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PAPER PACKAGING: CONSUMER PERCEPTION AND SUSTAINABILITY TRENDS

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ABSTRACT

The study focuses on current trends and innovations in product packaging that reflect consumers' growing emphasis on sustainability and eco-friendly materials. This study, based on a literature review and secondary analysis of a questionnaire survey of a sample of Slovak respondents, examines consumer preferences, attitudes toward packaging materials, and motivations for recycling or reuse. The results show that paper and paper packaging are perceived as the most eco-friendly materials, with consumers appreciating their biodegradability, recyclability, and health safety. Nevertheless, the environmental parameters of packaging are only taken into account to a limited extent in purchasing decisions, and the willingness to pay more for environmentally friendly solutions remains rather moderate. The analysis also shows that generational differences were not statistically significant in most cases, except for a preference for paper packaging, which was strongest among older respondents. The study concludes by presenting examples of innovative paper-based packaging and suggests the direction of future developments in sustainable packaging materials.

Keywords: eco-friendly packaging; consumer attitudes; paper-based packaging; eco-innovation in packaging.

INTRODUCTION

From the perspective of sustainable resource management, the continuing trend of growing consumption is extremely worrying. Since plastics make up a significant proportion of packaging materials, the need to find more environmentally friendly alternatives is becoming increasingly urgent (Młoda-Brylewska and Melski, 2024). There is a rapidly growing trend towards the use of sustainably produced raw materials, which are not only used as active ingredients in products but also in packaging. Cinelli *et al.* (2019) emphasize the value of green, compostable, and biodegradable packaging solutions that reflect the environmental attitudes of both consumers and producers. As companies innovate towards more natural products, they are also strengthening their brands through environmentally oriented packaging design that meets growing market demands. Recyclability and environmental friendliness make paper an attractive packaging material, with the paper packaging segment projected to grow at 5% per year between 2022 and 2030 (according to the Paper Packaging Market Report 2025, In Sharma, 2025). This development is also supported by consumers who perceive paper as a valuable and environmentally friendly choice (e.g., Lindh *et al*., 2016; Loučanová *et al*., 2017; Loučanová *et al.*, 2022).

The growing problem of plastic waste in the food sector creates opportunities to develop more environmentally friendly packaging solutions (Horská *et al.,* 2021). Health awareness, which was originally linked mainly to food, has gradually spread to other sectors, leading to growing interest in natural ingredients, sustainable packaging, and other environmental aspects (Lin *et al*., 2018; Štofková *et al*., 2017). Studies show that the motivation to reduce plastic packaging varies by product category, while consumers strongly support reducing plastic in food. This motivation is somewhat weaker, for example, in the case of cosmetic products (Siddiqui *et al.,* 2023). The growth in environmental awareness is also reflected in the willingness to pay more for products or packaging made from natural materials (Amberg and Fogarassy, 2019).

Research over the past three decades has repeatedly confirmed that packaging design significantly influences consumer behavior and purchasing decisions. Packaging not only increases the attractiveness of a product, but also its perceived value (Kristanto *et al*., 2024). From the customer's perspective, the type of packaging material is the main indicator of a product's environmental friendliness (Resimovič *et al*., 2022). Their findings show that the material has the greatest impact on the perceived naturalness and environmental friendliness of a product, while visual elements, such as illustrations, labels, colors, and typography, play a secondary but still significant role. A 2023 survey (Beautipak, 2023, In Chen, 2024) found that 72% of consumers prefer eco-friendly packaging and 65% favor paper-based options. This trend signifies a strong movement toward sustainability. Research by the Plant-Based Products Council (2021) also points to growing interest in products from renewable sources such as corn and bamboo, which represents significant potential for packaging innovation. Brands are therefore increasingly replacing plastic with alternative materials such as bamboo, seaweed, corn starch, mushroom fibers, and avocado seeds. Bioplastics, cellulose films made from wood pulp (NatureFlex), and biodegradable plastics based on milk proteins, which have properties similar to polystyrene, are also becoming more widespread (Drobac *et al*., 2020). In this context of material sustainability, companies are increasingly introducing paper products in place of plastic ones, reflecting the growing demand for "paper instead of plastic" solutions (Loučanová *et al.*, 2024).

