Packaging Attributes and Gen Z Purchase Decisions: The Mediating Roles of Greenwashing and Eco-Label Perceptions in Cebu City

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ABSTRACT

Generation Z consumers demand sustainable, eco-friendly products, yet they face a confusing marketplace characterized by conflicting marketing practices such as authentic eco-labels and deceptive greenwashing. This study clarifies the influence of packaging attributes (visual, communication, technical, functional, and cost-effective) on Generation Z's perceptions of greenwashing and eco-labeling and purchase decisions. Data were collected from 385 respondents in Cebu City, Philippines, via a 7-point Likert-scale survey and analyzed using PLS-SEM. Findings reveal that respondents "partially agreed" on the relevance of packaging attributes, greenwashing, and eco-labeling. All five packaging attributes significantly influenced greenwashing perception. Meanwhile, only four significantly influenced eco-label perception, whereas functional attributes did not. Only communication and cost-effective attributes exerted a significant direct influence on purchase decisions, as visual, functional, and technical attributes showed no significant direct effects and influenced purchase decisions indirectly through perception. Greenwashing perception fully mediated the visual, functional, and technical paths and partially mediated the cost-effective path, but not the communication path. Eco-label perception fully mediated the visual and technical paths, partially mediated the communication and cost-effective paths, but did not mediate the functional path. While eco-labels drive purchasing behavior, greenwashing triggers skepticism, reducing purchase likelihood. Findings underscore the need for transparent marketing strategies that directly support Sustainable Development Goal SDG 12 (Responsible Consumption and Production) and SDG 13 (Climate Action), and foster environmentally conscious purchasing among young consumers. Businesses that prioritize authenticity and transparency can influence this demographic.

Keywords: Gen Z; Cebu City; Marketing Practices; Eco-label Perceptions; Greenwashing Perceptions; Packaging Attributes; Purchase Decisions; PLS-SEM

INTRODUCTION

Background and Rationale

The connection between green marketing and the Sustainable Development Goals (SDGs) is becoming more significant as communities recognize the need to address global issues such as pollution, climate change, and resource depletion. The role of green marketing in the success of the Sustainable Development Goals (SDGs) is to promote environmentally friendly products that influence consumer behavior toward sustainability. Organizations that integrate sustainability into their marketing strategies commonly gain recognition and consumer loyalty (Amaoko et al., 2020). Developing a green marketing strategy involves integrating environmental considerations into the entire marketing mix (product, price, place, and promotion) to meet consumers' demand for environmentally friendly options.

In the marketing mix strategy known as the 5Ps, packaging is the fifth element (Awan et al., 2015). The relationship between green packaging and green purchase intention is significantly mediated by green trust, highlighting the importance of transparency (Magfiroh & Vania, 2024). Green packaging serves as a tangible representation that enhances a product's perceived value, encouraging consumers to purchase it. One marketing strategy that influences green purchase is the use of packaging eco-labels, but it negatively influences purchase if it involves greenwashing.

In the era of technological advancement, physical packaging remains significant in influencing consumers' decision-making, despite their heavy reliance on online information, especially on social media. This era offers several advantages related to growing awareness of environmental issues, which has led to a significant shift in consumer purchasing decisions. In the Philippines, the younger demographic shows a strong sense of environmental responsibility, which is an important factor in their buying decisions (Solina & Ocampo, 2024). They prioritize sustainability, particularly by purchasing environmentally friendly products and services. Young individuals born between 1997 and 2012 are referred to as Generation Z or Gen Z (Bautista et al., 2023). This cohort will represent the fastest-growing consumer segment with significant global spending power by 2030, influencing economic and social aspects, including peers' and families' decision-making, as well as product manufacturers and retailers. In Cebu City, there were 301,301 Gen Z individuals living as of 2020. This is 31.25% of the city's total population (Philippine Statistics Authority, 2022).

While Wang et al. (2024) highlight a general knowledge gap regarding how packaging attributes such as material, design, labeling, and perceived eco-friendliness influence consumer purchase decisions, it remains unclear how these green packaging factors specifically affect Gen Z consumers within the unique cultural context of the Philippines. This implies that findings from other countries may not directly apply to the Philippines. Furthermore, the conceptual literature identifies a research gap and recommends empirical research investigating eco-packaging purchasing behavior using the Stimulus-Organism-Response model (Kıymalıoğlu et al., 2024). Although numerous studies have examined factors affecting consumers' purchase decisions for green products, greenwashing remains a major barrier. Greenwashing refers to making misleading or false claims about a product's environmental benefits, which undermines its credibility and leads to consumer distrust and unwillingness to purchase eco-friendly products (Estrada, 2024; Shojaei et al., 2024).

This study aims to clarify the influence of packaging attributes on Gen Z's perceptions of greenwashing and eco-labeling, and on purchase decisions, including visual, communication, technical, functional, and cost-effectiveness attributes. Additionally, it examines the role of marketing strategies as mediators in the relationship between packaging attributes and purchase decisions. The study is also significant because Gen Z is a crucial consumer group with heightened environmental consciousness. However, they are frequently influenced by factors such as greenwashing and unfamiliar eco-labels. This research is anchored in the Philippine Sustainable Development Goals (SDGs), the Philippine Consumer Act (Republic Act No. 7394), and the Extended Producer Responsibility (EPR) Act of 2022 (Republic Act No. 11898). These legal frameworks focus on consumers' access to product information, producers' environmental responsibility, and sustainability goals through conscious purchasing. It is also guided by the Stimulus-Organism-Response (SOR) theoretical framework. According to this theory, packaging attributes (the stimuli) can cause respondents to perceive eco-labeling and greenwashing (the organism), which in turn can influence their decision to purchase (the response) (Inggrid et al., 2024).

This study uses a quantitative approach, in which data are analyzed and interpreted using SmartPLS 4 (version 4.1.1.6) and Microsoft Excel (version 2016). Data were collected using a seven-point Likert-scale survey, which was distributed through clustered sampling. Furthermore, the number of respondents was determined using the Cochran formula. Descriptive statistics present the distribution of respondents' profiles and survey results. Additionally, Partial Least Squares-Structural Equation Modeling (PLS-SEM) is used for reliability and validity assessment, structural model assessment, and hypothesis testing.

The implementation of the marketing strategy, as the output of this study, supports the Philippine Sustainable Development Goals (SDGs), particularly SDG 12 and SDG 13. A marketing strategy will address greenwashing practices and promote eco-labeled products to ensure transparency in physical stores, such as convenience and grocery stores. This includes procurement and supplier compliance, market awareness and consumer trust, product visibility and merchandising, digital communication, customer engagement and loyalty, and store promotion and green advocacy.

THEORETICAL FRAMEWORK

This study is anchored in three legal bases and a framework as shown in Figure 1. The Philippine SDGs serve as a roadmap aligned with national priorities, integrating practices across government, businesses, and

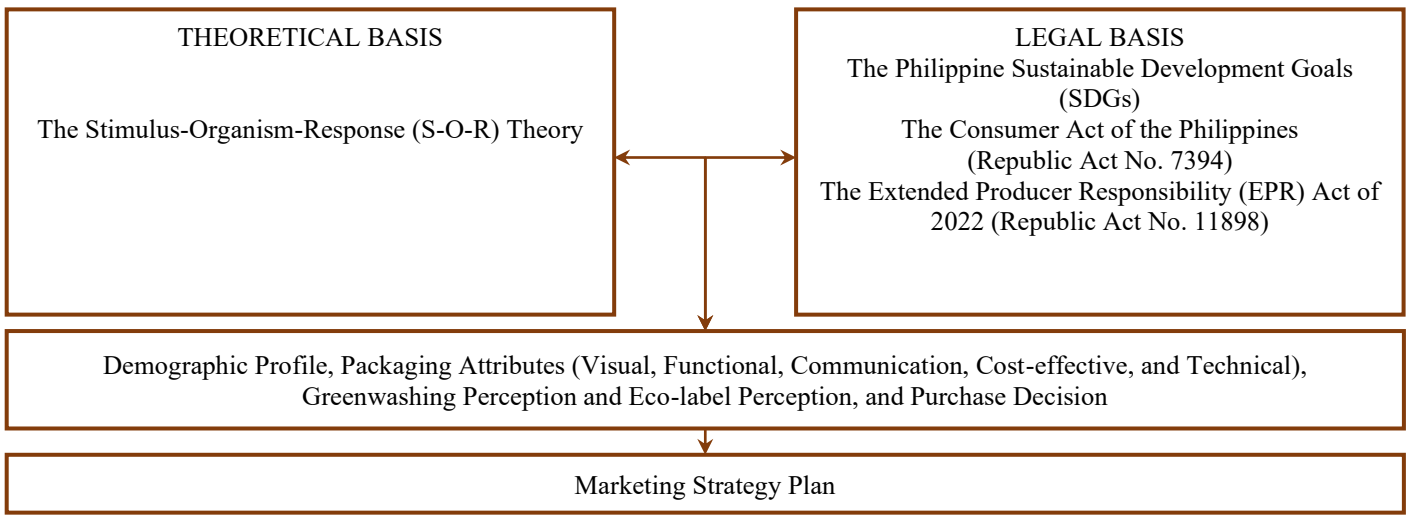
individuals to work towards a more sustainable and equitable world by 2030. The marketing strategy contributes to achieving SDG 12 and SDG 13. These sustainable goals are intrinsically linked to how businesses operate and how consumers make purchasing choices. An obstacle in achieving the objectives is the persistent issue of greenwashing, often facilitated through misleading eco-labeling.

