Journal of Entrepreneurship, Business and Economics
ISSN 2345-4695
2025, 13(2), 84-117

CONSUMER WILLINGNESS TO PAY A PREMIUM FOR SUSTAINABLE PRODUCTS UTILIZING RECYCLED PLASTICS IN HUNGARY - INFLUENCE OF ENVIRONMENTAL AWARENESS AND BRANDING STRATEGY

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Received March 2025; accepted August 2025

Abstract
This study investigates Hungarian consumers' willingness to pay a premium for sustainable products made from recycled plastics, with a focus on the role of environmental awareness and branding strategies. Following a literature review, premium pricing was examined in relation to consumer value perception and eco-consciousness. The primary research was based on a quantitative online survey conducted among Hungarian residents. Descriptive and inferential analyses were used to explore the connections between environmental attitudes, branding strategies, willingness to pay a premium, and demographic variables. The results show that factor price is remaining very important in Hungary, further on product durability and certifications related to CO2 neutrality significantly enhance consumers' willingness to pay more. Well-educated, higher-income respondents from the capital city placed greater emphasis on green products and were more likely to accept higher prices than others. Contrary to expectations, influencer marketing and brand trust had a weaker impact. The findings offer practical recommendations for companies aiming to strengthen eco-branding and pricing strategies in Hungary's sustainability market.

Research Paper

Keywords: Consumer Behavior, Willingness to Pay, Sustainable Products, Recycled Plastics, Branding Strategies

Reference to this paper should be made as follows: Sarközi, D., & Szabo, Z. (2025). Consumer Willingness to Pay a Premium for Sustainable products utilizing recycled plastics in Hungary - Influence of Environmental Awareness and Branding Strategy. *Journal of Entrepreneurship, Business and Economics*, *13*(2), 84–117.

Introduction

Problem Statement

Sustainability is a crucial factor, as according to study 83% of consumers across all generations are representing a varying degree of green-mentality and it is also a relevant factor during purchasing decisions of consumers (Ottman 2017). The necessity to balance economic development with environmental sustainability support many consumer decisions, as sustainable consumption is in connection with broader well-being (Kadiu et al. 2022). Sustainable products utilizing at some point recycled plastics are holding massive potential, as plastics being a common raw material in all possible products and using recycled plastics instead of virgin ones can significantly reduce carbon footprint of products (Hillman et al. 2015; Hosseini et al., 2025). Further on, studies pointing out that companies who are using recycled plastics in their products can effectively enhance their eco-friendly image (Varga 2024). But using green raw materials also costs more and it is often reflected in the prices (Izaret & Sinha 2023). This makes the problem relevant, as some consumers are not willing to pay for green premium (Kotabe & Helsen 2022) or their willingness is primarily dependent on the environmental awareness (Barnett et al. 2022). But which factors, branding strategies, tools are influencing positively or negatively consumers' willingness to pay premium for sustainable products and how does it look like in Hungarian context?

Research gap

While Kovács & Keresztes (2022) conducted research in Hungary on the relationship between willingness to pay a premium (WTP) and perceived consumer effectiveness (i.e., the belief that individual purchasing decisions can help the environment), their study focused solely on sustainable food products. Tey et al. (2017) also contributed to this research field, revealing that aligning the value of sustainable products with consumers' price expectations is essential, otherwise consumers are unlikely to pay a premium. Their study provided meaningful insights but was not specific to the Hungarian market.

Further research by Kucher et al. (2019) showed that purchasing power and regional differences significantly influence consumers' willingness to pay a premium for ecological goods, although this study was conducted exclusively in Ukraine. Additionally, Biswas & Roy (2016) concluded that environmental perception and experience with green products positively influence WTP. Their study also emphasized that performance, efficiency, reliability, and value are the main drivers for WTP, especially when green products can offer these benefits without compromise. They also noted that consumers are more likely to support companies that show clear environmental responsibility. This study was conducted in India.

Research objective

This study explores various factors influencing Hungarian consumers' willingness to pay a higher price for sustainable products made from recycled

plastics. It examines how different branding strategies, communication methods, and marketing tools affect consumers' decisions to pay a premium. Additionally, the research aims to identify key obstacles and branding approaches that may hinder this willingness. The role of price in purchasing decisions is also assessed, with a particular focus on products that utilize recycled plastics.

Furthermore, the study investigates how environmental awareness impacts consumers' willingness to pay more. It also aims to identify the most effective branding strategies that could enhance this willingness under specific conditions. Finally, the study analyzes the influence of demographic factors - such as age, income, education level, gender, and place of residence - on consumers' willingness to pay a premium, offering a comprehensive overview of the drivers of consumer behavior in the Hungarian sustainability context.