Another positive finding is the growing recognition of cartonboard as the most environmentally friendly and easily recyclable form of packaging among European consumers, as revealed in The 2025 Pro Carton European Consumer Packaging Perceptions Study (2025), which surveyed more than 5,000 consumers in various European countries. Up to 52% of Europeans consider cartonboard the most environmentally friendly material, and 45% consider it the most recyclable. The environmental impact of packaging influences the purchasing decisions of 75% of European consumers, with this proportion even higher in some countries. Four out of five respondents also preferred carton to plastic, most notably in Germany (87%) and the United Kingdom (85%). These results clearly illustrate the strong public support for eco-friendly packaging solutions and the growing demand for sustainable alternatives (Procarton, 2025).

However, the latest research conducted in Slovakia indicates a slightly lower level of growth in environmental awareness among Slovak respondents, especially in actively considering environmental aspects of packaging when making purchasing decisions. According to Conzoomer 2023 (a representative survey of more than 3,000 respondents), approximately one-third of the Slovak population is skeptical of sustainability and considers it an exaggerated trend. An equally large proportion of consumers distrust the concept of organic products and are unwilling to pay more for goods that are presented as environmentally friendly. Two-thirds of consumers do not pay attention to whether e-shops use biodegradable or recyclable packaging, considering this irrelevant. Nevertheless, it is

positive to note that for almost 80% of households, waste sorting is a natural part of everyday life, indicating that basic environmental habits are already firmly rooted in society (Conzoomer 2023).

The later studies on the Slovak consumer market environment (Holotová *et al.,* 2020; Smolka *et al*., 2021; Kádeková *et al*., 2021; Kopaničová *et al.,* 2025) report positive trends. The study by Holotová *et al*. (2020) shows that environmental awareness among Slovak consumers is generally growing. The young generation of Slovak consumers (under 25; approximate generation Z) is more perceptive of packaging, and it plays an essential role in purchasing decisions and evaluations (Kádeková *et al.,* 2020). Even in the long term, Kopaničová *et al.* (2025) confirm that between Generations X and Y in Slovakia, attention to sustainability has grown significantly over the last decade, including perceptions of packaging. Moreover, generations Y and Z are most aware of the need to change and reduce packaging, and it can be assumed that in the future they will prefer products in returnable or fully recyclable packaging. A positive finding is that this policy has also been supported by older generations (Smolka *et al.,* 2021).

As evident from the above, packaging plays an important role not only in functionality but also in marketing and quality perception, with eco-friendly solutions based on renewable, recyclable materials, especially paper-based ones, becoming increasingly popular. Simultaneously, consumer interest in healthier lifestyles, natural products, and reducing plastic waste is growing (though to varying degrees across age groups and consumer environments), putting pressure on brands to innovate their packaging portfolios. Scientific and practical discourse is therefore moving towards a better understanding of consumer motivations, their packaging preferences, and the factors influencing their willingness to support eco-friendly alternatives. This paper focuses on current trends and innovations in paper packaging. It supplements their findings with a secondary analysis of data from the Slovak consumer environment, aiming to contribute to the discussion on the future of sustainable packaging solutions. The aim of the paper is to statistically evaluate the relationships between age, ecological attitudes, and packaging material preferences based on a secondary analysis of questionnaire data on paper packaging and ecological packaging trends.

For the purposes of this paper, analytical working questions were defined that reflect specific relationships tested using contingency tables and chi-square tests, in particular: the relationship between age group and environmental attitude, between age and the choice of the most eco- friendly packaging material, between environmental attitude and packaging material preference, between age and willingness to pay more for eco-friendly packaging, and between age and assessment of the trend of replacing plastic packaging with paper packaging.