The Extended Producer Responsibility (EPR) Act of 2022 (Republic Act No. 11898) does not directly mandate green marketing, but it encourages businesses to design products with less packaging or to choose packaging that can be easily reused or recycled, thereby influencing their marketing messages. The Consumer Act of the Philippines (Republic Act No. 7394) identifies the basic consumer rights, such as the right to health and safety, the right to information, the right to choose, and the right to be heard. The Stimulus-Organism-Response (SOR) theory was developed by Mehrabian and Russell in 1974 in the field of environmental psychology. The model was later widely adopted in marketing after social sciences research, particularly in psychology, acknowledged that consumers do not always behave rationally (Kıymalıoğlu et al., 2024).

The Stimulus-Organism-Response (SOR) theory provides a framework for understanding consumer behavior. It applies to sustainable packaging, in which marketing and external influences shape consumer perceptions and behaviors regarding sustainable consumption. It also highlights the utility of the model in examining environmentally friendly practices (Kıymalıoğlu et al., 2024).

Stimuli (S) are external and environmental factors that initiate the process and capture the organism's attention. In addition, these factors influence both cognitive and emotional processes in individuals (Kıymalıoğlu et al., 2024). In the context of sustainable packaging, these are attributes that shape consumers' perceptions. Existing studies indicate that various packaging characteristics influence consumer behavior. These characteristics include product design, product attributes (Zeng & Durif, 2019), package information (Jerzyk, 2016), sustainability features and aesthetics (Kapse et al., 2023; Martinho et al., 2015), functional value (Singh & Pandey, 2018), and price-related factors in eco-friendly packaging (Singh & Pandey, 2018; Kapse et al., 2023). Organism (O) is the internal state of an individual that mediates between stimulus and response. These internal characteristics influence how consumers perceive and evaluate marketing stimuli. Psychological and personal factors dominate the organism variables, which are classified in The Buyer Behavior Model as cultural, social, personal, and psychological (Kıymalıoğlu et al., 2024). In this study, the organism comprises the perception of eco-labels and greenwashing. Response (R) encompasses the behaviors produced when stimuli affect organisms, including consumer perception processes (Kıymalıoğlu et al., 2024). Stimuli may evoke positive or negative consumer responses, leading either to a desire to acquire a product or a desire to avoid it. In sustainable packaging, the ways that organisms respond to stimuli are grouped into four categories: purchase behavior, purchase decision, preference, and willingness to pay (Kıymalıoğlu et al., 2024). Moreover, purchase intentions treated as a proxy for purchase decision, as intention is widely considered as the essential tool for predicting consumer purchase behavior (Sharma et al., 2023).

Figure 1 Theoretical Framework



Related Literature and Hypothesis

Packaging Attributes and Greenwashing Perception

Packaging plays a significant role in consumers' purchase decisions, but it can also be a tool for greenwashing when used deceptively. Even though green packaging can increase the likelihood of purchasing green products, it can have the opposite effect if consumers perceive it as greenwashing (Shojaei et al., 2024). Furthermore, packaging attributes influence consumers' perceptions of authenticity and willingness to purchase. In this case:

H1. Visual attributes influence greenwashing perception.

H2. Functional attributes influence greenwashing perception.

H3. Communication attributes influence greenwashing perception.

H4. Technical attributes influence greenwashing perception.

H5. Cost-effective attributes influence greenwashing perception.

Packaging Attributes and Eco-label Perception

Eco-labeling is a marketing strategy that plays a pivotal role in shaping consumer trust and purchase decisions related to green packaging. Studies have shown that consumers often prefer packaging that balances usefulness and environmental benefits, even though price and convenience remain important (Berthold et al., 2024). Eco-labels are explicit cues that communicate a product's environmental impact, enhancing its perceived sustainability (Ischen et al., 2022). Packaging design that enhances perceived environmental friendliness and brand equity has been shown to strengthen green purchase decisions (Deng & Yang, 2024). While eco-labels serve as an explicit environmental cue, their effectiveness is heavily dependent on the packaging itself. To understand how consumers evaluate these green signals, it is essential to empirically analyze how different packaging attributes intersect with eco-label perception as a green marketing strategy. In this case:

H6. Visual attributes influence eco-label perception.

H7. Functional attributes influence eco-label perception.

H8. Communication attributes influence eco-label perception.

H9. Technical attributes influence eco-label perception.

H10. Cost-effective attributes influence eco-label perception.

Packaging Attributes and Consumers' Purchase Decision

Packaging is considered the fifth element of the marketing mix (Awan et al., 2015). Using the Kano Model, 22 attributes are categorized as must-be, one-dimensional, attractive, indifferent, and reverse (Dash, 2021). The attributes include visual, functional, technical, and informative or communication. In addition, existing research has examined the nature of packaging attributes and concluded that visual elements often dominate over informational elements in consumers' decision-making (Silayoi & Speece, 2007). Furthermore, integrating functional and communication attributes can significantly enhance the overall effectiveness of packaging, thereby making it an important component of engagement, especially for young consumers (Jerzyk, 2016). Moreover, the impact of packaging extends beyond shaping consumers' perceived quality or technical attributes (Ling & Halab, 2024). Sustainable packaging design is also achieved through cost-effective attributes such as optimizing material use and reducing waste (Singh et al., 2024). In this case:

H11. Visual attributes influence consumers' purchase decisions.

H12. Functional attributes influence consumers' purchase decisions.

H13. Communication attributes influence consumers' purchase decisions.

H14. Technical attributes influence consumers' purchase decisions.

H15. Cost-effective attributes influence consumers' purchase decisions.

Eco-label Perception, Greenwashing Perception, and Purchase Decisions Packaging Attributes and Consumers' Purchase Decision

Perceptions of eco-labels and greenwashing significantly influence consumer behavior and the perceived environmental friendliness of products. Trust in eco-labels is critical, as a lack of trust due to greenwashing undermines their effectiveness in shaping purchasing decisions (Kabaja et al., 2023). This leads consumers to question the authenticity of these labels, potentially resulting in a backlash against genuine green products. Interventions such as eco-labels can mitigate skepticism and enhance consumer confidence, thereby boosting green purchase decisions. In this case:

H16a. Greenwashing perception has a significant influence on consumers' purchase decisions.

H16b. Eco-label perception has a significant influence on consumers' purchase decisions.

H16c. Greenwashing perception has a significant influence on eco-label perception.

Greenwashing Perception as a Mediator between Packaging Attributes and Consumers' Purchase Decisions

Existing literature has employed quantitative methods and Structural Equation Modeling (SEM) to determine the influence of greenwashing on consumers' purchase decisions. Findings confirm that greenwashing indirectly influences on consumers purchase intention (Shojaei et al., 2024). When consumers can detect greenwashing in a product, they are more likely to mistrust the brand. While consumers actively use external product cues to guide their choices, Shojaei et al. (2024) demonstrate that limited knowledge of greenwashing's behavioural impact can hinder their ability to differentiate authentic sustainability from superficial design elements, ultimately resulting in misguided purchasing decisions. This suggests that a consumer's evaluation of a product's physical presentation can actively trigger or mitigate skepticism. In this case:

H17. Greenwashing perception mediates the effect of packaging attributes on consumers' purchase decisions.

