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The Impact of Packaging Type and Branding on Consumer Quality Perception and Preferences

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ABSTRACT

This study examines the impact of packaging type and branding on consumer perceptions of quality and preferences in the context of food products. The research involved 310 participants who evaluated the same product (beer) in different types of packaging (glass, plastic, metal) and in branded and non-branded versions. Data were collected through a survey questionnaire, and the analysis was conducted in JASP using repeated measures ANOVA. The results revealed that packaging type has a statistically significant impact on quality perception and consumer preferences, with glass perceived as the highest-quality material, while plastic received the lowest ratings. Branded products were consistently rated higher than non-branded ones across all packaging types. The interaction between packaging and branding was also significant, with branded products in glass packaging receiving the highest ratings. These findings highlight the critical role of packaging design and branding strategies in shaping consumer perceptions and provide valuable guidance for manufacturers in optimizing product presentation and market positioning.

Keywords: Packaging Type, Branding, Consumer Preferences, Quality Perception
JEL Classifications: M31, D12, L66

1. INTRODUCTION

The perception of product quality and consumer preferences are key factors that determine the success of a product in the market. In today's competitive environment, where numerous similar products flood the market, elements such as packaging and branding play a crucial role in purchasing decisions. Packaging, in addition to its functional role of protecting the product, also serves a psychological role by communicating visual, textual, and tactile information that influences quality perception. Different packaging materials, such as glass, plastic, and metal, are associated with distinct perceptions, including luxury, environmental awareness, and practicality.

On the other hand, branding functions as a powerful tool for creating trust and emotional connections between consumers and products. Recognizable brands often convey value that goes beyond the product itself, shaping consumer expectations and enhancing their preferences for branded items. The combination of visual elements in packaging and the strength of branding has the potential to influence consumer perceptions of quality and preferences, particularly in the food industry, where impressions of quality are often subjective.

Despite the growing interest in this area, detailed studies that examine the interaction between packaging materials and branding on product quality perception remain relatively scarce. The aim of this study is to address this gap by analyzing how combinations of packaging materials and branding influence consumer perceptions of quality and preferences. This research focuses on three common packaging materials—glass, plastic, and metal—and investigates differences in perception between branded and non-branded products. The findings of this study are expected to provide valuable insights for manufacturers and marketing professionals in optimizing product design and market positioning strategies. The COVID-19 pandemic significantly altered consumer behavior,

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leading to shifts in habits, priorities, and decision-making, with increased impulsivity and irrationality driven by uncertainty and external global crises (Šostar et al., 2023, Šostar and Ristanović, 2023a).

2. LITERATURE REVIEW

2.1. Packaging and Branding as Key Drivers of Consumer Behavior

The study by Zhao et al. (2021)); Lejiw et al. (2023) highlights the significant role of product packaging and pricing in shaping consumer buying behavior, demonstrating that packaging attributes such as material, design, and labeling not only influence purchase decisions but also customer satisfaction, particularly when mediated by product branding. Similarly, Naik and Lavuri (2019) emphasize that packaging elements positively affect consumer beliefs about purchasing; however, the packaging background does not significantly influence consumer behavior.

Packaging serves as a crucial tool in advertising, especially at the point of sale, and is considered one of the most important factors influencing consumer purchasing behavior (Rajkumar and Jain, 2021). Attractive packaging elements—such as color, shape, design, texture, language, and overall appearance—play a vital role in capturing consumer attention. Packaging acts as a silent salesperson in product marketing, helping products stand out among competitors (Reddy and Kommarapuram, 2019). Visual design is a key element in shaping consumer perceptions (Chitturi et al., 2021). For example, products with bright-colored packaging are often perceived as healthier, emphasizing the importance of visual elements in consumer evaluations (Steiner and Florack, 2023). High levels of creativity in packaging design increase consumer curiosity, thereby motivating them to process information and make purchase decisions (Shukla et al., 2022). Moreover, innovative and attractive packaging designs play a crucial role in influencing purchase decisions, as packaging continues to act as a silent yet persuasive marketing tool (Omamuzo and Okeke, 2023).

Specific industries, such as cosmetics, particularly benefit from effective packaging design. Srivastava et al. (2022) note that visual elements like color and shape significantly impact consumer purchasing decisions and help communicate brand messages. Similarly, Akbar et al. (2023) found that attractive and functional packaging design enhances product appeal and positively influences purchase intentions. Additionally, Kovačević et al. (2022) demonstrated that typography and graphic elements in packaging design play a crucial role in shaping consumer perceptions of quality. Key factors such as legibility and realistic depictions of ingredients create a positive impression of product quality.

Cultural elements in packaging design can also enhance consumer appeal. Lin and Lin (2022) found that incorporating ritualistic or ethnic elements in packaging increases product value and consumer preference by aligning with local traditions. Additionally, Hassan and Mostafa (2018) highlights the importance of design elements such as colors, backgrounds, fonts, and innovative features in expressing brand identity and influencing consumer behavior, including perceptions of quality, preferences, and purchase intentions.

The origin labeling on food packaging has a significant influence on consumer quality assessments and purchase decisions (Ansari et al., 2019). Studies by Thøgersen (2023) and Thøgersen and Nohlen (2022) emphasize that domestic products are often preferred due to perceptions of higher quality, safety, and support for local producers. Clear printed information, including product details and language clarity, is essential for building consumer trust, facilitating purchase decisions, and strengthening brand recognition (Phanuel, 2020). Integrating visual and verbal elements in packaging design further enhances its marketing effectiveness and attractiveness (Salem, 2022). Innovative packaging designs, which incorporate creative elements such as colors, shapes, and practical solutions, increase product appeal, particularly in competitive markets (Saha, 2020). Transparency in packaging, for example, allowing consumers to view the product, enhances perceptions of freshness and healthiness (Pal et al., 2018). The research results of Šostar et al. 2024 show a strong influence of packaging quality, design, sustainability, and promotional activities on creating customer loyalty, while the human factor (interactions with retail staff) is a less significant factor. External product features, such as packaging, price, and brand, have a more substantial influence on consumer decisions compared to internal characteristics. Brand perception amplifies evaluations of sensory attributes (Grzybowska-Brzezińska et al., 2020). Specific design features such as cool colors, simple text, and well-thought-out shapes are also key to consumer preferences and quality perceptions (Wang et al., 2022).

Co-designing packaging with consumers enables companies to identify visual and textual attributes that best match consumer preferences, increasing product acceptance and purchase intentions (López-Mas et al., 2022). Key design features such as images, colors, and shapes significantly influence consumer decisions, with images having the greatest impact on perception and product selection (Wang et al., 2023). Emotional connections with packaging design enhance brand recognition and purchasing motivation (Yung, 2023). Furthermore, packaging is a key marketing tool that significantly influences consumer behavior. Elements such as color, shape, size, material, and innovative features play a vital role in attracting attention, creating positive impressions, and driving purchase decisions (Sutrisno et al., 2021). Dutta and Sharma (2023) underscore the importance of sustainable and visually appealing packaging, which enhances brand image, increases consumer loyalty, and positively impacts quality perceptions. An analysis of results Šostar and Ristanović, 2023b showed that personal and psychological factors primarily influence consumer preferences for packaging, with personal budget emerging as the dominant criterion shaping these habits.

2.2. The Role of Sustainability and Consumer Preferences in Packaging

Consumers are increasingly prioritizing packaging that offers convenience, reliable functionality, and appealing aesthetics while emphasizing sustainability and environmental considerations, such as biodegradable and recyclable materials (Wahab et al., 2023).

Similarly, Duarte et al. (2024) found that consumer intentions to purchase products with sustainable packaging are primarily influenced by their willingness to pay a higher price, perceived value, and positive attitudes. These findings have significant implications for targeted advertising, public policies, and the need for improved consumer education and awareness regarding the benefits of sustainable packaging. The study of Šostar and Ristanović, 2024 concludes that product quality, composition, bioproduction origin, and status as local or healthy products are key drivers for purchasing sustainable products, with notable differences in consumer preferences across countries, particularly between Croatia and Spain versus Moldova, Turkey, and Ukraine.

Food safety and protection are key functions of packaging that consumers prioritize, with preferences for vacuum packaging and glass bottles. Bou-Mitri et al. (2021) found that consumers are willing to pay more for packaging that meets their needs for better and healthier options. In experimental scenarios, glass packaging is perceived as the most sustainable solution, while plastic is rated as the least sustainable (Branca et al., 2022). Furthermore, consumers who believe in the seriousness of ecological risks are more likely to accept inconveniences in delivery and purchase sustainable products, though a preference for sustainable packaging does not significantly impact their intention to shop from e-commerce stores with sustainable practices (Bharani et al., 2023).

