Young Consumers' Willingness to Pay for Environmentally Friendly Products: A Multi-Category Analysis

Natalia Kozik-Kołodziej[1] – Małgorzata Jarossová[2] – Bartłomiej Kabaja[3]
ORCID iD: 0000-0001-6787-2573[1], 0000-0003-2006-8339[2], 0000-0002-4155-2966[3]
kozikn@uek.krakow.pl, malgorzata.jarossova@euba.sk, kabajab@uek.krakow.pl
[1,3] Krakow University of Economics, Institute of Quality Sciences and Product Management, Department of Packaging Science and Logistics Processes
Kraków, Poland
[2] Bratislava University of Economics and Business, Faculty of Commerce, Department of Marketing
Bratislava, Slovakia

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Abstract: The study investigates the willingness of young consumers to pay (WTP) for environmentally friendly products in five categories: food, cosmetics, clothing and footwear, household chemicals, and electronics. Data were collected in January 2026 using a CAWI survey among 200 students of the Krakow University of Economics, aged 19-24. The respondents indicated the maximum percentage premium they would accept for products produced under strict environmental standards. The results show a moderate WTP, most frequently 5-10%, with the highest values for cosmetics and food. Statistical analysis revealed a significant and moderate effect of gender, with women more willing to pay higher premiums, while education and monthly budget showed weak relationships and place of residence was not significant. Findings suggest that WTP is context-dependent, varying by product category rather than solely by sociodemographic characteristics. The study contributes theoretically by applying a uniform WTP measurement across multiple product categories within a single sample and practically by indicating acceptable premium levels for pricing strategies and the importance of value- and attitude-based market segmentation.

Keywords: willingness to pay, eco-friendly products, consumer behavior, product categories, environmental awareness

JEL Classification codes: D12, Q56, M31

INTRODUCTION

In response to the growing global population and the ongoing degradation of the natural environment, increasing efforts are being made to promote more sustainable consumption (Azevedo & Silva, 2025). Most consumers are increasingly interested in environmental protection and in reducing the negative impact on the environment and society (Mancini et al., 2016; Ulusoy, 2016). The desire for sustainable consumption refers to the use of products and services that minimize environmental harm, promote efficient use of resources, and ensure ethical production practices (Salam et al., 2024). Research on consumer behavior helps to understand the motivations behind purchasing decisions, identifying how interest in environmental issues shapes preferences and willingness to buy (Al-Kumaim et al., 2021). Consequently, consumer products must become not only inclusive, healthy and nutritious, but also sustainable (Andreani et al., 2026). Therefore, the aim of this study was to determine consumers' willingness to pay for environmentally friendly products in different categories. The

study included food, cosmetics, clothing and footwear, household chemicals, and electronic devices. This article consists of an introduction, a review of the literature, a methodology, a discussion and results, and a conclusion.

1 LITERATURE REVIEW

Willingness to pay (WTP) is a widely used concept in scientific research. In the Scopus database, during the first two months of 2026, approximately 106 scientific articles included this phrase in their keywords, title, or abstract. Studies of this type include, among others, national parks (Endalamaw et al., 2026), nest boxes for insectivorous birds (Lazaridou & Michailidis, 2026), housing modifications (Snyman et al., 2026), vaccinations (Wang, 2026) or mitigation of climate change (Blackman, 2026). From the perspective of the present study, the most relevant and interesting are the analyses of willingness to pay for environmental and ecological attributes of consumer products.

This is due to the possibility of using the contingent valuation method (CVM), which is suitable for the quantitative assessment of intangible attributes (Carson & Hanemann, 2005). And such are goods with environmental benefits. It is precisely in the literature on environmental economics that respondents' stated preferences have become the basis for estimating and expressing them in monetary terms (Carson & Hanemann, 2005).

An example of such research is the study by Shaari et al. (2025), which examined the willingness to pay more for meat from local producers. Conducted in Malaysia, the study demonstrated a statistically significant willingness to pay a higher price for this type of food product. Similarly, Muhenga and Alphonce (2023) investigated the willingness to pay for eco-friendly sunflower oil among consumers in Tanzania. Comparable research by Gustavsen et al. (2025) focused on Norwegian consumers and analyzed willingness to pay for lettuce depending on the type of fertilizer used.