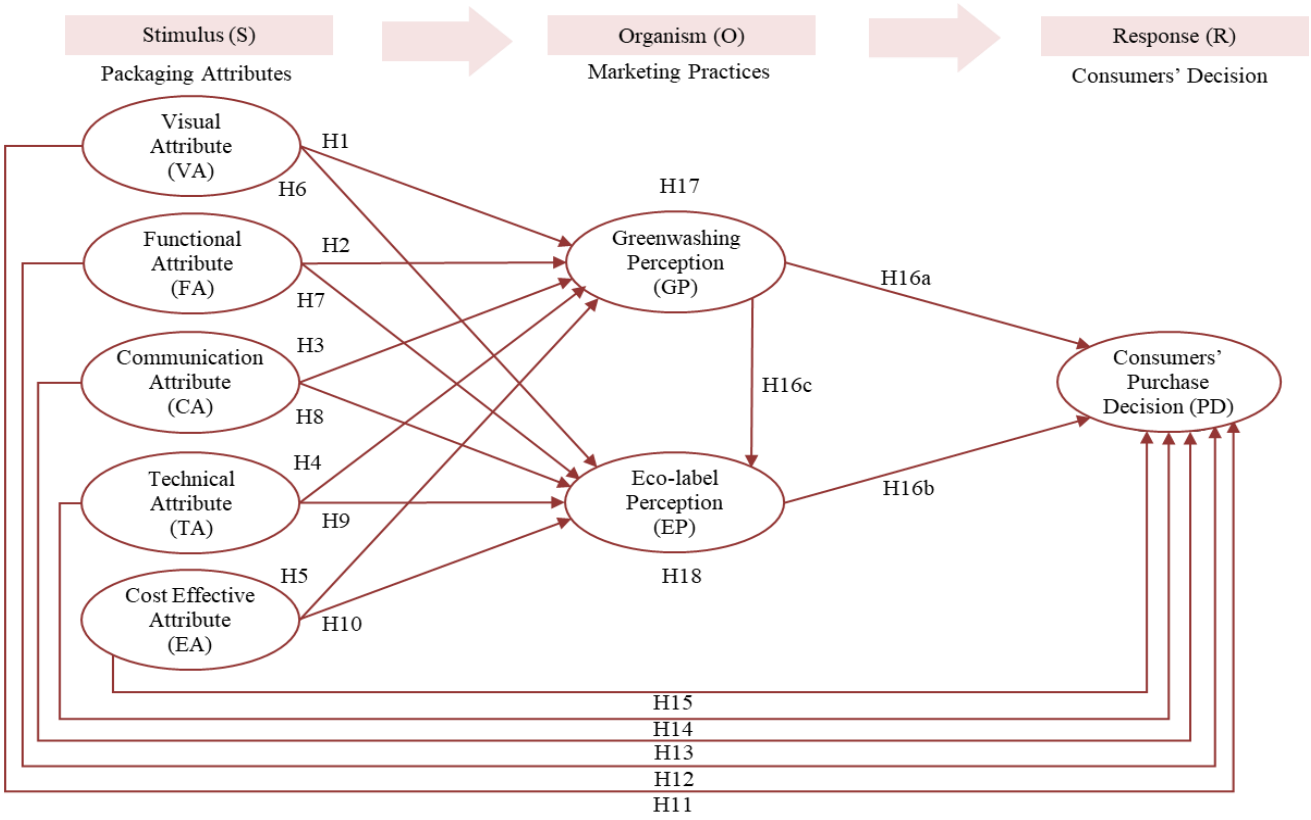
Eco-label Perception as a Mediator between Packaging Attributes and Consumers' Purchase Decisions

Eco-labels positively influence Gen Z's green purchase decisions, often mediated by environmental awareness and product knowledge. Studies evaluating the role of eco-labels found that this element is crucial in enhancing purchase decisions (Inggrid et al., 2024). In addition, perceived environmental friendliness acts as a mediator of the positive impact of green packaging attributes on green purchase behavior, highlighting the importance of transparency (Deng & Yang, 2024). However, the effectiveness varies by product type and consumer trust levels, with some research highlighting that trust in environmental labeling is critical for Gen Z's sustainable purchasing (Kabaja et al., 2023). In this case:

H18. Eco-label perception mediates the effect of packaging attributes on consumers' purchase decisions.

The conceptual framework shown in Figure 2 is derived from (Kıymalıoğlu et al., 2024; Inggrid et al., 2024), in which product or packaging attributes are considered Stimuli (S), consumers' perceptions are Organisms (O), and purchase decisions are Responses (R). The framework begins with the five core dimensions of packaging attributes that consumers are exposed to during a purchase evaluation. When consumers interact with these stimuli, this interaction triggers internal cognitive evaluation states. The ultimate behavioral outcome of the model is the consumer's decision to purchase.

Figure 2 Conceptual Framework



METHODOLOGY

Research Design

The study adopted the Stimulus-Organism-Response theory as its conceptual framework to explain how packaging attributes (the stimuli) trigger respondents' perceptions of greenwashing and eco-labels (the organism), ultimately leading to purchase decisions (the response) (Kıymalıoğlu et al., 2024). A quantitative approach was employed, with data gathered using a 7-point Likert-scale survey, which was preferred for its convenience, accuracy, and ability to capture respondents' evaluations. Reliability and validity were evaluated through Cronbach's alpha (α), composite reliability, average variance extracted, and discriminant validity, while content validity was established through subject-matter expert validation.

Research Environment

The study was conducted in Cebu City, the capital of Cebu Province and one of the most populous and urbanized cities in the Philippines. The city consists of 80 clustered barangays comprising 58 urban and 22 rural with a total population of 964,169 and an annual population growth rate of 0.93% as of the 2020 Census. The city government is actively involved in promoting sustainable practices, including a "No Segregation, No Collection" solid waste management policy and citywide bans on plastic bags. Data collection ran from September 23 to November 11, 2025.

Research Instrument

The survey questionnaire comprised three sections. The first section gathered demographic information (age, gender, civil status, educational attainment, income or allowance, location, and most commonly consumed product type). The second and third sections measured the study variables: packaging attributes (visual, functional, communication, technical, cost-effective), eco-label perception, greenwashing perception, and purchase decisions using a 7-point Likert rating scale (1 = Strongly Disagree to 7 = Strongly Agree). Five indicator statements adapted from existing research measured each attribute. A pilot test with 20 respondents was conducted to assess the validity, reliability, and structure of the instrument.

Respondents and Sampling

The respondents were individuals born between 1997 and 2012. As of 2020, there were 301,301 individuals in this age bracket, contributing 31.25% of Cebu City's total population. Because this population is large and geographically dispersed, the sample size was computed using Cochran's formula with a 95% confidence level ($Z = 1.96$), a 5% margin of error ($E = 0.05$) and an assumed population proportion of $p = 0.5$. Applying the finite population correction for $N = 301,301$ produced an adjusted sample of 384.51, rounded up to 385 respondents.

Respondents were drawn through two-stage cluster sampling. In the first stage, the 80 barangays of Cebu City were treated as clusters, and 10 were purposively retained based on the size of their Generation Z population. The retained clusters were Guadalupe, Tisa, Lahug, Basak San Nicolas, Inayawan, Mambaling, Talamban, Labangon, Quiot Pardo and Bulacao. Because the Cochran computation assumes simple random selection and the clusters differ substantially in population, a proportional quota was computed for each cluster from its share of the city's Generation Z population, so that no single barangay could dominate the sample.

In the second stage, individual respondents were selected within each cluster by systematic recruitment. A survey link and QR code were posted on the different social media platforms during the data-collection window, which ran until the 11th day of November 2025. Three screening filters were applied before a response was accepted: a mandatory residency item identifying the respondent's barangay, an age item restricting participation to those born between 1997 and 2012, and the consent item described in the survey form. Each accepted response was then assigned to its self-declared barangay for quota monitoring, and recruitment in a cluster was closed once that cluster's quota was reached.