The perception of eco-friendliness can vary significantly. For example, products packaged with a combination of plastic and paper are often perceived as more environmentally friendly than those packaged solely in plastic, even if their actual eco-friendliness may be lower (Sokolova et al., 2023). Visual elements, such as color and shape, also influence consumer perceptions of product healthiness, with green colors more frequently associated with health and quality (Bagwell, 2023). Sustainable packaging design significantly affects perceptions of quality, taste, and environmental friendliness. Visual elements like graphic depictions can shape sustainability perceptions regardless of the actual environmental impact (Steenis et al., 2017). The visibility and recognizability of packaging made from recycled materials are crucial for consumers. Features like eco-labels and attractive designs enhance the perception of sustainability and willingness to purchase (Polyportis et al., 2022). Brozović et al. (2021) highlight that the ecological sustainability and functionality of packaging materials are key factors influencing consumer perception, with glass often associated with higher quality and trust in the product.

European consumers increasingly prefer paper and cardboard packaging for its recyclability (57%), compostability (72%), and eco-friendliness (62%). Glass is favored for its reusability (55%) and better product protection (51%), while plastic packaging receives the lowest ratings in all categories. Consumers are also willing to pay more for products packaged in sustainable materials and avoid retailers who fail to reduce non-recyclable packaging (Two Sided Europe, 2020). Sustainable packaging alternatives like bioplastics and package-free products are gaining popularity, with choices depending on perceived environmental friendliness, economic factors, and personal preferences (Piracci et al., 2023). Factors such as packaging shape, material, visual appeal, and clearly labeled information significantly influence consumer purchasing decisions. Transparent and sustainable packaging is perceived as qualitatively better and more environmentally friendly (Choyal and Rani, 2023). Packaging designs that integrate preferred consumer functions with low environmental impact improve eco-efficiency but require balancing functional and sustainable aspects (Yokokawa et al., 2021).

Returnable glass packaging reduces overall environmental impact compared to single-use glass, although due to its weight and energy consumption, glass still has a higher impact than plastic (Stefanini et al., 2021). Consumers' perception of the recyclability and sustainability of plastic packaging plays a critical role in making environmentally friendly choices. Information and practical guidance are essential for increasing participation in recycling and waste reduction (Jacobsen et al., 2022). Sustainable packaging, such as glass and biodegradable options, has significant potential to reduce environmental impact. However, plastic packaging requires better recycling mechanisms and innovations to improve sustainability (Ibrahim et al., 2022). Consumers often develop a cyclical, emotionally charged relationship with food packaging, shifting from purchase and consumption to disposal. Packaging evokes feelings of frustration, responsibility, and sustainability concerns (Ruippo et al., 2023). Otto et al. (2021) found that consumers often overestimate the sustainability of glass and biodegradable plastic packaging while underestimating the negative impact of plastic. Education, eco-labeling, and incentives for sustainable behavior can improve purchasing decisions. Consumers' perception of sustainability is frequently influenced by misconceptions about the lifecycle of materials. While materials like glass and paper are often preferred for their perceived sustainability, true environmental impact depends on complex factors like recycling and energy efficiency (Boz et al., 2020). De Feo et al. (2022) highlighted that consumers significantly overestimate the sustainability of glass bottles compared to plastic, even though lifecycle analysis shows glass as the least sustainable option. This underscores the need for better communication of scientific facts to the public.

Paper packaging is perceived as the most sustainable due to its biodegradability and recyclability, but consumer knowledge about its actual sustainability characteristics is often limited. Improved education and communication about sustainable solutions are essential (Oloyede and Lignou, 2021). Research shows that consumer perceptions of packaging sustainability often diverge from actual lifecycle assessment results. Glass, often perceived as the most acceptable material, is frequently shown to have lower sustainability in lifecycle analyses (Marrucci et al., 2024). The study of Suki and Suki, 2015 concludes that functional, social, and epistemic values significantly influence consumer environmental concern regarding green products, with notable differences across usage groups, emphasizing the need for businesses to integrate these values into their practices and future research to explore mediating and moderating factors for deeper insights.

2.3. Packaging Materials and Consumer Perceptions: Insights from the Beverage Industry

Packaging significantly impacts consumer perceptions of quality and purchase intentions, with materials, colors, and design

playing a crucial role in attracting consumers (Yeo et al., 2020). For example, consumers who value sustainability prefer craft beer in glass packaging due to its perceived higher quality and environmental friendliness (Nieto-Villegas et al., 2024). Label color and bottle shape also significantly affect the perceived quality of beer; warm colors and curved shapes are associated with higher premium quality perceptions (Gislason et al., 2020). Glass is often preferred as a packaging material because of its association with high quality and its ability to preserve the product's taste, while plastic receives lower ratings in these aspects (de Castro Pereira, 2021).

Consumers exhibit a negative halo effect toward alcoholic beverages in paper packaging, perceiving them as lower-quality products compared to those in glass packaging. This highlights the importance of aesthetics and clear communication about unaltered taste (Techawachirakul et al., 2023). Betancur et al. (2020) confirmed that consumer choices for beer depend on a combination of biological, psychological, socio-cultural factors, intrinsic product properties like taste, and extrinsic characteristics such as packaging and the consumption context. Visual packaging elements like colors and shapes are key factors influencing beverage purchase intentions, with shape attractiveness having the greatest impact on quality perception (Purwaningsih et al., 2019).

Glass packaging is preferred for its ability to preserve food quality and prevent the transfer of harmful substances. Plastic packaging, although cost-effective and practical, poses higher health risks if misused (Yarış and Sezgin, 2017). Optimizing production lines for beer packaging, including managing downtimes and adjusting machine speeds, is essential for improving efficiency and reducing losses in the packaging process (Ujam and Godwin, 2018). Consumers perceive beer in glass bottles as tasting better compared to beer in plastic or metal packaging, underscoring the importance of packaging in shaping consumer attitudes and preferences (Pospisil and Zavodna, 2020). The choice of packaging material has a crucial influence on the perceived quality of craft beer. Consumers favor glass packaging for its premium appearance and sustainability, directly affecting their purchase decisions (Luís, 2021). Glass materials ensure better resistance to contamination compared to PET bottles, emphasizing their role in preserving product quality during the filling process (Devolli et al., 2016). During storage, pale lager beer in glass bottles showed the least changes in physico-chemical properties compared to kegged beer, while PET packaging caused the most pronounced changes, highlighting glass as the superior option for maintaining beer quality over time (Gagula et al., 2022). Glass bottles and aluminum cans proved essential for preserving beer quality and sales during the pandemic. While PET packaging offered logistical advantages, it caused greater changes in the beer's physico-chemical properties (Pitts and Witrick, 2021). Packaging can significantly influence consumers' taste perceptions, with beer from glass bottles rated higher than beer from plastic bottles, emphasizing the importance of material choice in enhancing quality perception (Habschied et al., 2022). Although traditional consumers prefer glass packaging for craft beer, the growing acceptance of aluminum cans opens opportunities for breweries to leverage logistical and marketing benefits (Merlino et al., 2020).

Reusable glass beer packaging demonstrates advantages in reducing waste and greenhouse gas emissions, provided key factors like standardization, high return rates, and limited transport distances are met (Van Velzen and Brouwer, 2022). Storing beer in aluminum cans can increase aluminum content in the beer due to metal migration, while glass bottles remain a safer option for preserving beer quality and minimizing consumption risks (Gajek et al., 2022). Vibrations during transport can affect packaging stability, with glass bottles being particularly sensitive to structural stress at the base and shoulders (Wang and Zhong, 2020). Natural aging of beer packaged in glass bottles and aluminum cans revealed that glass better preserves the aromatic profile during the first 6 months, while cans provide more uniform aromatic stability after extended storage (De Lima et al., 2023). Packaging for alcoholic beverages, including beer, plays a crucial role in attracting consumer attention through design, shape, and promotions, creating associations with specific occasions and consumer profiles while shaping expectations about taste and quality (Jones et al., 2022).

Using brewery by-products, such as Saccharomyces cerevisiae, to produce paper packaging shows potential for improving barrier properties but may reduce mechanical strength, requiring a balance between sustainability and functionality (Markevičiūtė et al., 2024). Applying circular economy principles in the brewing supply chain, including increased use of returnable and recycled glass packaging, can significantly reduce greenhouse gas emissions and the environmental footprint of beer packaging (Cimini and Moresi, 2021).

Auditory signals associated with glass bottles, such as the sound of opening and pouring beer, are perceived as more luxurious than cans. Louder and higher-frequency sounds enhance the impression of premium quality, demonstrating the importance of auditory cues in shaping beer quality perception (Almiron et al., 2021). In Italy, craft beer consumers prioritize attributes such as flavor, fermentation, and color, with packaging, promotions, and price having a lesser influence, suggesting that packaging material, like glass or aluminum, plays a smaller role compared to sensory characteristics (Lerro et al., 2020). Packaging, branding, and pricing significantly influence beer purchasing behavior in Kathmandu Valley. High-quality packaging and fair pricing motivate consumers to choose specific products, with glass bottles and innovative packaging providing competitive advantages (Dhakal, 2023). The brewing industry, through practices such as beer made from residual grains, plays a key role in implementing circular economy principles, reducing waste and CO_2 emissions, while sustainable packaging practices, like recycled glass, enhance the sector's ecological sustainability (Ravanal et al., 2024). Well-designed packaging, featuring clear expiration labels and customizable sizes, can reduce household food waste by helping consumers better manage beer shelf life and portion sizes (Chan, 2022).