In other product categories, such as cosmetics, Kolling et al. (2022) conducted studies. They found that among cosmetic users in Brazil and Italy, most were willing to pay more for products from companies that participated in corporate social responsibility and circular economy initiatives. In contrast, people who were less willing to pay more for cosmetics tended to be younger, male, and less educated. Cosmetics were also examined by Natsir et al. (2025) in a study on ecolabeled products conducted in Japan. One of the most important findings was that consumers must be aware of the meaning of eco-labels in order to be willing to purchase such products.

Equally interesting research on electronic products, specifically cook stoves, was conducted by Bersisa et al. (2021). The study estimated the willingness to pay for more environmentally friendly solutions and identified a price range, although expressed in Ethiopian Birr. The results showed that higher education, higher income, and employment outside of agriculture increased the probability of adopting improved cook stoves.

Zhao and Huh (2025) used an online survey to study consumers and assess their WTP for carbon-neutral clothing. This research identified an average WTP of 9.63% of the product's value. These results demonstrated that there is economic viability in marketing such clothing. The declared level of additional payments was higher than the cost of manufacturing such products. Variables such as age, attitude, behaviour and interpersonal relationships significantly influenced WTP (Zhao & Huh, 2025).

Saija and Daniotti (2025) conducted very similar research, but focusing on cleaning products and detergents. Their findings confirmed the trend that consumers are willing to pay more for environmentally friendly products. Using laundry detergents as an example, it was found that respondents were willing to pay an extra €2.42 for packaging with reduced plastic content and

an extra €2.22 for the use of renewable and eco-friendly surfactants. This study provides detailed insights into consumer preferences and how aspects of sustainability can influence willingness to pay (Saija & Daniotti, 2025).

Zhan et al. (2025) conducted an interesting study on WTP for organic products. They demonstrated that respondents who are more aware of product characteristics and labelling are more willing to pay a higher price for them, as they believe these products to be of higher quality. For other consumers, the authors of the study recommend running effective advertising campaigns. These findings may prove helpful not only to producers of these products but also to governments and policymakers (Zhan et al. 2025).

As shown, various studies address the willingness to pay for products with ecological attributes. However, for many reasons, these studies are not directly comparable. They involve different research groups, use different measurement methods that are not equivalent, and rely on different currencies and price levels depending on the region where the research was conducted. All of this makes drawing clear conclusions and comparing results difficult.

Therefore, the objective of the present study was to determine the willingness of consumers to pay for environmentally friendly products in different categories. By using a single measurement scale and the same research sample, this study fills a gap in the literature on willingness to purchase and pay for eco-friendly products. Consequently, the following research question was formulated – RQ1: How much are consumers willing to pay for environmentally friendly products in the categories examined?

2 METHODOLOGY

The study was conducted using the CAWI method (Computer-Assisted Web Interviewing). Data were collected through an original questionnaire developed in Google Forms. The research was carried out in January 2026. The sample consisted of 200 students from the Krakow University of Economics. A nonprobability convenience sampling approach was applied. Respondents were between 19 and 24 years old.

The questionnaire consisted of two parts:

- a demographic section including questions on gender, education level, place of residence, and monthly personal budget;
- the main section measuring willingness to pay (WTP) for environmentally friendly products manufactured according to strict environmental standards.

Respondents were asked to indicate the maximum percentage premium they would be willing to accept for five product categories: food, cosmetics, clothing and footwear, household chemicals, and electronics. Answers were provided on an ordinal scale with the following levels: 0%, 5%, 10%, 15%, 20%, 25%, and above 25%. The ordinal percentage-premium scale was selected to facilitate respondents' understanding and reduce cognitive burden, as well as to ensure comparability of responses across product categories. Compared to open-ended questions, this approach limits extreme or unrealistic values, while in contrast to dichotomous choice formats it allows for capturing variation in the intensity of willingness to pay.