Hypothesis

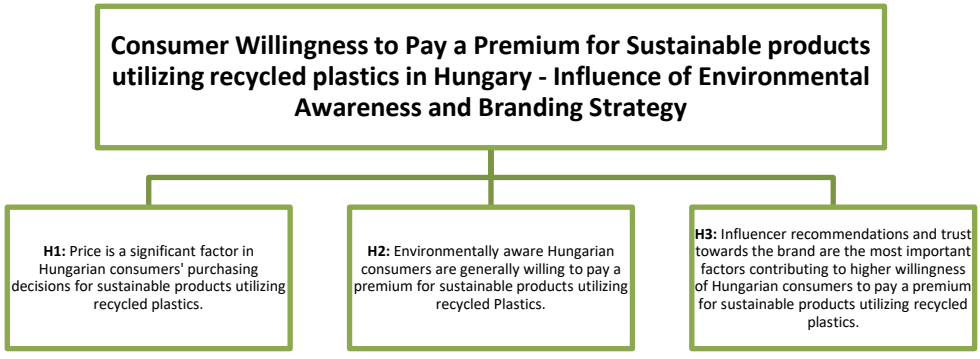

Figure 1. Hypothesis of the study

Literature Analysis

Understanding Sustainable Pricing and Consumer Behavior

A sustainable pricing strategy involves setting prices that also cover a company's social and environmental costs above conventional level of its price calculation which mostly includes costs of raw materials, manufacturing costs, administration and logistics costs. The goal is to support a sustainable economy, minimize environmental impact and harm (Albinsson 2024). On the other hand, premium pricing is a strategy involves setting the selling prices higher than those of the competitors. The main purpose is to create a market perception that the certain product is slightly superior or provides some extra benefits compared to others. This approach works best when supported by a strong marketing campaign designed to improve that perception (Gange 2024). Premium prices are often used to maximize profit in situations where customers are willing to pay more, where there are no direct substitutes for the product, or where production at scale is not cost-effective. Premium pricing can also strengthen brand identity in a specific market. This is known as price-quality signaling, as the high price communicates to consumers that the product is of premium quality and worth its cost. Some companies use this strategy to establish a premium image (Rajagopal 2013).

Companies could have various reasons to implement premium price, mainly in case of sustainable products (Gange 2024):

- To recover the initial costs of research, industrialization and commercialization of products
- Businesses aim to maximize profit by simple building on the willingness of eco-conscious consumers to pay more for such products

- The premium helps differentiate eco-friendly products from conventional ones in the company's product line
- Higher prices are partly due to the increased costs of raw materials and supply chains

Another term explains that green premium refers to the extra cost customers pay for a green product compared to a conventional one. When looking at the supply chain, the green premium can be seen as a "green adder" for businesses occurring during production of eco-friendly products because it often involves additional expenses, such as sustainable materials or energy-efficient manufacturing processes (Izaret & Sinha 2023).

On the consumer side, key-indicator is represented by the willingness to pay more (also known as WTPM) that refers to a customer's intention to accept premium prices. This willingness can be achieved when a relevant number of consumers are ready to pay higher prices. Consumers' willingness to pay more for green products occurs only when they recognize the value of protecting the environment. As a result, even if green products are seemed to be of lower quality or are more expensive compared to conventional products, consumers may still be willing to pay his extra money for them (Ningrum et al. 2022).

Several factors influence a consumer's willingness to pay more, such as purchasing power, age, gender, and social status. Additionally, the percentage of consumers willing to pay varies significantly across countries (Oesman 2020). Consumers worldwide are willing to buy sustainable products. While consumers are prepared to make sacrifices – like paying a premium – for eco-

friendly products, this willingness is often limited in case of economic problems or weak economical periods. One survey revealed that over one-third of consumers in developing countries are not prepared to pay more for green products. Interestingly, consumers in these countries were found to be less resistant than those in the west to pay extra for eco-friendly goods (Kotabe & Helsen 2022).

One of the main challenges in producing sustainable products is overpricing (Vehmas et al. 2018). While today's consumers are looking for sustainable options, they also prefer products that are easy to use and relatively affordable. Although prices might decrease if demand increases, higher production costs make it unlikely for demand to grow significantly, creating a dangerous cycle. (Fukushige et al. 2024).

From a consumer's perspective, price often represents an indicator of quality. Global trends show that customers are familiar with the concept of premium pricing and the brands that offer them. Premium products have become symbols of good taste, reflecting social status and personality. As a result, there is little doubt that people would like to own such products (Ashraf et al. 2017). This perceived value can build trust, reduce the risk of dissatisfaction, and align with consumers' self-image or needs. Market conditions play a critical role in shaping pricing strategies. Businesses need to closely monitor competitors, market demand and economic factors that can impact their pricing power. In highly competitive environments, pricing must be flexible, adapting to competitor pricing and customer behavior. (Hermans & Cybellium, 2024).