Since participation depended on voluntary online responses, achieved counts deviated from the proportional allocation. Respondents from adjoining barangays supplemented clusters that returned fewer responses than targeted;, these respondents are reported as "Others" in Table 1. The achieved distribution rather than the intended quota is reported and interpreted. This deviation is acknowledged as a limitation of the sampling frame.

Table 1. Distribution of respondents across sampled barangays

Cluster (Barangay)	Respondents	Percentage	Cumulative %
Basak San Nicolas	39	10.1%	10.1%
Bulacao	29	7.5%	17.7%
Guadalupe	67	17.4%	35.1%
Inayawan	22	5.7%	40.8%
Labangon	32	8.3%	49.1%
Lahug (Pob.)	44	11.4%	60.5%
Mambaling	24	6.2%	66.8%
Quiot Pardo	23	6.0%	72.7%
Talamban	21	5.5%	78.2%
Tisa	47	12.2%	90.4%
Others	37	9.6%	100.0%
Total	385	100.0%	100.0%

Data-Gathering Procedure

The procedure comprised three phases. In the pre-gathering phase, a review of related literature identified the research gap and variables, research objectives and problem statements were defined, and the questionnaire was constructed. During data gathering, an online survey via Google Forms was distributed through links and QR codes shared on social networking sites such as Facebook Messenger and Groups. Participants were informed about the researcher, the study's benefits, confidentiality, and the data privacy policy. Also, parental consent was required for participants under 18. Pilot testing with 20 respondents preceded the full-scale survey of 385

respondents. In the post-data-gathering phase, all responses were tallied, validated, and analyzed using SmartPLS 4 (version 4.1.1.6) and Microsoft Excel 2016.

The study observed the protocols throughout the pre-gathering, gathering and post-gathering phases, particularly with regard to informed or parental consent. The first screen of the survey form was a consent gate. It presented the purpose of the study, the identity of the researcher, the estimated completion time, the voluntary nature of participation, the right to withdraw at any point, the absence of any risk beyond the inconvenience of answering, and the data privacy statement. Respondents signified consent by selecting "Yes" on the item "I acknowledge that I understand my rights as a respondent in this study"; selecting "No" terminated the form and no data were transmitted. Because the inclusion criterion (birth years 1997–2012) admits minors, parental or guardian consent was required for every respondent below 18 years of age. Of the 385 respondents, 8 (2.1%) were aged 13–16 and were therefore processed exclusively through this route. Meanwhile, respondents aged 17 were likewise treated as minors.

Data Analysis

Respondent profiles were scored categorically, with frequencies computed and divided by the total number of respondents. Perceptions of packaging attributes and marketing practices were scored analytically: the composite average score per construct was interpreted using the 7-point scale ranges: 1.00–1.85, 1.86–2.71, 2.72–3.57, 3.58–4.43, 4.44–5.29, 5.30–6.15, and 6.16–7.00. Descriptive statistics (mean, frequency, percentage, and standard deviation) were computed in Microsoft Excel 2016.

PLS-SEM was used for reliability and validity assessment, structural model assessment, and hypothesis testing. Significance was determined through a bootstrapping procedure with 5,000 subsamples, a two-tailed test, and a significance level of 0.05 (95% confidence level). Hypotheses were supported when $p < 0.05$ and $t > 1.96$. The coefficient of determination (R^2), predictive relevance (Q^2), and effect sizes (f^2, q^2) were calculated to assess the structural model (Kıymalıoğlu et al., 2024).

Internal consistency reliability was assessed through Cronbach's alpha (α) and composite reliability with thresholds of >0.70, convergent validity through AVE with a threshold of >0.50, and discriminant validity through the Heterotrait-Monotrait ratio (0.85 conservative or 0.90 lenient) and bootstrap confidence intervals not containing 1.00. Content validity was established through expert review.

The calculation and interpretation of these metrics help to determine the substantive impact of independent variables on the dependent variables. The coefficient of determination (R^2) assessed the proportion of variance in the dependent variables explained by the independent variables (Hair Jr et al., 2017). Effect size (f2) measured the impact on the dependent variables when the independent variables were omitted (Hair Jr et al., 2017). Additionally, predictive relevance (Q^2) assessed the model's ability to accurately predict the dependent variables (Hair Jr et al., 2017).

H1-H15 and H16 were tested using the p-value as the basis for significance testing. At a significance level of 0.05 for a 95% confidence interval, if the p-value is less than 0.05 and the t-value is greater than 1.96 the null hypothesis is rejected in favor of the alternative hypothesis (H1-H15 and H16).

RESULTS AND DISCUSSION

Profile of the Respondents

The demographic profile of the 385 respondents is summarized in Table 2. The largest age group was 17–19 years (29.6%, n = 114), followed by 23–25 years (23.9%, n = 92) and 26–28 years (23.4%, n = 90). A majority were female (59.7%, n = 230), single (93.8%, n = 361), and had at least college-level education (39.7% college level and 42.3% with a bachelor's degree). Most had an income or allowance below PHP 15,000 (55.6%, n = 214). This profile aligns with Filipino Gen Z benchmarks, where environmental consciousness and eco-label awareness serve as primary drivers of sustainable purchasing (Bautista et al., 2023; Solina & Ocampo, 2024).

Representing a critical strategic segment for green marketing in the Philippines, these young female consumers generally display a stronger preference for eco-labeled products and greater caution regarding greenwashing, though their eco-friendly behaviors remain balanced against price sensitivity (Bautista et al., 2023; Frias et al., 2025). The overwhelming proportion of single youth indicates that individuals are in the early stages of their consumer journey and are highly receptive to peer networks and emerging sustainability trends (Solina & Ocampo, 2024). Although these young consumers act as independent decision-makers heavily influenced by visible green attributes (Bautista et al., 2023), their high educational attainment actively nurtures the personal and moral norms required to translate sustainability information into definitive purchasing choices (Frias et al., 2025). Nevertheless, their current socioeconomic limitations, evidenced by low income levels or reliance on allowances directly restrict their immediate willingness to pay and shape their ultimate green purchase intentions (Frias et al., 2025).

Table 2. Profile of the respondents (N=385)

Characteristic	Category	Frequency	Percentage
Age	13–16	8	2.1%
	17–19	114	29.6%
	20–22	81	21.0%
	23–25	92	23.9%
	26–28	90	23.4%
Gender	Female	230	59.7%
	Male	150	39.0%
	Non-binary	5	1.3%
Civil Status	Single	361	93.8%
	Married	24	6.2%
Educational Attainment	Secondary	69	17.9%
	College Level	153	39.7%
	Bachelor's	163	42.3%
Income/Allowance	Less than 15,000	214	55.6%
	15,001–25,000	107	27.8%
	25,001–35,000	56	14.5%
	Above 35,000	8	2.1%

Respondents were distributed across barangays as presented in Table 1, with the highest concentrations in Guadalupe (17.4%), Tisa (12.2%), Lahug–Poblacion (11.4%), Basak San Nicolas (10.1%), and Labangon (8.3%). Given Cebu City's strategic importance as an economic hub in Central Visayas and its environmental governance initiatives, the location is relevant for studying green consumer behavior (Solina & Ocampo, 2024).

Snacks were the most frequently consumed product type (97.1%), followed by beverages (93.8%), fresh foods (93.5%), bakeshop products (90.9%), laundry products (65.2%), toiletries (61.3%), canned goods (56.9%), dairy products (38.2%), health and beauty products (33.8%), frozen products (23.4%), condiments and spices (6.8%), and household products (4.7%). Since snacks are typically packaged in small, portable forms, the role of packaging may significantly influence consumers' purchasing decisions. For beverages and fresh foods, the presence of eco-labels or claims related to recyclable or biodegradable packaging could be a pivotal factor for Gen Z consumers, who often prioritize these products for their perceived environmental friendliness (Ischen et al., 2022). Laundry and toiletry categories typically generate significant packaging waste and present opportunities for brands to innovate with sustainable packaging, as Gen Z consumers critically evaluate the sustainability of packaging materials in everyday household and personal care items (Singh et al., 2024).

