareness and reduces concerns. And for price-sensitive consumers, the introduction of incentive schemes can help to overcome the barriers caused by higher prices, thus widening the availability of sustainable products.

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