Green consumers are aware and very much focused on the health of their own of their family (Ottman 2017). They are deeply concerned about environmental issues and tending to purchase products which are healthy, eco-friendly and their manufacturing footprint is neutral to the nature (Sarkar, 2012).

Younger consumers, especially Generation Z, display strong eco-conscious tendencies, often driving the demand for sustainable products and innovative branding strategies tailored to their values (Papp-Vary et al. 2023). Environmental concerns can seriously influence a consumer's willingness to pay for eco-friendly products. According to research (Barnett et al. 2022), two main types of consumers could be differentiated:

- Low pro-environmental attitudes: These consumers are less likely to pay a premium, often placing optimism in technology to address environmental issues rather than individual efforts.
- High pro-environmental attitudes: These consumers view environmental health as essential to human well-being and economic sustainability. They see eco-friendly product attributes as an investment in future generations and are more willing to pay a premium

Consumer behavior in Central and Eastern Europe (CEE), including Hungary, has been shaped by the region’s transition from centrally planned to market economies. After the fall of Communism, years of limited product availability led to a strong initial demand for Western goods. Today, CEE consumers are generally well-educated and have high expectations. Still, their purchasing habits are influenced by economic uncertainty and a focus on value. Many prefer affordable options, often prioritizing product function and

price over emotional branding. This price sensitivity remains important even for sustainable product choices. In Central and Eastern Europe, rising energy costs and the high cost of living make it difficult for average families to manage their budgets. Even local, basic products are often too expensive for many, especially retirees and multi-generational families living under one roof. This financial pressure forces people to be very price-sensitive in their shopping decisions. Price and national pride play an important role in consumer behavior. Many consumers prefer local products, especially in basic categories like food, because they believe domestic brands are cheaper and help the local economy. For example, Polish consumers often show strong loyalty to Polish brands. However, this behavior is slowly changing as economies develop and people become more open to foreign brands. Despite limited income, many consumers in the region still spend large amounts on expensive goods like luxury clothing, cosmetics, and perfumes. This behavior is supported by easy access to credit from Western banks, which have expanded across the region. But this has also led to a fast increase in personal debt, which is becoming a concern (Wilkonson & Thomas, 2007).

The study of Scridon et al. (2025) points out similarly, that price is one of the biggest problems when it comes to buying sustainable products, like clothes. Eco-friendly fashion usually costs more because of ethical production and better materials. While many people in Central and Eastern Europe agree with sustainability in theory, they often cannot or do not want to pay extra. For example, many Polish and Romanian consumers said they would only buy eco-fashion if prices were similar to regular clothes. People expect better quality or longer-lasting products to justify a higher price. If

they don't see the value, they usually go back to cheap fast fashion. In CEE countries, decades of low-cost shopping habits and financial uncertainty make this even harder. Good communication about the long-term benefits of sustainable products is still missing in many markets.

Factors & Branding strategies influence willingness to pay premium

The strongest evidence for the growth of eco-friendly consumer behavior is the increasing number of people willing to pay more for environmentally friendly products. By recognizing how their purchasing decisions can help on ecological issues, consumers are tending to adjust their purchasing behavior to environmental challenges by choosing products which are eco-friendly. Several factors affect consumers' willingness to pay more for eco-friendly products. These factors can be grouped into five categories: demographics, values, knowledge, attitudes, and behavior (Mishra et al. 2017). Regarding demographical variables, numerous studies suggest that women are more committed to sustainable consumption and tend to behave in a more environmentally responsible manner. Traditionally, women have been seen as consumers and men as producers, with women estimated to make around 80% of household consumption decisions. Education, environmental concern, income, age and personal norms positively influence sustainable consumption practices (Susan et al. 2020).

Values has also an influence, as price premium is justifiable only if customers perceive sustainable products as having greater value. For example, showing customers how their additional costs are returning on a com-

pletely another way (e.g. through carbon reduction or other reasonable benefits), can help them understand the price difference. Research in the UK shows that most consumers are willing to pay a premium if the benefits and impact are clear (Belz & Peattie 2012). Consumers are willing to pay a premium for sustainable products, most are not prepared to compromise on functional features, such as quality. In other words, consumers are only willing to pay higher prices for labeled sustainable products if those products meet their functional needs (Reisch & Thogersen 2015).

The term knowledge refers to the truths, emotions, and experiences that individuals or groups possess. In a business context, knowledge plays a much larger role than in other areas of society. Product knowledge can be defined as reliable information stored in memory, which helps consumers make purchasing decisions. This information involves skills, meaning, and belief systems stored in a consumer's memory. Research shows that consumers are more likely to buy products with green packaging when they have access to proper environmental information, such as certifications or eco-labels (Ramakrishna & Wahab 2023).