Eco-friendly packaging focusing on waste reduction, such as biodegradable materials, resonates with consumers, particularly when it supports sustainability during both purchase and recycling (Martinho et al.,

2015). Conversely, products with more complex packaging, such as canned goods or household items, will need to ensure transparency and avoid greenwashing to maintain consumer trust (Shojaei et al., 2024). Packaging attributes such as clear labeling and eco-labels will likely influence consumer decision-making in the dairy and health and beauty categories (Ischen et al., 2022), and products with eco-labels strongly influence Gen Z because they better understand their real-world relevance (Bautista et al., 2023). Table 3 presents the summary of product types frequently consumed by the respondents.

Table 3. Frequently consumed product types (multiple responses allowed, N=385 per product)

Product Type	Respondents	Frequency	Percentage
Snacks	385	374	97.1%
Beverages	385	361	93.8%
Fresh Foods	385	360	93.5%
Bakeshop Products	385	350	90.9%
Laundry Products	385	251	65.2%
Toiletries	385	236	61.3%
Canned Goods	385	219	56.9%
Dairy Products	385	147	38.2%
Health and Beauty	385	130	33.8%
Frozen Products	385	90	23.4%
Condiments and Spices	385	26	6.8%
Household Products	385	18	4.7%

Perceptions of Packaging Attributes, Greenwashing, and Eco-Labeling

Table 4 presents the composite perceptions of the seven constructs. All fell within the "Partially Agree" range (4.44–5.29), indicating that respondents slightly agreed with statements about packaging authenticity and marketing practices, with standard deviations between 0.879 and 0.939.

This emphasis on visual attributes aligns with established literature highlighting the critical role of packaging characteristics. For instance, the aesthetic and structural elements (Silayoi & Speece, 2007; Ling & Halab, 2024), visual dimensions such as material and color (Berthold et al., 2024), and well-executed green packaging design (Deng & Yang, 2024) directly stimulate green purchase decisions specifically for young consumers (Jerzyk, 2016). Conversely, failing to establish clear, authentic visual cues can lead to transparency issues, where consumer skepticism or perceived greenwashing significantly influences purchase decisions and diminishes green consumption behaviors (Shojaei et al., 2024).

Table 4. Composite perceptions of packaging attributes and marketing practices.

Construct	Weighted Average	Standard Deviation	Interpretation	Positive Perception[a]
Visual Attribute	5.21	0.9151	Partially Agree	50.1%
Functional Attribute	4.84	0.9264	Partially Agree	29.1%
Communication Attribute	5.24	0.9387	Partially Agree	52.4%
Technical Attribute	4.99	0.8790	Partially Agree	37.9%
Cost-effective Attribute	5.21	0.9105	Partially Agree	50.7%
Greenwashing Perception	5.02	0.8946	Partially Agree	39.5%
Eco-label Perception	5.06	0.9365	Partially Agree	44.1%
a. Percentage of respondents who selected "Strongly Agree" and "Agree".				

The findings indicate that Gen Z consumers do not heavily consider functional packaging attributes such as ease of use, durability, and convenience. In contrast, existing literature reveals that structural and functional components are highly critical. Adaptability (easy dispensing) and Accessibility (easy to dispose of or easy to use) are must-have attributes in packaging (Singh et al., 2024). Furthermore, these specific packaging determinants heavily influence a buyer's willingness to select sustainable alternatives and even pay a premium price (Singh & Pandey, 2018).

Communication attributes received the highest rating (5.24), consistent with the view that informative packaging content acts as an "attractive quality". It confirms that transparent, information-driven packaging features are essential levers for capturing the environmentally conscious groups (Jerzyk, 2016; Dash, 2021) like the Gen Z segment investigated here. Moreover, a study conducted by Estrada (2024) illustrates transparent communication, concluding that misleading packaging labels are the most damaging greenwashing factor affecting consumer trust and purchase decisions.

The findings suggest several important implications for technical packaging attributes. Consumers strongly prefer packaging made from recycled or biodegradable materials (Ling & Halab, 2024), reducing waste while ensuring the product's safety and integrity (Silayoi & Speece, 2007; Martinho et al., 2015), and reducing the overall packaging size (Petljak et al., 2019). Additionally, core parameters such as protection, reusability and affordability are important considerations for sustainable packaging design (Singh et al., 2024). Furthermore, recyclable packaging is among the factors when choosing sustainable products and when deciding what to recycle (Martinho et al., 2015), and consumers are willing to pay a price premium (Singh & Pandey, 2018). While consumers recognize the importance of reducing disposal costs, it may not always be a driving factor in their purchase decisions.

The moderately positive greenwashing perception (5.02, 39.5% agreeing) reflects the skepticism of young consumers toward unverified green claims. Well-known and trusted certifications are more impactful (Ischen et al., 2022) than packaging design and labels that convey false or vague environmental claims are likely to erode consumer trust (Estrada, 2024; Shojaei et al., 2024). The eco-label perception (5.06, 44.1% positive) confirms that visible, credible labeling remains influential for consumers' purchase decisions (Ischen et al., 2022) particularly to Gen Z demographic (Kabaja et al., 2023). Consumers withhold trust from eco-labels unless they are confident in the legitimacy of the claims (Shojaei et al., 2024).

Psychometric Properties of the Scale and Framework Assessment

Research Instrument Assessment

As shown in Table 5, all eight constructs exceeded the established thresholds for Cronbach's alpha (>0.70), composite reliability (>0.70), and AVE (>0.50), confirming internal consistency reliability and convergent validity. Regarding discriminant validity, Table 6 shows that eight variable correlations exceeded the conservative HTMT threshold of 0.85 but remained below the lenient limit of 0.90 (EA↔CA 0.881; EP↔CA 0.896; GP↔EP 0.857; PD↔EP 0.881; PD↔GP 0.861; TA↔FA 0.882; TA↔GP 0.889; EP↔EA 0.898). However, none of the 95% bootstrap confidence intervals contained 1.00, establishing that the constructs are empirically distinct.

Table 5. Research instrument assessment (reliability and convergent validity)

Variable/Construct	Cronbach's Alpha (α)	Composite Reliability	Convergent Validity (AVE)
Visual Attribute	0.826	0.874	0.583
Functional Attribute	0.836	0.884	0.605
Communication Attribute	0.847	0.891	0.620
Technical Attribute	0.837	0.885	0.607
Cost-Effective Attribute	0.827	0.879	0.593
Greenwashing Perception	0.833	0.882	0.601
Eco-Label Perception	0.844	0.889	0.616
Purchase Decision	0.856	0.897	0.636

Table 6. Research instrument assessment (discriminant validity)

Variables	HTMT (0.85 / 0.90)	Bootstrap Confidence Interval	
		Lower Limit 2.5%	Upper Limit 97.5%
EA ↔ CA	0.881	0.826	0.927
EP ↔ CA	0.896	0.839	0.945
EP ↔ EA	0.898	0.869	0.953
FA ↔ CA	0.776	0.702	0.839
FA ↔ EA	0.760	0.681	0.829
FA ↔ EP	0.740	0.649	0.820
GP ↔ CA	0.781	0.694	0.852
GP ↔ EA	0.815	0.735	0.881
GP ↔ EP	0.857	0.777	0.919
GP ↔ FA	0.833	0.767	0.893
PD ↔ CA	0.814	0.716	0.895
PD ↔ EA	0.822	0.723	0.903
PD ↔ EP	0.881	0.802	0.945
PD ↔ FA	0.707	0.583	0.809
PD ↔ GP	0.861	0.773	0.935
TA ↔ CA	0.807	0.740	0.863
TA ↔ EA	0.829	0.759	0.885
TA ↔ EP	0.830	0.762	0.885
TA ↔ FA	0.882	0.826	0.930
TA ↔ GP	0.889	0.822	0.943
TA ↔ PD	0.765	0.665	0.849
VA ↔ CA	0.383	0.286	0.504
VA ↔ EA	0.390	0.288	0.514
VA ↔ EP	0.354	0.272	0.485
VA ↔ FA	0.624	0.511	0.727
VA ↔ GP	0.523	0.400	0.643
VA ↔ PD	0.389	0.277	0.525
VA ↔ TA	0.518	0.428	0.635

Research Framework Assessment

The coefficient of determination (R^2) and predictive relevance (Q^2) for greenwashing perception were 0.643 (moderate) and 0.631 (large), respectively, indicating that the five packaging attributes collectively explained 64.3% of the variance in greenwashing perception with a Q^2 value of 0.631 for predictive relevance. For eco-label perception, $R^2 = 0.715$ (moderate) and $Q^2 = 0.705$ (large); for purchase decision, $R^2 = 0.660$ (moderate) and $Q^2 = 0.640$ (large). Effect sizes (f^2) were predominantly small—functional (0.041), technical (0.112), and cost-effective (0.041) attributes on greenwashing; communication (0.117), technical (0.020), and cost-effective (0.123) attributes and greenwashing perception (0.078) on eco-label perception; communication (0.025), greenwashing (0.089), and eco-label (0.072) on purchase decision—while visual and functional attributes contributed negligible effects. The framework thus performed well overall, with explanatory power distributed across attributes rather than concentrated in one or two (Kıymalıoğlu et al., 2024).