3. MATERIALS AND METHODS

This research was designed to address gaps identified during the literature review concerning the interaction between packaging

materials and branding. The hypotheses tested in this study were grounded in established theoretical frameworks and empirical findings, allowing for a robust and detailed examination of consumer perceptions. By integrating a comprehensive research design, systematic data collection, and advanced statistical analyses, this study provides valuable insights into how packaging and branding influence consumer preferences and perceptions.

Table 1 outlines the hypotheses tested in the study, focusing on the effects of packaging type (Glass, Plastic, Metal) and branding (Branded vs. Non-Branded) on consumer quality perception and preferences. The hypotheses address both the independent effects of packaging (e.g., H_1, H_4, H_5) and branding (e.g., H_2), as well as their interaction (e.g., H_3). Specific comparisons include the superior perception of glass packaging (H_4, H_7), the challenges associated with plastic packaging (H_5, H_6), and the nuanced role of branding in mitigating the disadvantages of less-preferred materials like plastic and metal (H_9, H_{10}). The table encapsulates the theoretical expectations that guided the study and provides the foundation for the analyses conducted.

The study was conducted with 310 participants who were recruited to evaluate the impact of packaging type and branding on product quality perception and consumer preferences. Participants were chosen to represent a diverse demographic group to ensure that the findings would be generalizable across different consumer segments. The research employed a repeated measures experimental design, which allowed for a detailed analysis of the effects of packaging type—glass, plastic, and metal—and product branding, whether branded or non-branded. Each participant was exposed to all six combinations of these variables, enabling within-subject comparisons to assess differences in perception.

The foundations of this study were built upon a thorough review of the existing literature in consumer behavior, packaging psychology, and branding. Previous research on the impact of material choice and branding on quality perception was critically analyzed, which informed the formulation of ten hypotheses tested in this research. This review highlighted the critical role of packaging and branding in shaping consumer evaluations, providing a solid theoretical basis for the study. The materials for the study included beer, a product commonly packaged in glass bottles, plastic bottles, and metal cans. Glass was chosen for its association with premium quality, plastic for its convenience but lower perceived quality, and metal as a neutral or middle-ground option. Each product was presented in two versions: Branded, representing a well-recognized product with strong market presence, and non-branded, representing a generic version with no distinguishing branding elements. This setup allowed for a comprehensive evaluation of how packaging and branding interact to influence consumer perceptions.

Table 1: Hypothesis of the study

Hypothesis
H_1: There is a statistically significant impact of packaging type on quality perception and consumer preferences.
H_2: Branded products have statistically significantly higher quality perception and consumer preferences compared to non-branded products.
H_3: There is a significant interaction between packaging type and brand status on quality perception and consumer preferences.
H_4: Glass packaging significantly better influences quality perception compared to plastic and metal.
H_5: The quality perception of products is lowest for products in plastic packaging compared to glass and metal.
H_6: Branded products in plastic packaging are rated lower than non-branded products in glass packaging.
H_7: Branded products in glass packaging have the highest quality perception among all combinations of brand and packaging.
H_8: Products in metal packaging have higher quality perception than plastic packaging but lower than glass packaging.
H_9: The branding effect is stronger for plastic packaging than for glass and metal.
H_{10}:Branded products in metal packaging have higher quality perception than non-branded products in glass packaging.

Source: Authors elaboration

Participants were asked to evaluate the products using a structured questionnaire, providing ratings for perceived quality and preference. Each product was rated on a Likert scale ranging from 1 (lowest perception) to 10 (highest perception). To reduce potential biases, the order in which participants encountered the packaging and branding combinations was randomized. This ensured that no systematic order effects influenced the results. Ethical considerations were carefully addressed throughout the study. Participants provided informed consent before participating and were informed about their right to withdraw at any time. The study was designed to ensure anonymity and confidentiality, with no personally identifiable information collected.

The data collected were analyzed using JASP statistical software. Repeated measures ANOVA was employed to examine the main effects of packaging type and branding on quality perception, as well as their interaction. *Post hoc* tests with Bonferroni corrections were conducted to identify specific differences between packaging types and branding conditions. Descriptive statistics, including means, standard deviations, and coefficients of variation, were calculated to provide a detailed summary of participant responses. Marginal means analysis was used to identify overarching trends across all conditions. Visualizations, such as raincloud plots and descriptive plots, were created to illustrate the distribution of responses and highlight differences between conditions.

4. RESULTS

The results of this study provide comprehensive insights into how packaging type and branding influence consumer perceptions of product quality and preferences. Through statistical analyses, significant differences were identified across various combinations of packaging materials and branding, confirming the critical role these factors play in shaping consumer evaluations.

Table 2 presents the sociodemographic characteristics of the study participants. The sample consisted of 310 respondents, with a majority being female (64%) compared to male participants (36%). Most respondents were aged between 36 and 45 years (29%), followed by those aged 26-35 (27%) and 18-25 (25%), with smaller proportions aged 46-55 (15%) and 56+ (4%). Most participants were employed (93%), while only 7% were unemployed.

Regarding household income, the largest group reported a total monthly income of 1000-1399 euros (65%), followed by 499-999 euros (22%), with smaller proportions earning either <499 euros (3%) or above 1399 euros (10%). These demographics provide a comprehensive overview of the diverse participant pool and their socioeconomic backgrounds.

Table 3 presents the results of the within-subject effects analysis in repeated measures ANOVA. Two main variables were analyzed: Packaging type (Packaging) and its interaction with product type (Packaging * Product). This table helps identify whether there are significant differences in consumer perceptions across different packaging types and their combinations with product branding. The results indicate that packaging type has a highly significant impact ($F = 2809.812$, $P < 0.001$) with a large proportion of explained variance ($\omega^2 = 0.753$). This means that packaging type explains most of the variations in quality perception and consumer preferences. The interaction between packaging type and product type is also significant ($F = 118.546$, $P < 0.001$), but with a smaller effect size ($\omega^2 = 0.113$), showing that product status (branded or non-branded) modulates perception depending on the packaging type. Given the violation of the sphericity assumption, as indicated by Mauchly's test, Greenhouse-Geisser and Huynh-Feldt corrections were applied to adjust the degrees of freedom, ensuring the accuracy of the results. These corrections further confirm the statistical significance of the findings. This table emphasizes the importance of packaging design and its interaction with brand perception as key factors in understanding consumer preferences. The results provide valuable insights for optimizing marketing strategies and product development.

Table 4 presents the results of the between-subject effects analysis in repeated measures ANOVA. The main effect analyzed is the variable Product, which refers to the product status (branded or non-branded). This analysis examines whether there are significant differences between these two groups of participants in their average quality perception ratings. The results show that the product effect is significant ($F = 2952.433$, $P < 0.001$), with a very large proportion of explained variance ($\omega^2 = 0.704$). This means that product status—branded versus non-branded—explains a significant portion of the differences in quality perception and consumer preferences. Specifically, branded products are perceived significantly better than non-branded ones. Residual variance (Residuals) is 556.628, representing the variation within participant groups that is not explained by the product effect. The average variation per participant (Mean Square = 0.901) indicates that individual differences within the same groups are relatively small. This table clearly demonstrates the strong impact of branding on quality perception and consumer preferences. The results suggest that product branding significantly contributes to creating a positive impression among consumers, which is crucial for developing product positioning strategies in the market.

Table 5 presents basic statistical measures for different combinations of packaging type and product status. The results show that glass packaging achieves the highest average quality perception scores, with branded products (Mean = 8.865) being rated significantly higher than non-branded ones (Mean = 7.226). In contrast, plastic packaging receives the lowest ratings, particularly for non-branded products (Mean = 2.310), while metal packaging achieves intermediate values. The coefficient of variation indicates stable ratings within most groups, but plastic packaging shows the highest relative variability (CV = 0.343 for non-branded products). These findings highlight the critical role of packaging in quality perception, with a clear advantage for glass and the negative impact of plastic.