MATERIALS AND METHODS

This paper is based on a secondary analysis of data obtained from a questionnaire survey on paper as a packaging material and consumer trends, originally conducted within the framework of a diploma thesis (Holčíková, 2025). While the diploma thesis primarily presented descriptive results in the form of frequency and contingency tables, the present paper extends the original dataset processing by applying Pearson's chi-square tests of independence to selected relationships. The analysis, therefore, works exclusively with aggregated data. The survey was conducted using an online questionnaire created in Google Forms. The questionnaire (Holčíková, 2025) contained 20 questions focused on

demographic characteristics (gender, age, and education), purchasing behavior, and perception of packaging, evaluation of paper packaging (perceived sustainability, advantages, and disadvantages), and perception of trends in eco-friendly packaging, including willingness to pay extra for more eco-friendly solutions. Data collection took place in March 2025 via social media, with 186 respondents participating. Given the selection method, this is a purposeful non-probability sample, so the results cannot be considered representative of the entire population.

Respondents were originally classified into four generational cohorts based on commonly used definitions in demographic and marketing literature (Dimock, 2019): Generation Z (13–28 years), Generation Y / Millennials (29–44 years), Generation X (45–60 years), and Baby Boomers (61 years and older). In the subsequent statistical analyses, however, these original cohorts were merged where necessary to satisfy the assumptions of the chi-square test. In particular, Generation X and Baby Boomers were combined into a single 45+ category in those analyses that required a more robust table structure due to low expected frequencies. For this reason, the analytical part of the study uses adjusted age-based groups rather than the original generational classification in all cases.

In addition to age, respondents were classified according to environmental attitudes using a framework adapted from Loučanová *et al.* (2024), which builds on the LOHAS (Lifestyle of Health and Sustainability) segmentation model. For the purposes of the questionnaire and the present analysis, this framework was operationalized into five categories: no interest, practical reasons, trends and benefits, health motivation, and strongly engaged. Where required by low expected frequencies, these categories were subsequently merged into three broader analytical groups: Engaged (strongly engaged and health motivation), Rational (trends, benefits, and practical reasons), and Uninterested (no interest).The study addressed five analytical research questions reflecting specific relationships tested by contingency tables and chi-square tests:

- RQ1: Is there an association between age-based groups and environmental attitudes?
- RQ2: Is there an association between age-based groups and the perception of the trend from plastic to paper packaging?
- RQ3: Is there an association between age-based groups and willingness to pay more for eco-friendly packaging?
- RQ4: Is there an association between environmental attitudes and preferred eco-friendly packaging material?
- RQ5: Is there an association between age-based groups and the perceived most eco-friendly packaging material for food products?

The study drew on a brief summary of descriptive results reported in Holčíková (2025) and on a secondary statistical assessment of selected relationships using contingency tables and Pearson's chi-square test of independence. The significance level was set at $\alpha = 0.05$. To assess the suitability of the contingency tables, Cochran's criterion for expected frequencies was applied: no expected value was below 1, and fewer than 20% of cells had expected frequencies below 5 (Cochran, 1954; Kroonenberg and Verbeek, 2018).

Where the original tables contained very low frequencies (e.g., extreme responses, choice of plastic or metal as the most eco-friendly material), the response categories were merged (e.g. "positive" = rather positive and very positive and "non-positive" = neutral, rather negative, and very negative), paper vs. other materials, high/medium/low attention). In some analyses, the two older age groups were also combined into the 45+ category to meet the chi-square test's assumptions about expected frequencies (Cochran's condition).

Statistical calculations were performed using The jamovi program (The jamovi project, 2024), which is based on the R environment (R Core Team, 2024).

The limitation of the analysis is that it is based on aggregated data from an already completed survey, so it is not possible to test combinations of variables beyond those allowed by the questionnaire's structure, nor to retrospectively influence the questionnaire's structure or the method of data collection. However, secondary analysis allows a more systematic statistical assessment of the relationships between selected variables.