Table 7. Research framework assessment (R^2, f^2 and Q^2)

Variable/Construct		Cohen's Effect Size (f^2)		Coefficient of Determination (R^2)		Predictive Relevance (Q^2)	
Greenwashing Perception	Visual	0.014	No Effect	0.643	Moderate	0.631	Large Effect
	Functional	0.041	Small Effect				
	Communication	0.015	No Effect				
	Technical	0.112	Small Effect				
	Cost-effective	0.041	Small Effect				
Eco-Label Perception	Visual	0.009	No Effect	0.715	Moderate	0.705	Large Effect
	Functional	0.000	No Effect				
	Communication	0.117	Small Effect				
	Technical	0.020	Small Effect				
	Cost-effective	0.123	Small Effect				
	Greenwashing	0.078	Small Effect				
Purchase Decision	Visual	0.000	No Effect	0.660	Moderate	0.640	Large Effect
	Functional	0.000	No Effect				
	Communication	0.025	Small Effect				
	Technical	0.000	No Effect				
	Cost-effective	0.018	No Effect				
	Greenwashing	0.089	Small Effect				
	Eco-Label	0.072	Small Effect				

Direct Effects: Hypothesis Testing (H1–H16a-c)

Figure 3. Structural model with path coefficients and p-values (direct and mediation effects)

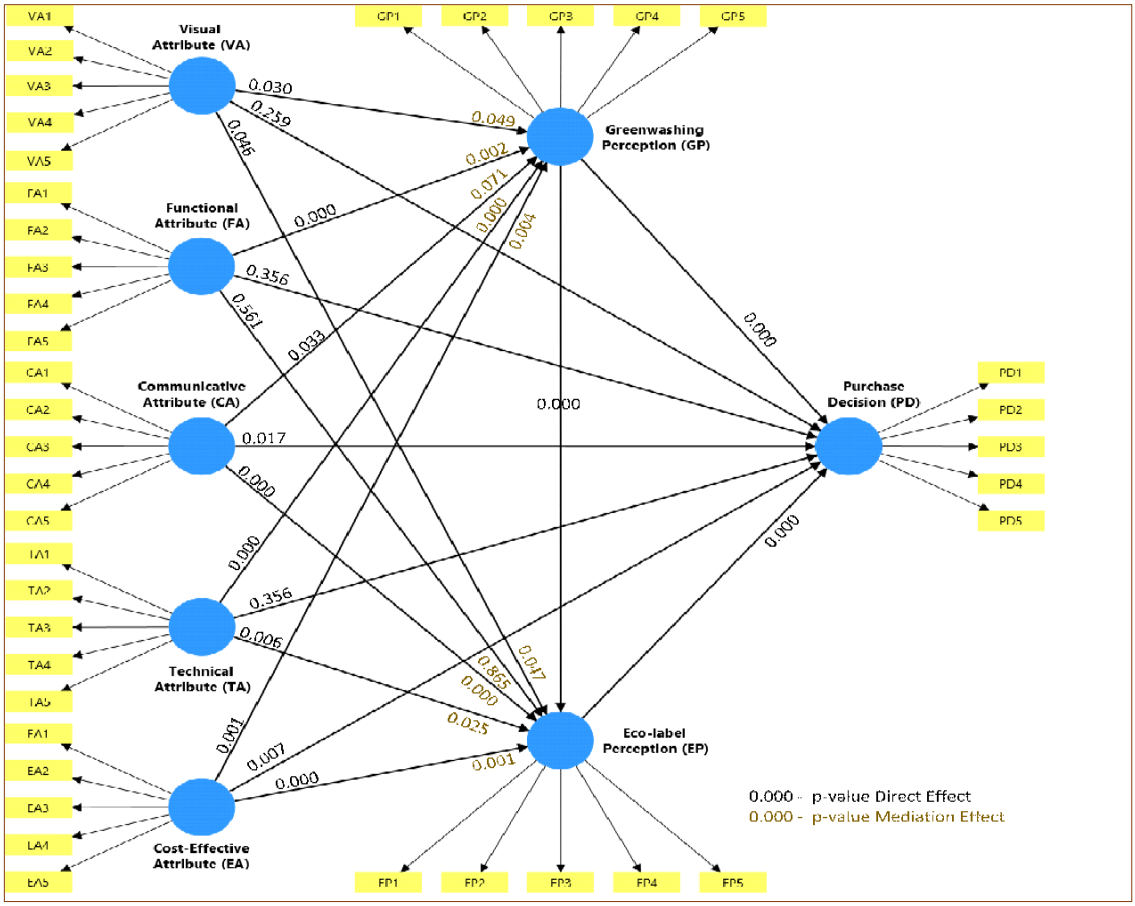


Table 8 presents the direct-effect results. All five packaging attributes significantly influenced greenwashing perception (H1–H5 supported), with technical attributes exerting the strongest influence ($t = 6.464$, $p < 0.001$), followed by functional ($t = 3.858$, $p < 0.001$), cost-effective ($t = 3.476$, $p = 0.001$), visual ($t = 2.175$, $p = 0.030$), and communication ($t = 2.133$, $p = 0.033$) attributes. This is consistent with evidence that misleading packaging images, design elements, and material colors trigger consumer suspicion about a product's true environmental impact (Berthold et al., 2024; Shojaei et al., 2024; Wang et al., 2024), and that labeling and graphic content shape how consumers detect potential greenwashing (Jerzyk, 2016; Kabaja et al., 2023). Consumers also weigh perceived risks—functional, structural, and financial when evaluating eco-design packaging (Zeng & Durif, 2019).

Four of the five attributes significantly influenced eco-label perception (H6, H8–H10 supported), with communication ($t = 6.139$, $p < 0.001$) and cost-effective ($t = 6.213$, $p < 0.001$) attributes most influential. Communication attributes also influence eco-label perception as labels act as the primary source of information through combined transparent packaging and clear sustainability claims, which create green trust and clarify the product's true environmental impact (Magfiroh & Vania, 2024). Technical attributes ($t = 2.748$, $p = 0.006$) such as recyclability validate explicit label claims (Martinho et al., 2015), and consumers evaluate the credibility of eco-friendly claims by weighing the cost-effectiveness or price premium against expected environmental advantages (Bautista et al., 2023; Singh & Pandey, 2018). Visual attributes ($t = 1.995$, $p = 0.046$) serve as an immediate environmental cue shaping how green a product is perceived (Berthold et al., 2024). However, functional attributes did not significantly influence eco-label perception (H7 unsupported, $t = 0.176$, $p = 0.561$), suggesting that utilitarian features rarely trigger the cognitive processing required to evaluate detailed label information, as consumers rely on quick visual cues rather than reading labels (Silayoi & Speece, 2007).

Only communication ($t = 2.385$, $p = 0.017$) and cost-effective ($t = 2.713$, $p = 0.007$) attributes directly influenced purchase decisions (H13 and H15 supported), while visual ($t = 0.178$, $p = 0.259$), functional ($t = 0.056$, $p = 0.356$), and technical ($t = 0.181$, $p = 0.356$) attributes did not (H11, H12, H14 unsupported). Clear environmental labeling is a vital determinant of purchasing decisions among Gen Z, who seek transparency to avoid greenwashing (Jerzyk, 2016; Kabaja et al., 2023), and perceived cost efficiency dictates actual purchase behavior (Martinho et al., 2015). While aesthetic packaging drives initial interest, it rarely determines final purchases without a solid underlying value proposition (Kapse et al., 2023), and functional and technical (eco-material) attributes operate partly through mediating perceptions of green value (Cui et al., 2026) similar to visual attributes.