Consumers attitude and behavior can be influenced by several factors, most importantly by their environmental consciousness, level of brand trust and brand loyalty:

– Environmentally conscious consumers with strong ecological concerns often consider the impact of their purchasing decisions and strongly believe they can contribute to protect the environment. This belief influences their behavior, particularly their willingness to pay more for environmentally friendly products. (Mishra et al. 2017).

- Brand trust plays a crucial role in enabling companies to adopt premium pricing strategies. When consumers trust a brand's quality and reliability, they are more willing to pay higher prices. This trust allows companies to increase profit margins while positioning themselves as distinct from competitors who primarily focus on price (Otola et al. 2024).
- Brand image is a very important element in a brand's development as it significantly influences the brand's reputation and credibility. It serves as a key factor in guiding consumers' decisions on whether to buy or pay for a product or service. A consumer's experience with the brand plays a major role in shaping this image, determining whether they remain loyal to the brand or choose to switch to a competitor. A strong, positive brand image enforces trust and long-term loyalty, making it a vital asset for any company (Wijaya 2013).

There are many branding strategies which can influence positively consumer´s willingness to pay more for sustainable products.

Eco-labeling identifies products that meet specific environmental standards, focusing either on performance aspects. Eco-labeling is a voluntary practice often managed by third-party organizations, governments, or non-profits. (Ottman 2007). Certifications and labels help consumers by providing key details about a product's origin and environmental impact, which builds trust (Jarman & Luna-Reyes 2016). Labeling is a crucial aspect and significantly contributes to building brand awareness among consumers, helps companies to communicate important brand messages and highlights transparency and trust (Fatimi 2024).

Third-party certifications play a critical role in ensuring consumers that products meet specific standards. Such certifications motivate consumers to make informed decisions, providing guarantees that product claims are reviewed and validated by independent organizations. (Henderson 2012)

Corporate Social Responsibility (CSR) is broadly defined as how companies integrate social, environmental, and economic concerns into their values, culture, decision-making, strategies, and operations, all while maintaining transparency and accountability. The primary goal is to implement practices that positively influence society (Hohnen & Potts 2007). CSR has the potential to influence consumer behavior, making it a powerful unique selling point for companies, especially for products with environmental or social value. Highlighting CSR initiatives can attract consumers to whom sustainability and social responsibility are very important (Demmerling 2015).

Customer online reviews are feedback shared by customers on company or third-party platforms, typically after making a purchase. These reviews act as a gap filler between customers, companies, and potential buyers, providing valuable information about the quality of products or services. As a form of user-created word-of-mouth (WOM) communication in the digital marketplace, online reviews hold significant influence over customer decisions. (Vásquez 2014). Positive reviews about the article are contributing to consumers' willingness to pay a premium (Ren et al 2022).

Innovative marketing communications, especially which designed for Generation Z, have proven effective in promoting sustainability and increasing willingness to pay for eco-friendly products (Papp-Vary et al. 2022).

Companies now rely on influencers and their followers to effectively communicate sustainable and eco-friendly programs. By partnering with influencers who share similar values, brands can create convincing connections that resonate with their target audience (Cepni 2024). Incorporating influencer branding into marketing strategies can significantly enhance a brand's and corporation's reputation. Influencers effectively communicate brand values and messages to their audience. Partnering up with well-known influencers not only strengthens trust but also improves consumer perceptions of the brand. (Teixeira et al. 2024). Influencer marketing is not only helping a company to reach a broader number of people, but it also improves creditability and contributing to a higher brand awareness (Oktavianti et al. 2024).

A carbon footprint measures the total emissions of carbon dioxide (CO2) and other greenhouse gases (GHGs) generated by individuals, organizations, events, or products. To present their environmental commitment and gain a competitive advantage, many brands use certifications, labels, and logos to highlight their sustainability efforts and eco-conscious initiatives (Sarkar 2012). Given these factors, achieving CO2 neutrality can serve as a significant differentiator for brands.

Using eco-friendly or sustainable packaging could be favorable to environmentally conscious consumers and can positively impact sales. This approach not only attracts green consumers but also improve the brand's overall image. Although many consumers have a positive attitude toward green packaging, they are often reluctant to pay a higher price for it. While some studies indicate that consumers are willing to spend more on eco-friendly packaging. (Chaudhuri & Sur 2024). Moreover, combining green packaging with proper

labeling can significantly enhance the perceived value of eco-friendly products and support green branding and marketing strategies (Sharma et al. 2014).

Transparency about raw materials, manufacturing processes, and the carbon footprint of products, supported by third-party labels and certifications, is an effective strategy for building consumer trust. Brands that openly share such information can differentiate themselves significantly in the market, providing competitive advantage. This approach aligns closely with the expectations of environmentally conscious consumers, who value honesty and sustainability on side of the manufacturers (Wagner 2021).