Figure 1 illustrates the average quality perception ratings of products depending on packaging type (Glass, Plastic, Metal) and product status (Branded and Non-Branded). Clear differences between categories can be observed, providing valuable insights into how packaging and branding influence consumer perceptions. Glass packaging achieves the highest quality perception ratings for both product types. Branded products in glass packaging receive the highest average rating, while non-branded products also show relatively high perceptions in this category. This

Table 2: Sociodemographic indicators

Sociodemographic indicator	n	Percentage
Gender		
Male	112	36
Female	198	64
Total	310	100
Age		
18-25	76	25
26-35	83	27
36-45	90	29
46-55	45	15
56+	16	4
Total	310	100
Employment status		
Employed	287	93
Unemployed	23	7
Total	310	100
Total monthly income of all household members		
Up to 499 euros	8	3
From 499 to 999 euros	67	22
From 1000 to 1399 euros	203	65
Above 1399 euros	32	10
Total	310	100

Table 3: Within subjects effects

Cases	Sphericity correction	Sum of squares	df	Mean square	F	P	ω^2
Packaging	Greenhouse-Geisser	5178.533	1.924	2691.620	2809.812	<0.001	0.753
	Huynh-Feldt	5178.533	1.930	2683.413	2809.812	<0.001	0.753
Packaging * Product	Greenhouse-Geisser	218.482	1.924	113.559	118.546	<0.001	0.113
	Huynh-Feldt	218.482	1.930	113.213	118.546	<0.001	0.113
Residuals	Greenhouse-Geisser	1138.985	1188.999	0.958			
	Huynh-Feldt	1138.985	1192.636	0.955			

Table 4: Between subjects effects

Cases	Sum of squares	df	Mean square	F	P	ω²
Product	2659.234	1	2659.234	2952.433	<0.001	0.704
Residuals	556.628	618	0.901			

Table 5: Descriptives

Packaging	Product	n	Mean	SD	SE	Coefficient of variation
Glass	Brand	310	8.865	1.161	0.066	0.131
	Regular	310	7.226	0.942	0.054	0.130
Plastic	Brand	310	5.606	0.855	0.049	0.153
	Regular	310	2.310	0.793	0.045	0.343
Metal	Brand	310	7.142	1.135	0.064	0.159
	Regular	310	4.903	0.778	0.044	0.159

Figure 1: Descriptives plots

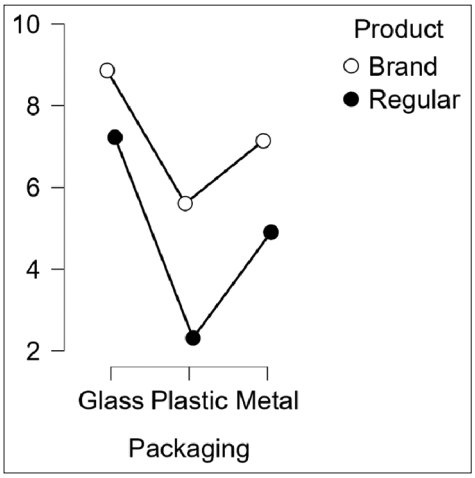
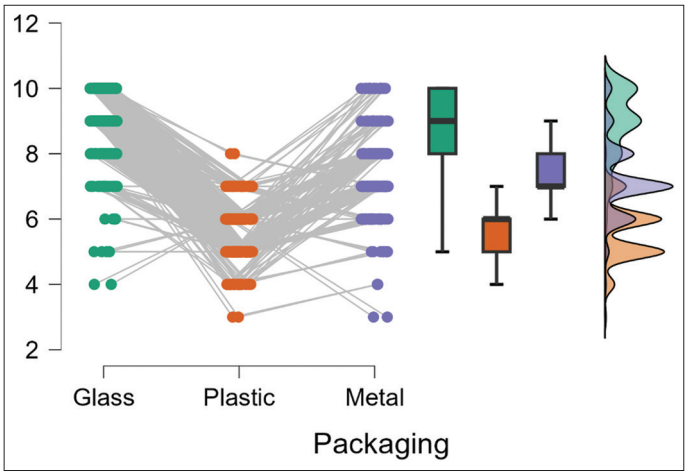


Figure 2: Perceived quality of branded products by packaging type



highlights the universal perception of glass as a premium material that contributes to a positive product image, regardless of product status. Conversely, plastic packaging has the lowest average ratings, especially for non-branded products. This suggests that plastic negatively impacts quality perception, particularly for products that lack the advantage of a recognizable brand. It appears that plastic cannot compensate for the absence of branding, which is an important insight for manufacturers.

Metal packaging occupies an intermediate position between glass and plastic. Its ratings are higher than plastic but significantly lower than glass. This suggests that metal can be a good compromise in situations where glass is not an option, but it still does not provide the same level of quality perception. The branding effect is also clear in the graph. Branded products consistently achieve higher ratings than non-branded ones across all packaging types. This difference is particularly pronounced for plastic packaging, indicating that branding can partially mitigate the negative perception of the material. On the other hand, the difference between branded and non-branded products for glass is less pronounced, further emphasizing the inherent advantage of this material. This graph visually demonstrates how quality perception varies depending on the combination of packaging and product status. The results highlight the importance of packaging as a key factor in shaping consumer perceptions, while also pointing to the power of branding in modulating these perceptions. In conclusion, glass remains the best choice for premium product packaging, while plastic requires additional efforts in design or branding to improve quality perception.

Figure 2 provides a detailed visual insight into the distribution of quality perception scores for different packaging types (Glass, Plastic, Metal) for branded products. This graph combines several elements—individual data points, lines connecting data for the same participants, box plots, and density distributions—to offer a comprehensive analysis. The first component, individual data points, clearly shows how each participant evaluates the quality perception for different packaging types. A consistent upward trend is noticeable for glass, while plastic packaging receives the lowest scores. These differences are visually emphasized by the gray lines connecting the same participant's scores across different packaging types, highlighting the trend that participants significantly change their evaluations depending on the packaging material. The second element, box plots, summarizes the data distribution for each type of packaging. Glass has the highest median values and the most narrowly dispersed data, indicating consistently positive perceptions. Plastic shows a wider range of data but with a significantly lower median, while metal occupies a middle position, with scores better than plastic but lower than glass. The third part of the graph, the density distribution (raincloud on the right-hand side), further highlights patterns. Glass has a symmetrical and high distribution of scores, confirming its dominant quality perception. In contrast, plastic has a lower and broader distribution, reflecting greater disagreement among participants. Metal, with a moderately high and wider distribution, again occupies a middle position. This comprehensive graphical representation underscores how different packaging types influence the perception of branded product quality. It is evident that glass has the greatest advantage, while plastic suffers due to significantly lower scores, suggesting a strong impact of packaging on consumer perception. Metal serves as a compromise solution but cannot reach the level of glass. These results provide valuable guidance for manufacturers regarding the importance of material choice for packaging branded products.

Figure 3 visualizes the distribution of quality perception scores for non-branded products, depending on the type of packaging

(Glass, Plastic, Metal). By combining individual data points, participant connections, box plots, and density distributions, the graph provides insights into perception patterns among participants. Scores for glass show consistently high-quality perception, with a median and distribution significantly higher compared to other materials. Non-branded products in glass packaging are rated the best, suggesting that glass carries an inherent premium perception, even in the absence of branding. Plastic, on the other hand, has the lowest quality perception scores, with a wider range of data and a significantly lower median. The density distribution for plastic packaging shows that most scores gravitate toward lower values, indicating a strong negative impact of plastic on consumer perception. Metal packaging scores fall between glass and plastic. While the scores are better than those for plastic, they do not reach the level of glass. The density distribution for metal is broader and shifts toward medium values, suggesting that metal is less consistent in creating positive perceptions compared to glass. The lines connecting individual participant data show a consistent trend—most participants give the lowest ratings to plastic and the highest to glass, with metal serving as a compromise. This graph highlights how different packaging materials significantly influence the quality perception of non-branded products and further confirms the importance of material selection in situations where branding does not serve as a protective factor.

Figure 3: Perceived quality of non-branded products by packaging type

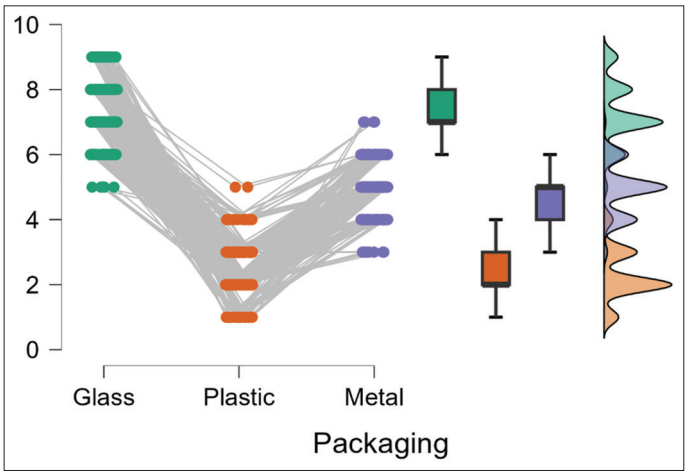


Table 6 presents the results of *post hoc* tests conducted to quantify the differences in quality perception between branded (Brand) and non-branded (Regular) products. This analysis provides precise measures of group differences after confirming the statistical significance of the main effect. The results reveal a significant difference between branded and non-branded products, with a mean difference of 2.391. The 95% confidence interval (95% CI) for this difference ranges from 2.305 to 2.478, indicating that the difference is stable and reliable within this range. The standard error (SE) of 0.044 reflects the precision of this estimate. The high t-statistic value of 54.336 and the Bonferroni-corrected P-value ($P < 0.001$*), confirm that the difference between branded and non-branded products is statistically significant at a very high level. These results highlight a consistently higher quality perception for branded products compared to non-branded ones, regardless of other variables like packaging type. In conclusion, the table demonstrates the strong effect of branding on product quality perception. This difference underscores the critical role of branding in shaping a positive image of products among consumers, while non-branded products, despite being present in the market, do not enjoy the same level of trust and preference. Manufacturers should invest in branding strategies to enhance the perceived value and quality of their products, even when the fundamental characteristics of the products remain similar.