Before the main study, a pilot test was conducted with a group of 15 students to verify the clarity and linguistic accuracy of the questionnaire. Minor editorial adjustments were made after the pilot stage. Data analysis included descriptive statistics and non-parametric tests appropriate for categorical variables. To assess the relationships between willingness to pay and sociodemographic characteristics, Pearson's chi-square test was applied. The strength of

the associations was evaluated using Cramér's V and Kendall's tau-b and tau-c coefficients. A statistical significance level of α = 0.05 was adopted.

3 RESULTS AND DISCUSSION

A total of 200 students (n) from the Krakow University of Economics aged 19–24 participated in the study. Women constituted the majority of the sample, representing 64% of the respondents. Men represented 34%, while 2% of the participants chose not to disclose their gender. A more detailed description of the study sample is presented in Table 1.

Tab. 1 Characteristics of the study sample

Independent variables	Categories	Structure indicator (%)
Gender	Female	64.0
	Male	34.0
	Refusal	2.0
Education	Secondary	71.5
	Bachelor's degree	26.0
	Master's degree	2.5
Place of residence	Rural area	39.0
	City with up to 100,000 inhabitants	24.0
	City with over 100,000 inhabitants	37.0
Monthly budget per person	Up to 700 PLN	38.5
	701 – 1,500 PLN	44.0
	1,501 – 2,300 PLN	10.5
	2,301 – 3,500 PLN	3.5
	Above 3,500 PLN	3.0
	No response	0.5

Source: own study

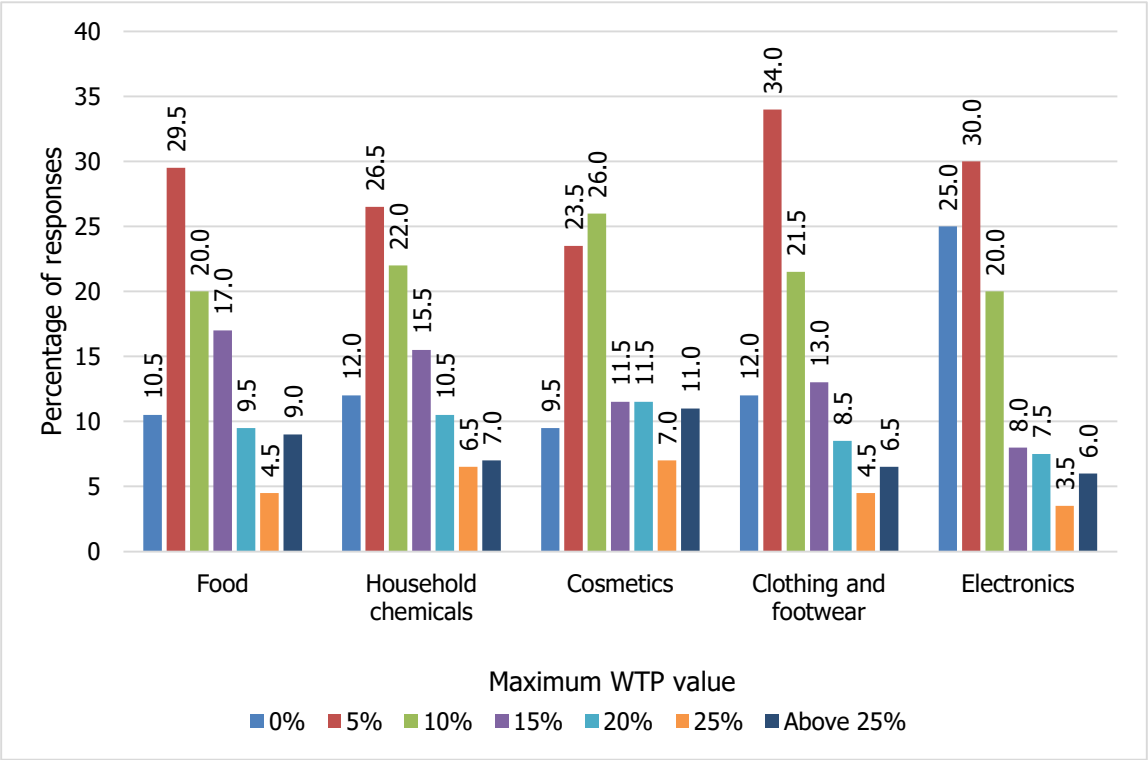
In the main part of the study, consumers indicated how much they would be willing to pay for environmentally friendly products manufactured under strict environmental standards. Respondents provided separate assessments for each product group: food, cosmetics, clothing and footwear, household chemicals, and electronics. The collected data are presented graphically in Fig. 1.