RESULTS AND DISCUSSION

The following overview briefly summarizes the main descriptive findings reported in Holčíková (2025) from a questionnaire survey on paper as a packaging material and consumer trends. The sample consisted of 186 respondents, predominantly women (78.49%). In terms of the original generational cohorts, Generation Z was the most represented group (n = 71; 38.17%), followed by Generation Y (n = 52; 27.96%), Generation X (n = 42; 22.58%), and Baby Boomers (n = 21; 11.29%). For the purposes of the contingency analyses, Generation X and Baby Boomers were merged into a single 45+ category (n = 63; 33.87%) where necessary. In the descriptive results, paper/cardboard was most often perceived as the most environmentally friendly packaging material, being selected by approximately 60% of respondents. At the same time, glass was the second most frequent choice. Paper packaging was generally evaluated positively for sustainability, and biodegradability, recyclability, and food safety were identified as its main advantages. The principal disadvantages were low resistance to moisture and mechanical damage. The descriptive findings also suggested possible differences in environmental attitudes, willingness to pay more for eco-friendly packaging, and perceptions of replacing plastic packaging with paper alternatives (Holčíková, 2025).

These descriptive patterns formed the basis for the subsequent contingency analyses. For transparency, the merged categories used in the analyses are described below, while the full statistical results are presented in Table 1.

Chi-square tests showed that several findings from the frequency analysis were not confirmed by more detailed testing (e.g., the relationship between age and environmental attitude, frequency of packaging perception, willingness to pay extra, or the trend of transition from plastic to paper packaging). At the same time, a statistically significant correlation was found in the selection of the most environmentally friendly packaging material by age, which could be further interpreted. Given the non-probability nature of the sample, the findings should be interpreted as applying to the analyzed sample rather than to the population.

Tab. 1 Summary of contingency analyses and chi-square test results.

No.	Analytical question	Original table	Adjusted table	Chi-square	df	p-value	Cramér's V
1	Age-based groups vs. environmental attitude	4 × 5	3 × 3	3.57	4	0.470	-
2	Age-based groups vs. perception of the transition from plastic to paper packaging	4 × 5	3 × 2	0.443	2	0.801	-
3	Age-based groups vs. willingness to pay more for eco-friendly packaging	4 × 5	3 × 3	1.579	4	0.813	-
4	Environmental attitude vs. preferred eco-friendly packaging material	5 × 4	5 × 2	1.17	4	0.883	-
5	Age-based groups vs. perceived most eco-friendly packaging material for food products	4 × 4	3 × 2	10.38	2	0.0056	0.24

*Note: Categories were merged where necessary to meet the assumptions of the chi-square test. Cramér's V is reported only for the statistically significant association

1. Age-based groups and environmental attitudes

To examine the relationship between age and environmental attitudes, the original four generational cohorts were merged into three age-based groups: Gen Z, Gen Y, and 45+. The original attitude categories were also reduced to three broader groups: engaged, rational, and uninterested (see Materials and methods). As shown in Table 1, no statistically significant association was found between the adjusted age groups and environmental attitude.

At the descriptive level, respondents across all three age groups were concentrated mainly in the engaged and rational categories, which together accounted for more than 97% of responses. In contrast, uninterested respondents accounted for only around 2% of the sample. Because the uninterested category remained very small, this result should be interpreted cautiously. Within the analyzed sample, the observed differences therefore suggest only limited variation in environmental attitudes across the adjusted age groups.

2. Perception of the trend from plastic to paper packaging across age-based groups

For this analysis, the original response categories were merged into two broader groups: positive (rather positive and very positive) and non-positive (neutral, rather negative, and very negative). The original four generational cohorts were again reduced to three age-based groups: Gen Z, Gen Y, and 45+. According to Table 1, no statistically significant association was found between age groups and perceptions of the transition from plastic to paper packaging.