Table 7 provides a detailed analysis of differences in quality perception across different types of packaging: Glass, Plastic, and Metal. This *post hoc* analysis follows the confirmation of a statistically significant main effect for packaging type, offering precise comparisons between the groups. The results reveal substantial differences in quality perception between the packaging materials. The comparison between glass and plastic shows the largest mean difference (4.087) with a 95% confidence interval (95% CI) ranging from 3.955 to 4.219, indicating that glass packaging is perceived significantly better than plastic. The high t-statistic of 74.179 and the Bonferroni-corrected P-value ($P < 0.001$*) confirm the robustness of this difference. The

Table 6: *Post hoc* comparisons for product effect

Group	Mean difference	95% CI for mean difference		SE	df	t	pbonf
Condition		Lower	Upper				
Brand							
Regular	2.391	2.305	2.478	0.044	618	54.336	<0.001***

***P<0.001

Table 7: *Post hoc* comparisons for packaging effect

Group 1	Mean difference	95% CI for mean difference		SE	df	t	pbonf
Group 2		Lower	Upper				
Glass							
Regular	4.087	3.955	4.219	0.055	618	74.179	<0.001***
Metal	2.023	1.882	2.164	0.059	618	34.435	<0.001***
Plastic							
Metal	−2.065	−2.183	−1.946	0.049	618	−41.862	<0.001***

comparison between Glass and Metal shows a mean difference of 2.023, with the 95% CI ranging from 1.882 to 2.164. This indicates that glass is also perceived significantly better than metal, albeit to a lesser extent than the difference with plastic. The t-statistic of 34.435 and the P-value (P < 0.001*) support the statistical significance of this difference. Lastly, the comparison between plastic and metal shows a mean difference of −2.065, with the 95% CI ranging from −2.183 to −1.946. The negative value indicates that metal is perceived significantly better than plastic, supported by the high t-statistic of −41.862 and a highly significant P-value (P < 0.001*). In summary, the results from this table demonstrate a clear hierarchy in consumer perception of packaging materials, with Glass being the most preferred, followed by metal, and plastic perceived the least favorably. These findings highlight the significant influence of packaging type on consumer quality perception, providing valuable insights for manufacturers aiming to improve product presentation and appeal.

Table 8 explores the interaction between product branding (branded or nonbranded) and packaging type (Glass, Plastic, Metal), quantifying how these factors together influence consumer perceptions of product quality. By examining mean differences, confidence intervals, and statistical significance, this table reveals critical insights into how combinations of product and packaging affect evaluations. The results show that branded glass (BG) consistently achieves the highest quality perception scores across all combinations. The difference between BG and regular glass (RG) is significant, with a mean difference of 1.639 (95% CI: 1.389-1.889, P < 0.001). This result emphasizes the added value of branding, even within a packaging type already perceived as premium. When compared to branded plastic (BP), BG is perceived far more favorably, with a significant mean difference of 3.258 (P < 0.001). The most pronounced contrast, however, is between BG and Regular Plastic (RP), with a mean difference of 6.555 (P < 0.001). These findings underscore the combined power of glass packaging and branding in driving positive consumer perceptions. Regular Glass (RG) performs significantly better than regular plastic (RP), with a mean difference of 4.916 (P < 0.001). This demonstrates the inherent advantage of glass over plastic in influencing quality perception, even in the absence of branding. Interestingly, RG is statistically indistinguishable from branded metal (BM), with a non-significant mean difference of 0.084 (P = 1.000). This suggests that branding can elevate the perception of metal packaging to a level comparable with unbranded glass, highlighting the potential of branding to offset material-related disadvantages. Plastic packaging performs the poorest overall. Branded plastic (BP) scores higher than regular plastic (RP), with a mean difference of 3.297 (P < 0.001), showing that branding mitigates some of the negative perceptions associated with plastic. However, BP is significantly less preferred than BG and BM, indicating that even with branding, plastic struggles to achieve the same level of perceived quality as glass or metal. Metal Packaging occupies a middle ground. Branded metal (BM) performs better than Regular Metal (RM), with a significant mean difference of 2.239 (P < 0.001). Additionally, RM is rated higher than RP, with a mean difference of 2.323 (P < 0.001). These results indicate that while metal packaging does not match the premium perception of glass, it is a more favorable choice than plastic, particularly when branding is applied. This table highlights the dominant position of glass packaging in influencing consumer perceptions of product quality, especially when paired with branding. Branding enhances the appeal of all packaging types, but its impact is most pronounced for less-preferred materials such as plastic and metal. These findings offer strategic guidance for manufacturers aiming to optimize the presentation and marketability of their products.

Table 9 presents the average perceived quality scores (marginal means) for each packaging type: Glass, Plastic, and Metal. These

Table 8: *Post hoc* comparisons for interaction between product and packaging

Group 1	Mean difference	95% CI for mean difference		SE	df	t	pbonf
Group 2		Lower	Upper				
BG							
RG	1.639	1.389	1.889	0.085	618	19.301	<0.001***
BP	3.258	3.028	3.488	0.078	618	41.813	<0.001***
RP	6.555	6.330	6.779	0.076	618	86.085	<0.001***
BM	1.723	1.478	1.967	0.083	618	20.738	<0.001***
RM	3.961	3.721	4.202	0.082	618	48.551	<0.001***
RG							
BP	1.619	1.395	1.844	0.076	618	21.267	<0.001***
RP	4.916	4.687	5.146	0.078	618	63.092	<0.001***
BM	0.084	−0.157	0.324	0.082	618	1.028	1.000
RM	2.323	2.078	2.567	0.083	618	27.961	<0.001***
BP							
RP	3.297	3.102	3.492	0.066	618	49.773	<0.001***
BM	−1.535	−1.741	−1.330	0.070	618	−22.016	<0.001***
RM	0.703	0.490	0.917	0.072	618	9.709	<0.001***
RP							
BM	−4.832	−5.046	−4.619	0.072	618	−66.714	<0.001***
RM	−2.594	−2.799	−2.388	0.070	618	−37.187	<0.001***
BM							
RM	2.239	2.008	2.469	0.078	618	28.651	<0.001***

BG: Brand glass, BP: Brand plastic, BM: Brand metal, RG: Regular glass, RP: Regular plastic, RM: Regular metal. ***P<0.001

values represent the mean perceptions across all participants and product types, adjusted for the effects of other variables in the analysis. The table provides insights into how packaging type independently influences consumer evaluations of quality. The results clearly show that Glass packaging is rated the highest, with a marginal mean of 8.045. The 95% confidence interval (CI) for this mean ranges from 7.962 to 8.129, demonstrating the consistent and strong positive perception of glass packaging. The standard error (SE) of 0.042 further highlights the precision of this estimate, indicating minimal variability in the data. In contrast, plastic packaging receives the lowest ratings, with a marginal mean of 3.958. The 95% CI for plastic ranges from 3.893 to 4.023, which underscores its significantly lower perception compared to glass. The relatively small SE of 0.033 suggests that this negative evaluation of plastic is consistent across participants. These results confirm that plastic packaging is perceived as the least favorable material in terms of quality. Metal packaging occupies a middle position, with a marginal mean of 6.023. The 95% CI ranges from 5.946 to 6.099, indicating that while metal is not as highly regarded as glass, it is significantly preferred over plastic. The SE of 0.039 indicates a moderate level of consistency in evaluations of metal packaging. The table highlights a clear hierarchy in consumer perception of packaging materials. Glass is viewed as the most premium and desirable packaging type, significantly outperforming both plastic and metal. Metal serves as a compromise, offering moderate quality perceptions, while plastic lags far behind, reinforcing its position as the least favorable material. These findings emphasize the critical role of packaging in shaping consumer perceptions of product quality, providing manufacturers with valuable insights for designing effective packaging strategies.