Another factor influencing the willingness to pay a green premium is the product's origin However, certifications play a crucial role while transforming this preference into a positive willingness to pay premium by assuring them about the product's origin. Country of origin certifications guaranteeing an origin from a special country or region (like European Union Origin) significantly influence consumers' willingness to pay more (Albinsson et al. 2024).

On the other hand, there are factors which may influence consumer´s willingness to pay more rather negatively.

Consumers who lack awareness of environmental issues and the growing threats to environment often do not show preferences toward sustainable products. These individuals lack knowledge about environmental problems and demonstrate low levels of environmental awareness, concern, and consciousness (Information Resources Management Association 2019).

As a result, their product choices and preferences are not influenced by eco-friendly behavior (Bali et al. 2023).

Concerns about product quality is also significant, as when consumers consider purchasing green products for the first time, they often hesitate because they are uncertain about the product's quality, having no previous experience with sustainable products. This uncertainty can lead to suspicion and influence negatively their decision-making process when choosing green products. (Albinsson et al. 2024).

Many consumers associate higher prices with better quality, believing that expensive products are better compared to lower-priced ones (Ordóñez 2004; Tajpour et al., 2021; Tanha et al., 2011; Marković et al., 2022). As a result, price-sensitive consumers often compare the prices and quality of green and non-green products. When the perceived benefits of green products outweigh the disadvantages (such as higher price), consumers are more likely to choose environmentally friendly options. However, if the price difference is too big and the benefits seem too small, they tend to stick to conventional, non-green products. Price sensitivity can limit consumers' ability to make environmentally conscious choices and represent green behavior (Bali et al. 2023).

High level of loyalty can be also classified one of the relevant factors, as consumers who use conventional non-green products and are highly satisfied with them tend to develop strong attachment and loyalty to those brands. These consumers are less motivated to give up their trusted products and choose rather green alternatives. The satisfaction and comfort they receive

from conventional products often prevent them from switching to green alternatives (Bali et al. 2023).

Greenwashing refers to the degree to which companies use corporate social responsibility initiatives to intentionally mislead consumers for financial benefit. (Chandler 2019). Greenwashing involves only highlighting positive environmental actions while hiding harmful practices to mislead consumer perceptions. Companies use this strategy to appear environmentally responsible without really improving their environmental efforts. By manipulating the landscape around their efforts, businesses can influence consumers making purchases based on incomplete or false information, often supporting practices that contradicting with their environmental values. Greenwashing is getting more common due to rising demand for sustainable products (Singh & Medhavi 2024).

Green skepticism represents a significant challenge for consumers, corporations and other stakeholders. It refers to an individual's desire to doubt, question, and distrust claims related to environmental responsibility. This skepticism is often linked to cynicism and low levels of trust, particularly when companies are not investing sufficient efforts to demonstrate real commitment for sustainability (Nguyen et al. 2019).

Consumers who are skeptical about green products often question the validity of claims regarding their environmental performance. They tend to look for additional information by reviewing certifications, examining ingredients and consulting friends or online sources. This behavior helps them verify the product's claims and minimize the risk of choosing a product which fails to meet their expectations. (Leonidou & Skarmeas 2017).

Methodology

Research design

This study uses a dual-method research approach, combining primary and secondary research. For the secondary research, a detailed literature review was conducted by creating relevant keywords and searching through academic databases such as Google Scholar and PubMed. The gathered literature was carefully analyzed and summarized to highlight the findings of existing studies and support the outcomes of this research.

The primary research involved a quantitative study conducted through a standardized online survey in Hungary on Hungarian language, meaning that all participants received the same set of questions based on an online "Google Survey" interface. This survey collected data on Hungarian consumers' purchasing behaviors, explicitly about brand trust, branding strategies, willingness to pay premium, importance of green brands utilizing recycled plastics.

Empirical research design, data collection and analysis

The target sample size for the primary research was between 250 and 300 Hungarian residents living in Hungary. This sample size was calculated based on the total population of Hungary, approximately 9.5 million people (European Union, n.d.), using a 95% confidence level and a margin of error of +/- 6%. Data collection took place from May 2024 to August 2024. The survey questions were developed based on a review of relevant literature, the research objectives, and the stated hypotheses.

The questionnaire was structured into two main sections and included a total of 27 questions: a demographic section, which aimed to gather background information about the respondents, and a main section, which focused on attitudes, awareness, behaviors, and perceptions related to sustainable products utilizing recycled plastics.

The demographic part included categorical variables such as age (possibility to choose from five age groups), gender (male, female and other/prefer not to say), net monthly income (ranging from "no income" to "outstanding"), education level (from primary school to PhD), and place of residence (capital, city, or village). These variables were measured using nominal or ordinal scales depending on the nature of the response categories.