The lowest willingness to pay was recorded for electronics, where as many as 25% of respondents declared no willingness to pay any price premium (0%). In this category, the most frequently indicated premium was also relatively low, with 25% of respondents selecting a 5% increase, while higher levels such as 20% or more were indicated by a clearly smaller share (below 10%).

Across most product categories, including food, clothing and footwear, household chemicals and electronics, the most frequently selected value was a 5% premium. For example, 29.5% of respondents chose a 5% premium for food, 26.5% for household chemicals, and 25% for

clothing and footwear. This confirms that a 5% increase represents the most commonly accepted level of price premium overall.

Fig. 1 Maximum willingness to pay (WTP) across product categories



Source: own study

The highest willingness to pay was observed in the cosmetics category. In this case, the most frequently indicated premium was 10%, selected by 26% of respondents. Additionally, cosmetics recorded the highest share of respondents declaring the maximum premium levels, with approximately 11% indicating a willingness to pay above 25%. A relatively high share of maximum responses was also observed for food (around 9%).

In general, consumers were most willing to pay a premium for cosmetics, followed by food and household chemicals, while the lowest willingness was observed for electronics. The distributions of responses across categories were right-skewed, with a concentration of answers at lower premium levels (5-10%) and progressively fewer indications for higher values.

The variation in WTP levels between product categories confirms the contextual nature of perceived environmental value. Higher willingness to pay for cosmetics and food may result from their direct impact on health and everyday use, whereas lower willingness in the case of electronics suggests that environmental benefits are perceived as less immediate or more indirect.

A combined analysis of all responses shows that the most frequently declared premium was 5% (n = 287), followed by 10% (n = 219), indicating a moderate acceptance of higher prices. This suggests that although respondents express positive attitudes toward environmentally friendly products, their price sensitivity remains a significant limiting factor. This finding is consistent with previous research, which indicates a moderate but conditional acceptance of price premiums for environmentally friendly products (Shaari et al., 2025; Muhenga & Alphonce, 2023).

Tab. 2 Percentage distribution of maximum willingness to pay (WTP) by product category

Maximum additional amount consumers are willing to pay for an eco-friendly product	n	Structure indicator (%)
0 percent	138	13.8
5 percent	287	28.7
10 percent	219	21.9
15 percent	130	13.0
20 percent	95	9.5
25 percent	52	5.2
Above 25 percent	79	7.9

Source: own study

To extend the analysis of the stated willingness of consumers to pay for environmentally friendly products, we investigated its relationship with the demographic and behavioral characteristics of the sample surveyed. The findings are summarized in Table 3.

Tab. 3 Relationship between sociodemographic variables and willingness to pay (WTP)

Variable	χ^2	df	p-value	Cramér's V	Kendall's tau-b	Kendall's tau-c
Gender	130.17	6	<0.001	0.364	—	—
Education level	37.68	12	0.00017	0.137	-0.015	-0.013
Place of residence	12.02	12	0.444	—	—	—
Monthly budget	61.89	24	0.00003	0.125	0.047	0.042

Source: own study

The analysis first examined the relationship between the gender of the respondents and their willingness to pay. Responses marked as 'prefer not to answer' were excluded, and Pearson's chi-square test was applied for independent samples ($\alpha = 0.05$). The result ($p < 0.001$) indicates a statistically significant association between sex and WTP levels, with a moderate effect size (Cramér's V). Importantly, the empirical distributions reveal a meaningful behavioral pattern: women consistently declared a higher willingness to incur additional costs for environmentally friendly products than men, which aligns with broader evidence of greater female engagement in pro-environmental behaviors (Kolling et al., 2022).