Table 10 presents the average perceived quality scores (marginal means) for branded (Brand) and non-branded (Regular) products. These scores reflect the overall evaluations of product quality, averaged across all packaging types, with adjustments for other variables in the analysis. The table offers a clear view of how branding influences consumer perceptions of quality. The results demonstrate a strong and significant effect of branding on quality perception. Branded products achieve a marginal mean of 7.204, with a 95% confidence interval (CI) ranging from 7.143 to 7.265. This high mean score indicates that branded products are consistently rated more favorably by consumers. The small standard error (SE) of 0.031 reflects the high precision of this estimate, showing minimal variability in how participants perceive branded products. In contrast, non-branded products receive a significantly lower marginal mean of 4.813, with a 95% CI ranging from 4.752 to 4.874. This result highlights a notable disadvantage for products without branding, as they are perceived as less appealing and of lower quality. The identical SE of 0.031 indicates a similarly consistent evaluation across participants. The difference between the two means underscores the critical role of branding in shaping consumer perceptions. Branded products enjoy a distinct advantage, with their perceived quality being markedly higher than non-branded alternatives. This effect likely stems from the associations of trust, familiarity, and prestige that branding conveys, which influence consumer evaluations beyond the intrinsic qualities of the product. Table highlights the power of branding as a tool for enhancing consumer perceptions of quality. The significant gap between branded and non-branded products emphasizes the value of branding in competitive markets, providing manufacturers with a clear incentive to invest in brand development and marketing strategies to elevate their product offerings.

Table 9: Marginal means for packaging effect

Packaging	Marginal mean	95% CI for mean difference		SE
		Lower	Upper	
Glass	8.045	7.962	8.129	0.042
Plastic	3.958	3.893	4.023	0.033
Metal	6.023	5.946	6.099	0.039

Table 10. Marginal means for product effect

Product	Marginal mean	95% CI for mean difference		SE
		Lower	Upper	
Brand	7.204	7.143	7.265	0.031
Regular	4.813	4.752	4.874	0.031

Table 11: Marginal means for interaction between product and packaging

Product	Packaging	Marginal mean	95% CI for Mean Difference		SE
			Lower	Upper	
Brand	Glass	8.865	8.747	8.982	0.060
Regular	Glass	7.226	7.108	7.344	0.060
Brand	Plastic	5.606	5.514	5.698	0.047
Regular	Plastic	2.310	2.218	2.402	0.047
Brand	Metal	7.142	7.033	7.250	0.055
Regular	Metal	4.903	4.795	5.012	0.055

Table 11 provides a detailed breakdown of the combined effects of product branding (Brand or Regular) and packaging type (Glass, Plastic, Metal) on perceived quality. These marginal means represent the adjusted average scores for each combination, offering a nuanced view of how branding and packaging interact to influence consumer evaluations. Branded glass (Brand Glass) has the highest perceived quality, with a marginal mean of 8.865 and a 95% confidence interval (CI) of 8.747-8.982. This result demonstrates the strong preference for glass packaging when paired with branding, highlighting its premium perception. Non-branded glass (Regular Glass) is rated lower at 7.226, but it still outperforms all combinations of plastic and metal packaging. The difference between branded and non-branded glass underscores the added value that branding contributes, even for a material already perceived positively. Plastic receives the lowest ratings across both branded and non-branded products. Branded plastic (Brand Plastic) achieves a Marginal Mean of 5.606, which, while better than its non-branded counterpart, is still significantly lower than glass or metal. Non-branded plastic (Regular Plastic) has the lowest score of all combinations, with a Marginal Mean of 2.310, and a narrow CI (2.218-2.402), reflecting consistent negative perceptions. These results indicate that plastic packaging suffers from a substantial disadvantage, regardless of branding. Metal occupies a middle

ground in perceived quality. Branded metal (Brand Metal) achieves a Marginal Mean of 7.142, which is higher than branded plastic but lower than branded glass. Non-branded metal (Regular Metal) is rated at 4.903, outperforming non-branded plastic but trailing behind both branded and non-branded glass. The results for metal suggest that while it is less favored than glass, it is a viable alternative to plastic, particularly when paired with branding. The interaction between product branding and packaging type is evident. Branding consistently elevates the perceived quality for all packaging materials, with the largest impact seen for plastic and metal. However, the relative ranking of packaging types remains consistent: glass is rated the highest, followed by metal, with plastic as the least favorable option. These results confirm that branding enhances consumer perceptions across all materials but cannot fully overcome the inherent disadvantages of less preferred packaging types like plastic. Table highlights the dominant role of glass packaging in driving positive quality perceptions, particularly when paired with branding. Metal serves as a moderate alternative, benefiting from branding but still unable to match the premium perception of glass. Plastic, on the other hand, faces significant challenges, with branding only partially mitigating its low ratings. These findings offer valuable guidance for manufacturers, emphasizing the importance of selecting the right packaging material and leveraging branding to optimize consumer appeal.

The analysis confirmed all ten proposed hypotheses, providing detailed insights into the roles of packaging type, branding, and their interaction in shaping consumer perceptions of product quality. Hypothesis 1 confirmed: There is a statistically significant impact of packaging type on quality perception and consumer preferences. Packaging type significantly influences consumer perceptions, with clear differences between glass, plastic, and metal. Glass consistently achieved the highest ratings, followed by metal, while plastic was rated the lowest. This demonstrates that packaging material is a key factor in shaping consumer preferences. Hypothesis 2 confirmed: Branded products have statistically significantly higher quality perception and consumer preferences compared to non-branded products. Branded products were consistently rated higher than non-branded ones. This indicates that branding effectively enhances consumer trust and conveys a perception of higher value and quality, independent of packaging material. Hypothesis 3 confirmed: There is a significant interaction between packaging type and brand status on quality perception and consumer preferences. The interaction between packaging and branding was significant. Branded glass products achieved the highest ratings, while non-branded plastic products received the lowest. This confirms that branding enhances the positive perception of premium packaging materials like glass and partially mitigates the disadvantages of less-preferred materials like plastic. Hypothesis 4 confirmed: Glass packaging significantly better influences quality perception compared to plastic and metal. Glass was rated significantly higher than both plastic and metal in all analyses. This confirms its premium perception and strong positive impact on consumer quality evaluations. Hypothesis 5 confirmed: The quality perception of products is lowest for products in plastic packaging compared to glass and metal. Plastic packaging consistently received the lowest scores, demonstrating its inherent disadvantage in conveying quality. This finding highlights the need for strategic efforts to improve the perception of plastic-packaged products. Hypothesis 6 confirmed: Branded products in plastic packaging are rated lower than non-branded products in glass packaging. Despite the presence of branding, plastic packaging was rated lower than non-branded glass products. This underscores the importance of material choice in shaping consumer perceptions, as branding alone cannot fully overcome the negative perception of plastic. Hypothesis 7 confirmed: Branded products in glass packaging have the highest quality perception among all combinations of brand and packaging. Branded glass products consistently achieved the highest ratings, highlighting the synergy between branding and glass as a premium material. This combination is most effective in conveying quality and luxury to consumers.

Hypothesis 8 confirmed: Products in metal packaging have higher quality perception than plastic packaging but lower than glass packaging. Metal packaging was rated higher than plastic but did not reach the level of glass. These finding positions metal as a middle-ground option, providing a better alternative to plastic while still not matching the premium perception of glass. Hypothesis 9 confirmed: The branding effect is stronger for plastic packaging than for glass and metal. The difference between branded and non-branded plastic products was larger than for glass or metal. This highlights the ability of branding to significantly improve the perception of less-preferred materials like plastic, although it remains limited compared to glass or metal. Hypothesis 10 confirmed: Branded products in metal packaging have higher quality perception than non-branded products in glass packaging. Branded metal products were rated higher than non-branded glass products. This demonstrates the power of branding to elevate the perception of materials like metal, even surpassing non-branded premium materials like glass.

5. CONCLUSION

In recent years, the study of consumer behavior has increasingly emphasized the psychological and emotional factors influencing purchasing decisions. Packaging and branding have emerged as two essential components shaping both functional and symbolic perceptions of products. Packaging materials, such as glass, plastic, and metal, evoke distinct associations—glass is often linked to premium quality, plastic to convenience but lower quality, and metal to durability and practicality. At the same time, branding has become a critical tool for fostering trust, loyalty, and heightened consumer expectations. As sustainability becomes a growing concern, the food and beverage industry face the challenge of balancing consumer preferences for packaging with environmental responsibility, making research into these factors highly relevant.

This study confirms the significant role of packaging type and branding in shaping consumer perceptions of quality and preferences. Glass packaging consistently outperformed other materials, being associated with higher perceived quality, while plastic received the lowest ratings. Branding proved to enhance perceptions across all packaging types, with branded products rated significantly higher than non-branded ones. The interaction

between packaging and branding further emphasized the importance of their combined effect, as branded glass products achieved the highest ratings and non-branded plastic products the lowest. These results highlight the powerful influence of material choice and brand identity on consumer evaluations.

While this research provides valuable insights, it is not without limitations. The focus on a single product category—beer—may restrict the applicability of the findings to other products. Additionally, the reliance on self-reported data, while insightful, may not fully capture actual consumer behavior in purchasing contexts. Furthermore, the sample, although diverse, may not account for all cultural and demographic differences influencing preferences. Future studies could expand this research by exploring other product categories, incorporating behavioral data, and investigating cross-cultural variations in packaging and branding preferences.