Descriptively, positive evaluations clearly predominated in all three adjusted age groups: 87.32% in Gen Z, 90.38% in Gen Y, and 90.48% in the 45+ group. In the analyzed sample, support for the transition from plastic to paper packaging was therefore high across all compared groups, with only minor differences in intensity. Support for this trend is high and consistent across generations, indicating broad social acceptance of ecological changes in packaging.

3. Willingness to pay more for eco-friendly packaging across age-based groups

In the analysis of willingness to pay more for eco-friendly packaging, responses were merged into three categories: negative (definitely not and rather not), neutral, and positive

(rather yes and definitely yes). As in the previous analyses, the original four generational cohorts were merged into three age-based groups: Gen Z, Gen Y, and 45+. As reported in Table 1, no statistically significant association was observed between age groups and willingness to pay more for eco-friendly packaging.

At the descriptive level, the 45+ group showed the highest proportion of positive responses (33.33%), followed by Gen Z (30.99%) and Gen Y (26.92%). Neutral responses were most frequent in Gen Y (42.31%), while Gen Z recorded the highest proportion of negative responses (35.21%). However, within the analyzed sample, these differences were not statistically strong enough to support the conclusion that willingness to pay varied meaningfully across the compared age-based groups. The public's attitude is rather cautious but not rejecting. Respondents are not strongly opposed to paying extra for eco-friendly packaging, but they are not particularly convinced. This pattern suggests potential for positive change, provided that the importance and benefits of eco-friendly solutions are sufficiently communicated to the public, especially if they are associated with credibility and reasonable affordability.

4. Preferred eco-friendly packaging material according to environmental attitude

The relationship between environmental attitude and the preferred eco-friendly packaging material for food products was examined using five attitude categories: no interest, practical reasons, trends and benefits, health motivation, and strongly engaged. To obtain a more robust analytical structure, packaging materials were reduced to two categories: Paper and Other (glass, plastic, and metal). As indicated in Table 1, no statistically significant association was found between environmental attitude and the preference for paper over other materials.

Descriptively, paper/cardboard remained the dominant option overall, accounting for approximately 59% of responses, while glass represented about 38%. Plastic and metal together accounted for less than 4% of responses. Within individual attitude categories, the paper reached its highest share among respondents who were strongly engaged and among those motivated by trends and benefits, accounting for approximately 64% of responses in both groups. Even in the no-interest group, responses were split evenly between paper and other materials. Within the analyzed sample, preference for paper therefore appeared to be broadly shared across respondents with different types of environmental attitude.

5. Perceived most eco-friendly packaging material for food products across age-based groups

The analysis of the perceived most eco-friendly packaging material for food products was based on three age-based groups: Gen Z, Gen Y, and 45+, with the latter created by merging the original 45–60 and 61+ categories. Packaging materials were again reduced to two categories: Paper and Other (glass, metal, and plastic). This was the only relationship in the analysis that proved statistically significant (Table 1), with a weak-to-moderate association.

At the descriptive level, paper accounted for 54.93% of responses among Gen Z, 46.15% among Gen Y, and 74.60% among the 45+ group. By contrast, other materials accounted for 45.07% of responses among Gen Z, 53.85% among Gen Y, and 25.40% among the 45+ group. Within the analyzed sample, older respondents therefore showed a markedly stronger preference for paper, whereas younger respondents more often selected other materials, especially glass.

The results therefore show that age groups differ statistically significantly in their choice of the most eco-friendly packaging, with older respondents showing a stronger

preference for paper. These interpretations cannot be understood as direct evidence, but rather as one of the possible frameworks for meaningfully interpreting the observed differences between age groups.

Overall, the contingency analyses showed that most of the differences suggested by the descriptive results were not statistically confirmed. Within the analyzed sample, the only statistically significant association was found between the age-based group and the perceived most eco-friendly packaging material for food products. The following section discusses these findings in relation to previous research and the broader context of consumer perceptions of sustainable packaging.