In the main section, several questions were measured using closed-ended Likert scales ranging from 1 to 6, where 1 indicated the lowest or least favorable rating (e.g., "not important at all" or "very poor") and 6 indicated the highest or most favorable rating (e.g., "extremely important" or "excellent"). Other questions used multiple-choice formats, in which participants were advised to select a maximum of three options from a predefined list (e.g., factors influencing purchasing decisions, trust indicators, or effective branding strategies). Finally, one open-ended question was included to allow respondents to provide additional qualitative feedback and suggestions. The variables in this section were measured using ordinal and nominal scales, depending on the question type and response format.

Before launching the survey, a pre-test was conducted (Salamzadeh et al., 2013, 2025), which included face and content analysis based on qualitative reviews from 4 experts, consisting of professionals in the research field

and linguistic experts. In the second phase, a trial run was conducted with 19 participants to assess whether the survey constructs were measured appropriately. This trial run verified participants' general understanding of the survey and included preliminary tests for normality and reliability using Cronbach's Alpha.

In the later stage, the survey was validated through Exploratory Factor Analysis (EFA). EFA, along with all other analyses of the empirical data, was conducted using IBM SPSS 29.0.2.0.

The survey was distributed primarily on Facebook, across various groups. These included: "Szakdolgozat kérdőív kitöltők" with 19.100 members, "Kérdőív kitöltők klubbja" with 11.100 members, "Kérdőív kitöltők (szakdolgozat, kutatás segítség)" with 6.000 members and "Kérdőív Pont | Kérdőív gyűjtemény, kérdőívek és kitöltők" with 23.400 members.

Although the survey reached a broad age and educational range, the sample was based on voluntary responses from members of Facebook groups, which suggests a convenience sampling method. This approach likely introduced self-selection bias, as individuals with a stronger interest in sustainability or internet access may have been more motivated to participate. While efforts were made to include participants from different regions (urban, rural, and capital), the sample not fully represent the Hungarian population, particularly older adults and those with lower digital literacy. These limitations should be considered when generalizing the results to the broader population.

Results and Discussion

Sample characteristics

Descriptive statistics shows that the sample consisted of 258 participants, with the majority identifying as residents of Hungary (M = 1.01, SD = 0.088) on a scale where 1 = Yes and 2 = No. The majority of participants (41.8%) were from age group between 15 and 29 years, followed by 30-44 years (31.6%) and 45-60 years (21.3%). A smaller proportion of respondents were aged 60 years and above (3.8%), while the lowest representation was from individuals under 14 years (1.5%). Nearly equal proportions of males (49.8%) and females (49.4%) participated in the study. A small percentage (0.8%) of respondents did not specify their gender. Participants' monthly income ranged from "no income" (1) to "excellent income" (5). Most participants reported having an average income (M = 3.12, SD = 1.014). Educational levels varied from "elementary school" (1) to "university degree or higher" (5), with a mean of 3.75 (SD = 1.220), saying that most participants had at least college education. Regarding place of residence, participants had to possibility to choose from capital city (1), cities (2), and villages (3). Most participants were registered in different villages of Hungary, exactly 38.5% (n = 98). Followed by registration in various cities with 30.9% (n = 80). Lastly. 30.5% (n = 79) of the participants have reported to come from the capital city, Budapest.

A reliability analysis was conducted to assess the internal consistency of the 12-item scale. The analysis included 257 valid cases. The reliability of the scale was found to be excellent, with a Cronbach's Alpha of 0.908, indicating a high level of internal consistency among the items.

A normality analysis was conducted using the Kolmogorov-Smirnov and Shapiro-Wilk tests for multiple variables measured on a 1–6 scale. Both tests indicated significant results ($p < .001$) across all items, suggesting that the data differs significantly from a normal distribution. E.g. "How important are environmental aspects when purchasing products?" The Shapiro-Wilk test statistic shows .189, $df = 256$, $p < .001$, and a Shapiro-Wilk indicates .919, $df = 256$, $p < .001$.

An exploratory factor analysis (EFA) using Principal Axis Factoring was conducted on the four items relevant to the underlying research to assess their structure. The Kaiser-Meyer-Olkin (KMO) measure verified sampling adequacy (KMO = 0.821), and Bartlett's test of sphericity was significant ($x^2 (6) = 440.403$, $p < .001$), indicating that the data was suitable for factor analysis. One factor was extracted with an eigenvalue of 2.78, explaining 59.42% of the total variance. Communalities for the items ranged from 0.528 to 0.663, demonstrating moderate to high shared variance. Factor loadings for all items were strong, ranging from 0.726 to 0.814, suggesting that the items are well-represented by the extracted factor. This result indicates a uni-dimensional structure for the scale, capturing a single construct related to environmental attitudes and behaviors.

Testing of hypothesis

H1: Price is a significant factor in Hungarian consumers' purchasing decisions for sustainable products utilizing recycled plastics.