To address practical challenges, manufacturers and marketers should prioritize premium packaging materials like glass for products positioned as high-quality or luxurious. For less favorable materials like plastic, branding efforts should be intensified to mitigate negative perceptions. Moreover, investments in sustainable packaging solutions, such as biodegradable or recyclable materials, can better align with consumer expectations and environmental priorities. This study has significant implications for both academia and industry. For researchers, it highlights the importance of examining the interplay between packaging and branding in influencing consumer behavior. For industry professionals, the findings offer actionable strategies to optimize packaging design and branding to meet consumer expectations and maintain a competitive edge. As consumer priorities shift and environmental awareness grows, understanding these dynamics will remain crucial for businesses seeking to innovate and succeed in an increasingly demanding market. This research provides a strong foundation for future studies to further explore the evolving relationship between packaging, branding, and consumer preferences.

REFERENCES

Akbar, R.A., Kalis, I.C.M., Afifah, N., Purmono, B.B., Yakin, I. (2023), The influence of product packaging design and online customer review on brand awareness and their impact on online purchase intention. South Asian Research Journal of Business and Management, 5(1), 10-18.

Almiron, P., Escobar, B.F., Pathak, A., Spence, C., Velasco, C. (2021), Searching for the sound of premium beer. Food Quality and Preference, 88, 104088.

Ansari, A.U.M., Siddiqui, A.D. (2019), Packaging features and consumer buying behavior towards packaged food items. Global Scientific Journal, 7(3), 1050-1073.

Bagwell, G.A. (2023), Can Packaging Impact Consumers Perceptions of what Products Appear to Look Healthy Vs. If they Actually are Healthy? Appear to Look Healthy Vs. If they Actually are Healthy? Master's Thesis, University of Tennessee.

Betancur, I.M., Motoki, K., Spence, C., Velasco, C. (2020), Factors influencing the choice of beer: A review. Food Research International, 137, 109367.

Bharani, S., Roy, S., Tawde, S. (2023), Green products wrapped and delivered: consumer's preference for sustainable e-commerce practices. The International Review of Retail, Distribution and Consumer Research, 34(3), 331-360.

Bou-Mitri, C., Abdessater, M., Zgheib, H., Akiki, Z. (2021), Food packaging design and consumer perception of the product quality, safety, healthiness and preference. Nutrition and Food Science, 51(1), 71-86.

Boz, Z., Korhonen, V., Sand, K.C. (2020), Consumer considerations for the implementation of sustainable packaging: A review. Sustainability, 12(6), 2192.

Branca, G., Resciniti, R., Loureiro, C.M.S. (2022), Virtual is so real! Consumers' evaluation of product packaging in virtual reality. Psychology and Marketing, 40(3), 596-609.

Brozović, M., Kovačević, D., Bota, J. (2021), Consumer satisfaction with packaging materials: Kano model analysis approach. Tehnički Vjesnik, 28(4), 1203-1210.

Chan, Y.B.R. (2022), A review of packaging-related studies in the context of household food waste: Drivers, solutions and avenues for future research. Packaging Technology and Science, 35(1), 3-51.

Chitturi, R., Londoño, C.J., Henriquez, C.M. (2021), Visual design elements of product packaging: Implications for consumers' emotions, perceptions of quality, and price. Color Research and Application, 47(3), 729-744.

Choyal, D., Rani, J.R.M. (2023), Impact of packaging on consumer's buying behavior. 8(1), 22-32.

Cimini, A., Moresi, M. (2021), Circular economy in the brewing chain. Italian Journal of Food Science, 33(3), 47-69.

De Castro Pereira, G.P.C. (2021), How Packaging Materials influence the Consumers' Purchase Intention: The Mediation Role of Perceived Quality. [Dissertation at Universidade Católica Portuguesa].

De Feo, G., Ferrara, C., Minichini, F. (2022), Comparison between the perceived and actual environmental sustainability of beverage packagings in glass, plastic, and aluminium. Journal of Cleaner Production, 333, 130158.

De Lima, A.C., Aceña, L., Mestres, M., Boqué, R. (2023), Monitoring the evolution of the aroma profile of lager beer in aluminium cans and glass bottles during the natural ageing process by means of HS-SPME/GC-MS and multivariate analysis. Molecules, 28(6), 2807.

Devolli, A., Kodra, M., Shahinasi, E., Feta, D., Dara, F. (2016), Hygienic control in beer bottling and dispensing system. Journal of Hygienic Engineering and Design, 15, 1-11.

Dhakal, A. (2023), Factors influencing consumer buying behavior of beer in Kathmandu Valley. SSRN Electronic Journal, 1, 1-12.

Duarte, P., Silva, C.S., Roza, S.A., Dias, C.J. (2024), Enhancing consumer purchase intentions for sustainable packaging products: An in-depth analysis of key determinants and strategic insights. Sustainable Futures, 7, 100193.

Dutta, D., Sharma, N. (2023), Impact of product packaging on consumer buying behaviour: A review and research agenda. Research Review International Journal of Multidisciplinary, 8(7), 65-70.

Gagula, G., Šarić, G., Rezić, T., Horvat, D., Magdić, D. (2022), Changes in the physicochemical properties of pale lager beer during storage in different packaging materials. Journal of the American Society of Brewing Chemists, 81(2), 351-356.

Gajek, M., Wysocki, P., Pawlaczyk, A., Sać, Ł., Szynkowska-Jóźwik, M.I. (2022), The elemental profile of beer available on polish market: Analysis of the Potential impact of type of packaging material and risk assessment of consumption. Molecules, 27(9), 2962.

Gislason, S., Bruhn, S., Christensen, A.M., Christensen, M.T., Hansen, M.G., Kha, T.T., Giacalone, D. (2020), The influence of bottle design on perceived quality of beer: A conjoint analytic study. Beverages, 6(4), 64.

Grzybowska-Brzezińska, M., Kuberska, D., Ankiel, M., Brelik, A. (2020), Consumer's behavior in a multi-attribute concept of a food product. European Research Studies Journal, 13(1), 526-551.

Habschied, K., Mastanjević, K., Šibalić, M., Krstanović, V., Galić, V. (2022), A survey on detection of plastic-related chemicals in beer packaged in PET using FT-IR technology. Beverages, 8(4), 73.

Hassan, E.A.A., Mostafa, N.M.H. (2018), The Importance of Packaging Design as a Branding Factor in Consumer Behavior. In: Fifth International Conference of the Applied Arts Helwan University.

Ibrahim, I.D., Hamam, Y., Sadiku, E.R., Ndambuki, J.M., Kupolati, W.K., Jamiru, T., Eze, A.A., Snyman, J. (2022), Need for sustainable packaging: An overview. Polymers (Basel), 14(20), 4430.

Jacobsen, F.L., Pedersen, S., Thøgersen, J. (2022), Drivers of and barriers to consumers' plastic packaging waste avoidance and recycling - a systematic literature review. Waste Management, 141, 63-78.

Jones, D., Moodie, C., Purves, I.C., Fitzgerald, N., Crockett, R. (2022), Alcohol packaging as a promotional tool: A focus group study with young adult drinkers in Scotland. Journal of Studies on Alcohol and Drugs, 83(4), 565-573.

Kovačević, D., Mešić, E., Užarević, J., Brozović, M. (2022), The influence of packaging visual design on consumer food product choices. Journal of Print and Media Technology Research, 11(1), 7-18.

Lejiw, A.D., Fauzi, A. (2023), Effects of product pricing, product packaging, and place on consumer buying behavior through customer satisfaction. Technium Social Sciences Journal, 48(1), 1-11.

Lerro, M., Marotta, G., Nazzaro, C. (2020), Measuring consumers' preferences for craft beer attributes through Best-Worst Scaling. Agricultural and Food Economics, 8, 1.

Lin, Y., Lin, R. (2022), A study on framework development and ritual design factors affecting consumers' preferences for modern cultural and creative product packaging. Creative Education, 13(8), 2612-2634.

López-Mas, L., Claret, A., Bermúdez, A., Llauger, M., Guerrero, L. (2022), Co-creation with consumers for packaging design validated through implicit and explicit methods: Exploratory effect of visual and textual attributes. Foods, 11(9), 1183.

Luís, A.A.D. (2021), The Influence of Packaging on Consumer Purchase Intention of Craft Beer. Master Thessis in Management at ISCTE Business School.

Markevičiūtė, Z., Lyytikäinen, J., Leminen, V., Varžinskas, V. (2024), Grain by-products and Saccharomyces cerevisiae application in paper packaging material: Impact on physical-mechanical and barrier properties. Discover Sustainability, 5, 82.

Marrucci, L., Daddi, T., Iraldo, F. (2024), Identifying the most sustainable beer packaging through a life cycle assessment. Science of the Total Environment, 948, 174941.

Merlino, M.V., Blanc, S., Massaglia, S., Borra, D. (2020), Innovation in craft beer packaging: Evaluation of consumer perception and acceptance. AIMS Agriculture and Food, 5(3), 422-433.