Discussion

The findings of the secondary analysis indicate the very favorable perception of paper and cardboard as the "most eco-friendly" packaging material, strong support for replacing plastics with paper packaging, and a rather cautious willingness to pay extra for more eco-friendly packaging. The relationship between age and the material perceived as most eco-friendly proved to be statistically significant. Older respondents aged 45+ prefer paper more strongly, while younger cohorts are more likely to accept glass and other materials. In terms of attitudes towards sustainability, packaging perception frequency, and willingness to pay more, generational differences in our sample were not statistically significant. However, at a descriptive level, there are slight shifts towards greater attention among older groups.

The strong symbolic position of paper corresponds to previous international findings. Otto et al. (2021) show that consumers evaluate the sustainability of packaging primarily based on its "natural appearance," recyclability, and ease of disposal, often considering paper to be an environmentally friendly material, while underestimating plastic and overestimating glass and biodegradable plastics. Oloyede and Lignou (2021) confirm that paper is perceived as the "right" ecological choice, but consumers also recognize its functional limitations. Our results, a positive image of paper, but also an awareness of its weaknesses, complement this picture. Design plays a role here: according to Steenis *et al.* (2017), the right combination of materials and graphics can increase a product's overall rating.

When it comes to willingness to pay more for eco-friendly packaging, our sample appears rather cautious; most respondents do not completely reject paying more, but remain neutral or only slightly positive. This corresponds to foreign findings on the "attitude–behavior gap." Herrmann *et al.* (2022) show that consumers only pay more for packaging that they clearly perceive as sustainable, while price sensitivity remains high. Duarte *et al*. (2024) add that purchase intent depends on a combination of willingness to pay extra, perceived benefits, and overall attitude toward sustainability. At the same time, research points to persistent information uncertainty. Consumers often do not understand materials or labels (Boz *et al.,* 2020; Norton *et al.,* 2022; Chirilli *et al.,* 2022), which makes the neutral or hesitant attitudes in our sample understandable.

A specific contribution of our paper is the placement of the results in the Slovak and post-socialist context. Research by Holotová *et al*. (2020) shows growing environmental awareness among Slovak consumers, but also persistent barriers, including price and habits. According to Kádeková *et al*. (2020), young Slovak consumers (under 25 years of age, approximately Gen Z) are more sensitive to packaging, which significantly influences their purchasing decisions. Generations Y and Z are also the most reflective of the need to reduce packaging. They are likely to prefer returnable or fully recyclable solutions in the future, with older generations also supporting these efforts (Smolka *et al*., 2021). The longitudinal study by Kopaničová *et al*. (2025) confirms that interest in sustainability, including packaging, is growing significantly among Generations X and Y, with Generation X

showing slightly greater concern for packaging sustainability, and women being more sensitive to this issue than men. Horská *et al.* (2023) add that the iGeneration (approximately Gen Z) is more likely to support recyclable packaging and to follow information on packaging than older cohorts, although the differences are not explicit.

The present findings are broadly compatible with this literature, but only partly. Within the analyzed sample, a strong preference for paper as the most eco-friendly material was observed across all groups, with the clearest preference among respondents aged 45+. One possible interpretation of this age-related pattern is that older respondents may associate paper with familiarity, practicality, and reliability. In the Slovak and post-socialist context, such preferences may also reflect broader life experience shaped by thriftiness, reuse, and material durability. As Fehérváry (2009) suggested regarding the material culture of socialism, consumption practices were tied not only to product availability but also to ideas of order, modesty, and utility. Although the present data do not allow this interpretation to be tested directly, they suggest that differences in paper preferences may be linked not only to current sustainability discourse, but also to longer-term consumer habits and value orientations.

At the same time, price remains an important limiting factor in the practical adoption of more sustainable packaging. This is consistent with the representative Conzoomer 2023 survey, which found that approximately 70% of consumers switched to cheaper options due to inflation and that 71% consistently compared prices. In this context, a favorable environmental image alone may not be sufficient. More sustainable packaging must also withstand the price pressure households face, which helps explain why willingness to pay more remained cautious in the analyzed sample.