To measure the responses, participants had to make 3 choices from an ordinal scale. These three choices are resulting three categorical variables

(choice 1, 2 and 3). So non-parametric Chi-Square tests were conducted for all three categorical variables to assess whether the observed frequencies for the most important factors for Hungarian consumers while choosing sustainable products differ significantly from expected frequencies.

The first Chi-Square test revealed a statistically significant difference between the observed and expected frequencies, x^2 (14, N = 262) = 564, p < .001.

The second Chi-Square test also showed a significant difference, x^2 (14, N = 259) = 251.99, p < .001.

The third Chi-Square test similarly indicated a significant difference, x^2 (14, N = 255) = 285.06, p < .001.

These results shows that certain factors are more frequently considered important by consumers than others.

Based on the frequency analysis of combined choices, "Price" ranks among the top three (out of 16 other possibilities) most chosen factors influencing purchasing decisions for sustainable products among Hungarian consumers. A total of 12.9% of participants (N = 100) selected "Price" as an important factor, highlighting its significance regarding consumer preferences. These findings support the first hypothesis.

H2: Environmentally aware Hungarian consumers are generally willing to pay a premium for sustainable products utilizing recycled Plastics.

A Pearson correlation analysis was conducted to examine the relationship between environmental awareness and willingness to pay a premium for

sustainable products utilizing recycled plastics considering Hungarian consumers. The results revealed a significant positive correlation between the importance of environmental considerations when purchasing products and the willingness to pay more for products made from recycled plastics, $r = .580$, $p < .001$.

This indicates that Hungarian consumers who consider environmental factors more important are generally more willing to pay a premium for sustainable products. This confirms the second hypothesis.

H3: Influencer recommendations and trust towards the brand are the most important factors contributing to higher willingness of Hungarian consumers to pay a premium for sustainable products utilizing recycled plastics.

To measure the responses, participants had to make 3 choices from an ordinal scale. These three choices are resulting three categorical variables (choice 1, 2 and 3). So non-parametric Chi-Square tests were conducted for all three categorical variables to assess whether the observed frequencies for the most important factors contributing to higher willingness of Hungarian consumers to pay a premium for sustainable products differ significantly from expected frequencies.

The first Chi-Square test revealed a statistically significant difference between the observed and expected frequencies, x^2 (7, N = 260) = 159.88, $p < .001$.

The second Chi-Square test also showed a significant difference, x^2 (7, N = 246) = 132.67, $p < .001$.

The third Chi-Square test similarly indicated a significant difference, x^2 (6, N = 238) = 152.12, p < .001.

These results shows that certain factors are more frequently considered important by consumers than others.

Based on the frequency analysis considering combined choices, the most important factor contributing to higher willingness of Hungarian consumers to pay a premium for sustainable products is "product´s long lifespan and durability" by 14,2% of participants (n = 106). "Certifications about CO2 neutrality" followed closely by 13,8% of participants (n = 103).

Therefore, this hypothesis must be rejected.

This aligns well with the findings of Wilkinson & Thomas (2007) and Scridon et al. (2025), who state that in Eastern European countries, consumers tend to prioritize product price and functionality over emotional branding. Wilkinson & Thomas (2007) explicitly point out that labels and certifications play a significant role in consumer behavior, as people in the region also care about a product's country of origin. Western brands are often perceived as superior to local or regional ones. Well-known companies such as Sony, IKEA, Max Factor, L'Oréal, and Revlon are popular because many consumers in this area view Western products as more modern and trustworthy. Based on this, it can be concluded that even if consumers trust local brands, they still prefer well-labeled and often Western brands due to their stronger brand reputation.

Three multiple linear regression models were conducted to examine whether demographic factors - age, gender, income, education level, and place of residence - qualified as independent variables – are influencing or

not the dependent variables (1) willingness to pay a premium, (2) frequency of buying recycled plastic products, and (3) importance placed on environmental aspects during purchase in case of Hungarian consumers.

The model predicting willingness to pay more was statistically significant, $F(5, 290) = 25.30$, $p < .001$, and explained 33.6% of the variance ($R^2 = .336$). Significant predictors included age (negative), income (positive), education (positive), and residence (negative).

The regression model for purchase frequency was also significant, $F(5, 290) = 21.04$, $p < .001$, accounting for 29.5% of the variance ($R^2 = .295$). Age, income, and education were significant predictors, with age having a negative effect and the other two positive.

Finally, the model predicting the importance of environmental aspects was significant, $F(5, 290) = 17.39$, $p < .001$, with an R^2 of .257. Age and place of residence negatively predicted importance, while education showed a positive relationship.

These results indicate that socio-economic status and urban living are positively associated with pro-environmental consumer behavior in Hungary, while age tends to be negatively connected with such behaviors, meaning that younger generations are more eco-friendly and ready to pay a premium for green products. Gender was not a significant predictor in any of the cases. Results are also presented in *Table 1*.