The next step involved assessing the relationship between education level and willingness to pay. A statistically significant association was confirmed; however, evaluation using Cramér's V and Kendall's tau-b and tau-c coefficients revealed a weak effect. This suggests that while higher education may slightly reduce sensitivity to environmental product attributes, it does not substantially differentiate consumer WTP among young adults – a group characterized by relatively homogeneous educational aspirations.

Finally, the relationships between place of residence, monthly budget, and WTP were evaluated using the chi-square test. Place of residence showed no significant association ($p = 0.444$), suggesting that urbanization level does not play a differentiating role in environmental purchasing decisions within this consumer group. Monthly budget, by contrast, yielded a significant result ($p < 0.001$), though the effect remained very weak (Cramér's V; Kendall's tau). This implies that while financial constraints set a general boundary for WTP, they do not strongly predict the extent of consumers' environmental willingness to pay.

Taken together, these findings indicate that sociodemographic variables have limited explanatory power for WTP in this sample. Although significant associations were found for gender, education, and income, most were weak in practical terms. The notable exception is sex, where a moderate association was observed. This pattern points toward a more nuanced conclusion: among young consumers, structural characteristics alone do not adequately account for environmental purchasing behavior. Instead, attitudinal factors – including environmental awareness, eco-label knowledge, and personal value systems – appear to be stronger drivers, as evidenced by prior research (Natsir et al., 2025). These results thus underscore the importance of moving beyond demographic profiling when seeking to understand and promote sustainable consumption.

The results obtained allow for a clear answer to the research question. With regard to RQ1, it was found that young consumers declare a moderate willingness to pay a higher price for products manufactured in accordance with strict environmental standards, most often at the level of 5–10%, although this level varies across product categories.

CONCLUSION

The findings of this study align with the body of literature that indicates that the willingness to pay for environmental attributes is not determined solely by economic factors but is multidimensional and dependent on the context of the product. The theoretical contribution of the study lies in the application of a uniform WTP measurement methodology across several product categories within the same sample, enabling direct comparison between them. The results suggest that the willingness to pay for environmental attributes is context-specific and varies by product category rather than being driven exclusively by demographic characteristics of consumers. This may indicate the growing importance of attitudinal and value-based factors in explaining pro-environmental behaviors among young consumers.

From a practical perspective, the results point to the existence of an acceptable moderate price-premium threshold, which may serve as guidance for companies' pricing strategies. At the same time, the limited role of demographic variables highlights the need for more advanced market segmentation methods based on the level of environmental engagement and value systems of consumers.

However, the study has several limitations that warrant careful consideration. The sample was nonrepresentative: the use of convenience sampling and the restriction to students of one university limits the generalizability of the findings to the broader population of young consumers, let alone to other age groups. The sample's demographic homogeneity – in terms of age, education, and likely environmental attitudes – may have contributed to elevated WTP declarations. A further, more fundamental limitation concerns the validity of hypothetical WTP measurement. Survey-based approaches relying on stated preferences are prone to hypothetical bias, as respondents tend to overstate their willingness to pay compared to their actual behavior in real market conditions. Meta-analytic evidence indicates that hypothetical WTP overestimates real WTP by approximately 21% on average (Schmidt & Bijmolt, 2019), with more recent studies confirming that this discrepancy persists across different product categories and consumer groups (Ebert et al., 2025). The ordinal scale format adopted in this

study mitigates some of these concerns by anchoring responses and limiting extreme values, but does not fully resolve the gap between stated and revealed preferences. The results reflect declared price preferences for environmental products and constitute a valuable indicator of consumer attitudes, though their translation into actual purchasing decisions requires verification through experimental research.

Future research should include more diverse respondent groups and incorporate additional variables such as environmental awareness, trust in eco-labels, or perceived product value. It would also be advisable to employ experimental methods or studies of real purchasing behavior to verify the declared willingness to pay.

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