From a practical perspective, the future of paper packaging should be considered in the broader context of material innovation, functional performance, and circularity. Although paper is perceived positively by consumers, its wider adoption depends on whether it can meet barrier, durability, and price requirements alongside environmental expectations. This is consistent with current work on innovative coated paper packaging, which emphasizes that functional performance and circularity must be addressed together (Nitkiewicz et al., 2024). At the same time, developments in the packaging industry show that this field is already evolving through concrete solutions. These include alternative fiber-based approaches such as Releaf Paper (Releaf Paper, 2025), which uses fallen leaves as a cellulose source, as well as broader material alternatives such as the Slovak bioplastic NonOilen® (NonOilen, 2025). Further examples include paper-based packaging innovations developed by companies such as Albéa and Toppan Printing, which illustrate ongoing efforts to reduce plastic content, improve usability, and enhance environmental performance (Albéa, 2024; Toppan Printing, 2020). In addition, market-oriented sources indicate growing interest in eco-friendly packaging and renewable materials, including paper and other alternatives such as bamboo, algae, corn starch, mushroom fibers, bioplastics, and cellulose films (Chen, 2024; Plant Based Products Council, 2021). In this sense, the transition from plastic to paper packaging should not be understood solely as a symbolic ecological preference, but also as a technological and economic challenge, grounded in practical feasibility.

Overall, the findings suggest that paper packaging occupies a strong symbolic position in consumer perceptions, but that does not guarantee behavioral change. Its practical potential appears greatest when consumers perceive it as environmentally friendly, when the packaging meets functional expectations, and when the price premium remains acceptable. In this respect, the transition from plastic to paper packaging depends not only on attitudes

but also on the interaction of environmental communication, material performance, and affordability.

The limitation of the research is that we analyze a nonprobability sample of 186 respondents and use only secondary, aggregated data. The results should therefore be understood as an exploratory view of how Slovak consumers in our sample frame perceive paper packaging and sustainability. Future research should build on this by using representative data collection, adding objective knowledge indicators (e.g., a test of correct estimation of the environmental impact of materials), and experimentally verifying whether better information or specific innovations (e.g., paper from leaves or local bioplastics) actually change real purchasing behavior.

CONCLUSION

The aim of this paper was to examine selected relationships between age-based groups, environmental attitudes, and consumer perceptions of paper packaging, with particular attention to the perceived most eco-friendly packaging material, willingness to pay more for eco-friendly packaging, and attitudes towards the transition from plastic to paper packaging.

Regarding the analytical research questions, only one statistically significant association was confirmed in the analyzed sample: the relationship between age groups and the perceived most eco-friendly packaging material for food products. Respondents aged 45+ selected paper more often, whereas younger groups more frequently chose glass or other materials. By contrast, the relationships between age-based groups and environmental attitudes, willingness to pay more for eco-friendly packaging, and perceptions of the transition from plastic to paper packaging were not statistically confirmed. Likewise, no statistically significant association was found between environmental attitudes and preferred eco-friendly packaging material.

The findings indicate that paper and cardboard were most often perceived as the most environmentally friendly packaging materials in the analyzed sample, whereas plastic was rarely viewed in this way. At the same time, the results suggest that the positive symbolic position of paper does not automatically translate into a clear willingness to pay more. Consumer evaluation of packaging, therefore, depends not only on environmental image but also on functional properties and affordability.

The contribution of the paper lies in extending the original descriptive processing of the dataset through contingency analysis and chi-square testing, while also placing the findings in the Slovak context of sustainable packaging perception. In this respect, the study provides an exploratory insight into how paper packaging is perceived across the analyzed sample and shows that age-based differences are primarily evident in the choice of the material considered most eco-friendly.

Although the findings cannot be generalized to the population as a whole, due to the non-probability nature of the sample and the use of secondary aggregated data, they offer a useful basis for further research. Future studies could build on this by using representative sampling, incorporating measures of objective knowledge about packaging materials, and testing whether better information or packaging innovations influence actual purchasing behavior.

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