Both marketing practices perceptions significantly influenced purchase decisions, and greenwashing perception significantly influenced eco-label perception (H16a–H16c supported). Greenwashing creates a psychological barrier that decreases brand trust and suppresses purchases (Estrada, 2024; Shojaei et al., 2024), whereas favorable eco-label perceptions increase purchase likelihood among environmentally conscious segments (Bautista et al., 2023; Kabaja et al., 2023; Magfiroh & Vania, 2024). The significant GP→EP path indicates that greenwashing degrades the credibility of eco-labels, causing consumers to doubt even verified certifications (Estrada, 2024).

Table 8. Direct effect hypothesis testing (PLS-SEM, 5,000 bootstrap subsamples)

Hypothesis	Path	t-value	*p*-value	Decision
H1	VA → GP	2.175	0.030	Supported
H2	FA → GP	3.858	<0.001	Supported
H3	CA → GP	2.133	0.033	Supported
H4	TA → GP	6.464	<0.001	Supported
H5	EA → GP	3.476	0.001	Supported
H6	VA → EP	1.995	0.046	Supported
H7	FA → EP	0.176	0.561	Unsupported
H8	CA → EP	6.139	<0.001	Supported
H9	TA → EP	2.748	0.006	Supported
H10	EA → EP	6.213	<0.001	Supported

H11	VA → PD	0.178	0.259	Unsupported
H12	FA → PD	0.056	0.356	Unsupported
H13	CA → PD	2.385	0.017	Supported
H14	TA → PD	0.181	0.356	Unsupported
H15	EA → PD	2.713	0.007	Supported
H16a	GP → PD	4.239	<0.001	Supported
H16b	EP → PD	4.881	<0.001	Supported
H16c	GP → EP	4.516	<0.001	Supported

Mediation Effects (H17 and H18)

Table 9 reports the indirect effects. Greenwashing perception fully mediated the influence of visual (t = 1.982, $p = 0.049$), functional (t = 3.043, $p = 0.002$), and technical (t = 3.990, $p < 0.001$) attributes on purchase decisions. These attributes failed to show significant direct effects but exhibited highly significant indirect effects once greenwashing perception was introduced. Transparent execution of visual and functional elements insulates consumers from immediate skepticism (Berthold et al., 2024; Deng & Yang, 2024), and perceived risks of eco-design packaging suppress purchase decisions (Zeng & Durif, 2019). Meanwhile, greenwashing perception partially mediated the influence of cost-effective attributes (indirect t = 2.867, $p = 0.004$), consistent with the view that an unjustifiably high green premium can be framed as artificial marketing and drive up greenwashing perceptions (Estrada, 2024; Shojaei et al., 2024). No mediation was found for communication attributes (t = 1.809, $p = 0.071$), indicating that clear eco-claims do not depend on bypassing greenwashing scrutiny to drive purchases.

Eco-label perception fully mediated the relationship for visual (indirect t = 1.983, $p = 0.047$) and technical (t = 2.246, $p = 0.025$) attributes, which did not demonstrate a significant direct influence on PD. This confirms that the impact of visual and technical attributes on consumer purchase decisions is entirely mediated by eco-labeling perception. These attributes do not directly drive immediate consumer purchase decisions unless consumers perceive eco-label value (Inggrid et al., 2024).

Cost-effectiveness showed significant direct (t = 2.713, $p = 0.007$) and indirect (t = 3.415, $p = 0.001$) effects, as did communication (direct t = 2.385, $p = 0.017$; indirect t = 3.907, $p = 0.000$), indicating partial mediation for both. No mediation was found for functional attributes (indirect t = 0.170, $p = 0.865$), as consumers compartmentalize structural utility and eco-labels; an eco-label cannot compensate for poor functional attributes to enhance perceived credibility (Petljak et al., 2019).

Table 9. Mediation effect of greenwashing and eco-label perceptions between packaging attributes and purchase decisions

	Path	Direct Influence			Indirect Influence			Mediation Effect
		t-value	*p*-value	Decision	t-value	*p*-value	Decision	Decision
H17	VA→GP→PD	0.178	0.259	Unsupported	1.982	0.049	Supported	Full Mediation
	FA→GP→PD	0.056	0.356	Unsupported	3.043	0.002	Supported	Full Mediation
	CA→GP→PD	2.385	0.017	Supported	1.809	0.071	Unsupported	No Mediation
	TA→GP→PD	0.181	0.356	Unsupported	3.990	0.000	Supported	Full Mediation
	EA→GP→PD	2.713	0.007	Supported	2.867	0.004	Supported	Partial Mediation
H18	VA→EP→PD	0.178	0.259	Unsupported	1.983	0.047	Supported	Full Mediation
	FA→EP→PD	0.056	0.356	Unsupported	0.170	0.865	Unsupported	No Mediation
	CA→EP→PD	2.385	0.017	Supported	3.907	0.000	Supported	Partial Mediation
	TA→EP→PD	0.181	0.356	Unsupported	2.246	0.025	Supported	Full Mediation
	EA→EP→PD	2.713	0.007	Supported	3.415	0.001	Supported	Partial Mediation

CONCLUSION

In conclusion, this study analyzed how packaging attributes influence Gen Z purchasing decisions in Cebu City, taking into account greenwashing and perceptions of eco-labels. Using surveys and PLS-SEM, the research revealed that respondents “partially agreed” on the relevance of packaging attributes, greenwashing, and eco-labeling. Three findings support the argument, and each has a direct implication for the marketing strategy proposed.

First, every packaging attribute influences greenwashing perceptions (H1–H5; supported), while eco-label perceptions serve to validate sustainability claims (H6, H8–H10; supported). Notably, because packaging attributes act as signals of environmental responsibility, they also generate consumer demand for verifiable proof. Consequently, marketing strategies should prioritize procurement and supplier compliance over advertising, ensuring that every on-pack claim is backed by proper certifications and sustainability documentation.

Second, only communication (H13) and cost-effective (H15) attributes exerted a significant direct influence on purchase decisions, while visual, functional and technical attributes indirectly influence purchase decision through greenwashing (H17) and eco-label (H18) perception. Therefore, a marketing strategy must do the work that packaging cannot accomplish alone. Shelf tags, in-store signage, and the "scan-to-verify" QR code exist to translate these packaging attributes into readable, comparison-ready information.

Lastly, eco-label perception partially mediates both communication and cost-effectiveness (H18), and greenwashing perception partially mediates cost-effectiveness (H17) while fully mediating the other three. A product's packaging already suggests it is eco-friendly alongside an eco-label. The label turns a basic green claim into solid proof. Meanwhile, when consumers do not automatically trust packaging, they rely entirely on the eco-label for verification. Because the label does all the work, using trusted certifications is the single best action a store can take. Since consumers demand proof, businesses must prioritize consumer education and verified eco-labels over vague "green" messaging.

Eco-labels drive purchasing decisions, while greenwashing triggers skepticism that influence purchase likelihood. Businesses must implement credible and transparent marketing strategies that avoid deceptive practices by leveraging product packaging, which supports Sustainable Development Goal (SDG) 12 (Responsible Consumption and Production) and SDG 13 (Climate Action), and fosters environmentally conscious purchasing among young consumers. These strategies serve as an information channel between manufacturers and consumers, specifically targeting Gen Z. Strategies include promoting credible eco-labeled products, cultivating consumer awareness, and enhancing in-store visibility and accessibility. Moreover, strategies should strengthen communication with Gen Z consumers using digital platforms, encourage repeat purchases through loyalty incentives, and drive sustainable purchasing behavior and environmental initiatives through store promotions and green advocacy.

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Compliance with Ethical Standards

Ethical Considerations

Participation in this study was voluntary, and respondents were fully informed about the researcher, the study's benefits, confidentiality, and the data privacy policy. Parental consent was required for participants under 18 years old.

Confidentiality and data privacy

All personal information collected was treated as confidential and used solely for academic research purposes.

Data availability

The data supporting the findings of this study are available from the author upon reasonable request.

Declaration of AI use

The author utilized Grammarly and Jenni AI to assist with technical writing, proofreading, and plagiarism checking.

Conflict of Interest

The author declares no conflict of interest in the conduct and publication of this study.