Table 1. Summary of Multiple Linear Regressions carried out on demographic variables in connection with eco-conscious behaviors qualified as independent variables

Dependent Variable	R^2	F-statistic	Sig.	Significant Predictor
Willingness to pay more	.336	25.297	< .001	Age (-), Income (+), Education (+), Residence (-)
Purchase frequency	.295	21.04	< .001	Age (-), Income (+), Education (+)
Importance of environmental aspects	.257	17.388	< .001	Age (-), Education (+), Residence (-)

Source: own edit

Primary research of this paper revealed that in Hungary, price is a very important factor when purchasing sustainable products. This finding aligns with the results of the secondary research. As Kotabe and Helsen (2022) pointed out, consumers in developing countries are often more concerned about the price of sustainable products and are not always willing to pay a premium for them.

The findings of this paper also indicate that eco-conscious Hungarian consumers are more willing to pay extra for eco-friendly products than those who are less environmentally concerned. This is supported by Barnett et al. (2022), who emphasized that a consumer's level of environmental awareness significantly affects their willingness to pay more for sustainable products. Consumers with a high level of environmental concern often view the additional cost as an investment in the well-being of future generations.

The results of this study further show that the most important factors influencing Hungarian consumers' willingness to pay a premium are product durability and certifications related to CO_2 neutrality - rather than influencer marketing or trust in the brand itself. This is supported by Reisch and

Thogersen (2015), who argued that consumers are more likely to pay extra if sustainable products meet their quality and functional expectations without compromise. It also aligns with the findings of Ramakrishna and Wahab (2023), who demonstrated that consumers' knowledge of sustainability significantly influences their willingness to pay, underlining the importance of eco-labels and product certifications.

Although previous researchers (Teixeira et al., 2024; Oktavianti et al., 2024) highlighted that influencer marketing can enhance brand trust and improve consumer perception, the findings of this study suggest that in Hungary, product quality and transparent environmental contributions are more important drivers of consumer decisions.

Finally, Susan et al. (2020) found that higher education, environmental concern, and income level can positively influence consumer behavior toward sustainable products. This is in line with the primary findings of this research, which show that well-educated Hungarian consumers with higher income are more likely to consider and pay a premium for sustainable products.

Conclusion

The findings of this research offer important practical insights for companies aiming to promote sustainable products in Hungary, especially those made from recycled plastics. One of the key highlights is that Hungarian consumers are open to environmentally friendly products, but their willingness to pay a premium depends strongly on product quality and price. Companies should therefore ensure that sustainable products are both affordable

and offer visible value, especially in terms of durability and certified environmental impact. Clearly displayed labels and certifications related to CO2 neutrality or other environmental standards can increase consumer trust and justify higher prices.

Marketing strategies should be adjusted to reflect the fact that influencer marketing and brand trust played a weaker role in shaping consumer decisions than expected. Instead, transparent communication about product functionality and sustainability claims appears to be more effective. It is important for companies to present practical benefits rather than emotional branding, as Hungarian consumers often prioritize product value over image. The research also shows that the most receptive segment to sustainable products consists of well-educated, high-income consumers living in urban areas, especially in the capital. Companies should consider targeting these eco-conscious consumers with tailored messages and campaigns. At the same time, regional and social differences should not be overlooked. Expanding accessibility through pricing strategies or cheaper sustainable alternatives could help reach broader groups.

Lastly, public policy and education also play a role. Raising awareness about long-term environmental and financial benefits of sustainable consumption could support market growth. Further research could also explore deeper consumer motivations, especially among less represented groups, to be able to develop more inclusive sustainability strategies.

While this study provides useful insights into Hungarian consumers' willingness to pay for sustainable products, it also has several limitations. First, the research was based on a non-representative sample, collected during

a short time frame using an online survey. As a result, certain social groups - especially older individuals or those without internet access - may have been underrepresented. This could limit the generalizability of the results to the wider Hungarian population. Second, the survey focused mainly on quantitative methods, which are useful for identifying trends, but do not offer deeper understanding of personal motivations and emotional factors behind consumer choices. Additionally, the study only investigated recycled plastic products as an example of sustainability, which may not reflect consumer attitudes toward other types of green products.

To build on these findings, future research should use larger, more representative samples and apply longitudinal designs to explore how consumer attitudes change over time. Qualitative methods - such as in-depth interviews or focus groups - could also be used to better understand the emotional and social motivations behind sustainable purchasing. Further studies could also explore differences between urban and rural consumers, or compare Hungarian consumers with those in other Central and Eastern European countries. Finally, future research could investigate the effects of government incentives, sustainability education, or stronger labeling regulations on consumer willingness to pay a premium for eco-friendly products.

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