Naik, N.M., Lavuri, R. (2019), Impact of product packaging elements on consumer purchase notion: A study FMCG items. European journal of Business and Management, 11(10), 52-61.

Nieto-Villegas, R., Bernabéu, R., Rabadán, A. (2024), Effects on beer attribute preferences of consumers' attitudes towards sustainability: The case of craft beer and beer packaging. Journal of Agriculture and Food Research, 15, 101050.

Oloyede, O.O., Lignou, S. (2021), Sustainable paper-based packaging: A consumer's perspective. Foods, 10(5), 1035.

Omamuzo, G.N., Okeke, C.T. (2023), Impact of product packaging on consumer buying decision of the manufacturing industry in Delta State. International Journal of Research Publication and Reviews, 4(7), 2159-2165.

Otto, S., Strenger, M., Maier-Nöth, A., Schmid, M. (2021), Food packaging and sustainability - consumer perception vs. correlated scientific facts: A review. Journal of Cleaner Production, 298, 126733.

Pal, S., Yevalkar, A., Bhattacharjee, A., Holkar, S. (2018), Consumers' preference leading purchase intention toward manipulation of form and transparency for juice packaging design. Journal of Applied Packaging Research, 10(4), 79-88.

Phanuel, H. (2020), The role of product packaging "printed information" on customers' buying behavior: Case study of Azam Rwanda Ltd. International Journal of Advanced Academic Research, 6(1), 38-53.

Piracci, G., Boncinelli, F., Casini, L. (2023), Investigating consumer preferences for sustainable packaging through a different behavioural approach: A random regret minimization application. Environmental and Resource Economics, 86, 1-27.

Pitts, E.R., Witrick, K. (2021), Brewery packaging in a Post-COVID economy within the United States. Beverages, 7(1), 14.

Polyportis, A., Mugge, R., Magnier, L. (2022), Consumer acceptance of products made from recycled materials: A scoping review. Resources, Conservation and Recycling, 186, 106533.

Pospisil, Z.J., Zavodna, S.L. (2020), Does the packaging change the perceived taste of beer? Results from a beer experiment. Market-Tržište, 32(1), 65-78.

Purwaningsih, I., Surachman, S., Pratikto, P., Santoso, I. (2019), Influence of packaging element on beverage product marketing. International Review of Management and Marketing, 9(6), 205-210.

Rajkumar, A., Jain, V. (2021), A literature study on the product packaging influences on the customers behavior. The Journal of Contemporary Issues in Business and Government, 27(3), 779-785.

Ravanal, C.M., Doussoulin, P.J., Mougenot, B. (2024), Does sustainability matter in the global beer industry? Bibliometrics trends in recycling and the circular economy. Frontiers in Sustainable Food Systems, 8, 1437910.

Reddy, S.M., Kommarapuram, A. (2019), A study on consumer perception on packing of FMCG products. International Journal of Innovative Studies in Sociology and Humanities, 4(6), 81-86.

Ruippo, L., Kylkilahti, E., Sekki, S., Autio, M. (2023), It probably could've done with less plastic - consumers' cyclical and uneasy relationship with food packaging. Frontiers in Sustainability, 4, 1176559.

Saha, P.S. (2020), Impact of product packaging on consumer buying decision. Journal of Engineering and Science Research, 4(2), 17-22.

Salem, E.S. (2022), The Effect of Visual and Verbal Elements of Food Product Packaging on Consumer Buying Decision. In: 30th International RAIS Conference on Social Sciences and Humanities. p109-119.

Shukla, P., Singh, J., Wang, W. (2022), The influence of creative packaging design on customer motivation to process and purchase decisions. Journal of Business Research, 147, 338-347.

Sokolova, T., Krishna, A., Döring, T. (2023), Paper meets plastic: The perceived environmental friendliness of product packaging. Journal of Consumer Research, 50(3), 468-491.

Šostar, M., Jupek, C., Huška D. (2024), Analyzing the role of the marketing mix in creating customer loyalty in supermarkets. Polish Journal of Management Studies, 29(1), 302-318.

Šostar, M., Ramanathan, N.H., Serzhanov, V. (2023), The impact of COVID 19 pandemic on consumer behavior. Telematique, 22(1), 617-622.

Šostar, M., Ristanović, V. (2023a), An assessment of the impact of the COVID-19 pandemic on consumer behavior using the analytic hierarchy process model. Sustainability, 15(20), 15104.

Šostar, M., Ristanović, V. (2023b), Assessment of Influencing factors on consumer behavior using the AHP model. Sustainability, 15(13), 10341.

Šostar, M., Ristanović, V. (2024), Evaluating consumer preferences for sustainable products: A comparative study across five countries. World, 5(4), 1248-1266.

Srivastava, P., Ramakanth, D., Akhila, K., Gaikwad, K.K. (2022), Package design as a branding tool in the cosmetic industry: Consumers' perception vs. reality. SN Business and Economics, 2, 58.

Steenis, D.N., Van Herpen, E., Van der Lans, A.I., Ligthart, N.T., Van Trijp, M.C.H. (2017), Consumer response to packaging design: The role of packaging materials and graphics in sustainability perceptions and product evaluations. Journal of Cleaner Production,162, 286-298.

Stefanini, R., Borghesi, G., Ronzano, A., Vignali, G. (2021), Plastic or glass: A new environmental assessment with a marine litter indicator for the comparison of pasteurized milk bottles. The International Journal of Life Cycle Assessment, 26, 767-784.

Steiner, K., Florack, A. (2023), The influence of packaging color on consumer perceptions of healthfulness: A systematic review and theoretical framework. Foods, 12(21), 3911.

Suki, M.N., Suki, M.N. (2015), Impact of consumption values on consumer environmental concern regarding green products: Comparing light, average, and heavy users'. International Journal of Economics and Financial Issues, 5(1S), 82-97.

Sutrisno, D., Gunarta, K.I., Widodo, E. (2021), Packaging Design with Consumer Behavior Perspective: A Literature Review. In: Second Asia Pacific International Conference on Industrial Engineering and Operations Management, Surakarta, Indonesia. p2385-2389.

Techawachirakul, M., Pathak, A., Motoki, K., Calvert, A.G. (2023), Negative halo effects of sustainable packaging. Psychology and Marketing, 40(12), 2627-2641.

Thøgersen, J. (2023), How does origin labelling on food packaging influence consumer product evaluation and choices? A systematic literature review. Food Policy, 119, 102503.

Thøgersen, J., Nohlen, H.U. (2022), Consumer understanding of origin labelling on food packaging and its impact on consumer product evaluation and choices. JRC Technical Report, European Commision. p1-85.

Two Sided. (2020), European Packaging Preferences 2020: A European Study of Consumer Preferences, Perceptions, and Attitudes Towards Packaging. Two Sided Report.

Ujam, J.C., Godwin, C.H. (2018), Optimization of packaging line performance: A case study of AB breweries in Nigeria. Journal of Engineering Research and Reports, 1(1), 1-22.

Van Velzen, T.U.E., Brouwer, T.M. (2022), Reusable Packaging in Europe: Between Facts and Fiction - an Informed Opinion for Metal Packaging Europe. Netherlands: Wageningen Food and Biobased Research, 2272.

Wahab, A.R.K., Lopez, C.V., Roslan, A.N., Muthu, S. (2023), Consumer Preferences on Packaging Materials of Food Spread Products. Fourth Industrial Revolution on Business Success. ICBT 2021. Lecture Notes in Networks and Systems. Berlin: Springer. p485.

Wang, F., Wang, H., Cho, J.H. (2022), Consumer preference for yogurt packaging design using conjoint analysis. Sustainability, 14(6), 3463.

Wang, H., Ab Gani, M.A.A., Liu, C. (2023), Impact of snack food packaging design characteristics on consumer purchase decisions. Sage Open, 13(2), 1-15.

Wang, Z.W., Zhong, L.L. (2020), Finite element analysis and experimental investigation of beer bottle-turnover boxes transport unit under random vibration excitation. Packing Technology and Science, 33(6), 197-214.

Yarış, A., Sezgin, A. (2017), Food Packaging: Glass and Plastic. Researches on Science and Art in 21st Century Turkey. Ankara: Gece Kitaplığı Yayınevi.

Yeo, S.F., Tan, C.L., Lim, K.B., Khoo, Y.H. (2020), Product packaging: Impact on customers' purchase intention. International Journal of Business and Society, 21(2), 857-864.

Yokokawa, N., Amasawa, E., Hirao, M. (2021), Design assessment framework for food packaging integrating consumer preferences and environmental impact. Sustainable Production and Consumption, 27, 1514-1525.

Yung, Y.X. (2023), The Positive Role of Packaging in Consumer Behavior. In: 2nd International Conference on Financial Technology and Business Analysis, Advances in Economics Management and Political Sciences. p293-300.

Zhao, H., Yao, X., Liu, Z., Yang, Q. (2021), Impact of pricing and product information on consumer buying behavior with customer satisfaction in a mediating role. Frontiers in Psychology, 12, 720151.