REFERENCES

1. Amoako, G. K., Dzogbenuku, R. K., Doe, J. K., & Adjaison, G. K. (2020). Green marketing and the SDGs: Emerging market perspective. Marketing Intelligence & Planning, 40(3), 310–325. https://doi.org/10.1108/MIP-11-2018-0543
2. Awan, W. A., Salam, A., & Inam, S. G. (2015). The impact of marketing mix (5 Ps) elements on sales of UPS: A case of Karachi market—buyer's perspective. VFAST Transactions on Education and Social Sciences, 6(2), 50–56. https://doi.org/10.21015/VTESS.V6I2.230
3. Bautista, N. I., Palmiano, J. S., Reyes, A. R., San Juan, Y. M. L., & Etrata, A., Jr. (2023). Beauty goes green: Effects of eco-label and price sensitivity on Filipino Gen X and Z's sustainable purchasing behaviour. East Asian Journal of Multidisciplinary Research, 2(5), 2041–2052. https://doi.org/10.55927/eajmr.v2i5.3911
4. Berthold, A., Guion, S., & Siegrist, M. (2024). The influence of material and color of food packaging on consumers' perception and consumption willingness. Food and Humanity, 2, 1000265. https://doi.org/10.1016/j.foohum.2024.100265
5. Cui, H., Zhang, K., Ke, C., Duan, R., & Gui, Y. (2026). How Eco-Designed Retail Packaging Shapes Purchase Intention: Exploring the Mediating Role of Green Perceived Value. Sustainability, 18(3), 1261. https://doi.org/10.3390/su18031261
6. Dash, S. K. (2021). Identifying and classifying attributes of packaging for customer satisfaction: A Kano model approach. International Journal of Production Management and Engineering, 9(1), 57–64. https://doi.org/10.4995/ijpme.2021.13683
7. Deng, Y., & Yang, Y.-C. (2024). Impact of green packaging design on green purchase intention. Social Behavior and Personality: An International Journal, 52(4), 1–13. https://doi.org/10.2224/sbp.12893
8. Estrada, S. M. D. (2024). Greenwashing and consumer trust practices of selected eco-friendly products: A proposed sustainability action plan. International Journal for Multidisciplinary Research, 6(6), Article 31948. https://doi.org/10.36948/ijfmr.2024.v06i06.31948
9. Frias, J. O. M., Maghinay, S. L., Onipig, R. A. B., Alonzo, A. A., Dadole, D. M., Vicente, O. D. J., & Galla, M. R. (2025). Analyzing consumer purchase intention on products with green packaging among the Gen Z in Iligan City, Philippines. American Journal of Multidisciplinary Research and Innovation, 4(3), 244–252. https://doi.org/10.54536/ajmri.v4i3.4792
10. Hair, J. F., Jr., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). A primer on partial least squares structural equation modeling (PLS-SEM) (2nd ed.). SAGE Publications.
11. Inggrid, Puspasari, T. R., & Yunus, U. (2024). Impact of green advertising and packaging on purchase decisions via green perceived value. Ilomata International Journal of Social Science. https://doi.org/10.61194/ijss.v5i4.1354
12. Ischen, C., Meijers, M. H. C., Vandeberg, L., & Smit, E. G. (2022). Seen as green? Assessing the salience and greenness of environmentally friendly packaging cues. Journal of Food Products Marketing, 28(1), 31–48. https://doi.org/10.1080/10454446.2022.2038757
13. Jerzyk, E. (2016). Design and communication of ecological content on sustainable packaging in young consumers' opinions. Journal of Food Products Marketing, 22(6), 707–716. https://doi.org/10.1080/10454446.2015.1121435

14. Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). Likert scale: Explored and explained. British Journal of Applied Science & Technology, 7(4), 396–403. https://doi.org/10.9734/BJAST/2015/14975
15. Kabaja, B., Wojnarowska, M., Ćwiklicki, M., Buffagni, S. C., & Varese, E. (2023). Does environmental labeling still matter? Generation Z's purchasing decisions. Sustainability, 15(18), Article 13751. https://doi.org/10.3390/su151813751
16. Kapse, U., Mahajan, Y., Hudnurkar, M., Ambekar, S., & Hiremath, R. (2023). The effect of sustainable packaging aesthetic on consumer behavior: A case study from India. Australasian Accounting, Business and Finance Journal, 17(1), 236–246. http://dx.doi.org/10.14453/aabfj.v17i1.11
17. Kıymalıoğlu, A., Özbük, R. M. Y., Ünal, D. A., Dirlik, O., & Akar, N. (2024). Unpacking sustainable packaging through the stimulus-organism-response model: A systematic literature review. SAGE Open, 14(4). https://doi.org/10.1177/21582440241302320
18. Ling, T., & Halab, K. N. M. (2024). Exploring the influence of green packaging design on consumer purchasing behavior: A comprehensive analysis. International Journal of Academic Research in Business and Social Sciences, 14(1), 1662–1670. https://doi.org/10.6007/ijarbss/v14-i1/19743
19. Magfiroh, N. N., & Vania, A. (2024). We trust in green product: The impact of green marketing and packaging on purchase intention. El-Mal: Jurnal Kajian Ekonomi & Bisnis Islam, 5(6), 3093–3108. https://doi.org/10.47467/elmal.v5i6.2085
20. Martinho, G., Pires, A., Portela, G., & Fonseca, M. (2015). Factors affecting consumers' choices concerning sustainable packaging during product purchase and recycling. Resources, Conservation & Recycling, 103, 58–68. https://doi.org/10.1016/j.resconrec.2015.07.012
21. Petljak, K., Naletina, D., & Bilogrevic, K. (2019). Considering ecologically sustainable packaging during decision-making while buying food products. Ekonomika Poljoprivrede, 66(1), 107–126. https://doi.org/10.5937/ekopolj1901107p
22. Philippine Statistics Authority (PSA). (2022, August 12). Age and sex distribution in the Philippine population (2020 census of population and housing). https://psa.gov.ph/statistics/population-and-housing/node/167965
23. Sharma, K., Aswal, C., & Paul, J. (2023). Factors affecting green purchase behavior: A systematic literature review. Business Strategy and the Environment, 32(4), 2078–2092. https://doi.org/10.1002/bse.3237
24. Shojaei, A., Barbosa, B., Oliveira, Z., & Regalo Coelho, A. M. (2024). Perceived greenwashing and its impact on eco-friendly product purchase. Tourism & Management Studies, 20(2), 1–12. https://doi.org/10.18089/tms.20240201
25. Silayoi, P., & Speece, M. (2007). The importance of packaging attributes: A conjoint analysis approach. European Journal of Marketing, 41(11–12), 1495–1517. https://doi.org/10.1108/03090560710821279
26. Singh, G., & Pandey, N. (2018). The determinants of green packaging that influence buyers' willingness to pay a price premium. Australasian Marketing Journal, 26(3), 221–230. https://doi.org/10.1016/j.ausmj.2018.06.001
27. Singh, T., Singari, R. M., & Singh, S. P. (2024). Comprehensive study of design attributes for sustainable packaging design: Analytical techniques and expert validation. International Journal of Innovation Studies, 9(1), 1101-1119. https://doi.org/10.21203/rs.3.rs-5668960/v1
28. Solina, A. M., & Ocampo, L. V. G. (2024). Driving sustainable change: Behavior and environmental awareness in the case of the Philippines. In Recent Advances in Economic Growth and Financial Sustainability (Vol. 5, pp. 23–31). Book Publisher International. https://doi.org/10.9734/bpi/raeges/v5/633
29. Sugiarto, A., Lee, C.-W., Huruta, A. D., Dewi, C., & Chen, A. P. S. (2022). Predictors of pro-environmental intention and behavior: A perspective of stimulus–organism–response theory. Sustainability, 14(23), Article 16047. https://doi.org/10.3390/su142316047
30. Wang, X., Chen, J., Ma, C., & Jiang, Y. (2024). Simpler is greener: The impact of packaging visual complexity on products' eco-friendliness perception. Psychology & Marketing, 41(12), 2992–3008. https://doi.org/10.1002/mar.22096
31. Zeng, T., & Durif, F. (2019). The influence of consumers' perceived risks towards eco-design packaging upon the purchasing decision process: An exploratory study. Sustainability, 11(21), Article 6131. https://doi.org/10.3390/su11216131