



The Influence of Eco-Labeling, Environmental Concern, and Packaging Aesthetics on Generation Z's Intentions to Purchase Ready-To-Drink Beverages in North Sulawesi

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Abstract

Growing environmental concerns, increasing packaging waste, and the widespread consumption of ready-to-drink (RTD) beverages have heightened the importance of sustainability-oriented marketing and consumer research. This study examines the simultaneous and partial influence of eco-labeling, environmental concern, and packaging aesthetics on Generation Z's purchase intention toward RTD beverages in North Sulawesi. The study also contributes to understanding how informational environmental cues, internal environmental values, and visual product attributes collectively shape sustainable consumption intentions. A quantitative explanatory design was employed using a structured questionnaire administered to 200 Generation Z respondents selected through purposive sampling. Data were analyzed using validity and reliability tests, classical assumption tests, and multiple linear regression analysis with SPSS. The results show that eco-labeling, environmental concern, and packaging aesthetics simultaneously have a significant influence on purchase intention, explaining 66.6% of its variance. Partially, environmental concern has the strongest positive and significant influence, followed by packaging aesthetics, which also demonstrates a significant positive effect. In contrast, eco-labeling has no significant individual influence on purchase intention. These findings indicate that Generation Z's purchase intention toward RTD beverages is driven more strongly by internal environmental values and immediately observable product appeal than by eco-labels alone. The study highlights the importance of integrated sustainability-oriented marketing strategies that combine credible environmental communication, consumer awareness, and visually appealing packaging to encourage sustainable consumption.

Keywords: Eco-Labeling, Environmental Concern, Packaging Aesthetics, Purchase Intention, Generation Z.

Abstrak

Meningkatnya permasalahan lingkungan, limbah kemasan, serta konsumsi minuman ready-to-drink (RTD) telah meningkatkan pentingnya pemasaran berorientasi keberlanjutan dan penelitian mengenai perilaku konsumen. Penelitian ini bertujuan untuk menganalisis pengaruh simultan dan parsial eco-labeling, environmental concern, dan packaging aesthetics terhadap purchase intention Generasi Z terhadap minuman RTD di Sulawesi Utara. Penelitian ini juga memberikan pemahaman mengenai bagaimana informasi lingkungan, nilai kepedulian terhadap lingkungan, dan atribut visual produk secara bersama-sama membentuk niat konsumsi berkelanjutan. Penelitian menggunakan pendekatan kuantitatif eksplanatori dengan pengumpulan data melalui kuesioner terstruktur kepada 200 responden Generasi Z yang dipilih menggunakan teknik purposive sampling. Data dianalisis menggunakan uji validitas dan reliabilitas, uji asumsi klasik, serta analisis regresi linear berganda dengan bantuan SPSS. Hasil penelitian menunjukkan bahwa eco-labeling, environmental concern, dan packaging aesthetics secara simultan berpengaruh signifikan terhadap purchase intention dengan kemampuan menjelaskan sebesar 66,6%. Secara parsial, environmental concern memiliki pengaruh positif dan signifikan paling kuat, diikuti oleh packaging aesthetics yang juga berpengaruh positif dan signifikan. Sebaliknya, eco-labeling tidak memiliki pengaruh signifikan secara individual terhadap purchase intention. Temuan ini menunjukkan bahwa niat beli Generasi Z terhadap minuman RTD lebih kuat dipengaruhi oleh nilai kepedulian lingkungan dan daya tarik produk yang dapat diamati secara langsung dibandingkan keberadaan eco-label semata. Oleh karena itu, strategi pemasaran berkelanjutan perlu mengintegrasikan komunikasi lingkungan yang kredibel, peningkatan kesadaran konsumen, dan desain kemasan yang menarik.

Kata kunci: Eco-Labeling, Kepedulian Lingkungan, Estetika Kemasan, Niat Beli, Generasi Z.

1. Introduction

Environmental degradation has become one of the most pressing global challenges of the modern era. Rapid industrialization, urban expansion, and intensive resource exploitation have increased environmental pressure

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worldwide, with pollution, climate change, and resource scarcity directly affecting human health, ecosystems, and long-term economic stability (Kumaresan et al., 2023). One contributor is unsustainable consumption, particularly of ready-to-drink (RTD) beverages. The convenience and accessibility of products such as bottled water, tea, coffee, and juice have increased reliance on single-use packaging, making the RTD beverage industry a significant contributor to packaging waste and environmental pollution throughout production, consumption, and disposal (Arijeniwa et al., 2024; Liu et al., 2025). This problem is intensified where waste management and resource recovery systems remain inefficient (Bocken et al., 2022).

In Indonesia, plastic waste reaches approximately 9.13 million tons annually, with packaging accounting for a considerable share (Ismainar et al., 2021). Similar challenges occur in North Sulawesi, where increasing urban development and consumption contribute to growing waste generation. Local government reports indicate that Manado produces the largest share of daily waste in the province, followed by Minahasa, Bitung, North Minahasa, and Tomohon. However, waste management infrastructure remains limited, while collection and sorting processes are costly and inefficient (Basyaiban et al., 2024). These conditions highlight the importance of encouraging sustainable consumption, defined as meeting present needs through the acquisition, use, and disposal of goods without compromising ecological and socio-economic conditions for future generations (Weder & Stranzl, 2025), consistent with Sustainable Development Goal 12.

Nevertheless, sustainable attitudes do not always translate into purchasing behavior. Consumers may express concern for environmental protection while still prioritizing price, convenience, habit, and product attractiveness, creating an attitude-behavior gap (Golob et al., 2023). To address this gap, companies have adopted green marketing strategies that incorporate environmental responsibility into product design, communication, and branding (Chen, 2010; Biswas & Roy, 2015). One important instrument is eco-labeling, which provides consumers with formal information about a product's environmental attributes and can reduce information asymmetry (Waris et al., 2024). Previous studies suggest that credible eco-labels can strengthen environmental attitudes, consumer trust, and pro-environmental purchasing behavior, particularly in the food and beverage sector (Rana et al., 2026).

However, the effectiveness of eco-labeling may depend on consumers' internal environmental values. Environmental concern refers to the extent to which individuals recognize environmental problems and feel responsible for addressing them. It influences how consumers interpret sustainability information and their willingness to engage in green purchasing (De Canio et al., 2021). Environmental knowledge and environmentally oriented lifestyles have also been found to positively influence intentions to purchase eco-labeled beverages (Bakri et al., 2023), while environmental concern can strengthen the effect of green product perceptions on purchase intention (Tan et al., 2025). Thus, eco-labeling represents an external informational cue, whereas environmental concern reflects an internal psychological factor that may determine how persuasive such information becomes.

In addition to informational cues, packaging serves as an important communication tool in shaping consumer perceptions. Packaging aesthetics refers to the sensory and emotional evaluation of visual elements, including color, shape, material, and layout (Brielmann & Pelli, 2018). Attractive packaging can increase emotional engagement and perceived product value and may sometimes outweigh rational considerations such as price or environmental attributes (Kapse et al., 2023; Mudgal et al., 2024). This is particularly relevant for Generation Z, whose purchasing decisions may reflect both environmental values and immediate visual appeal.

Generation Z, generally defined as individuals born between 1997 and 2012, represents an important consumer segment in Indonesia. As digital natives with considerable exposure to environmental issues, they are often characterized by value-driven consumption and strong pro-environmental attitudes (Raman et al., 2024). They also play an important role in advancing green economy initiatives (Marpaung et al., 2024; Prihatini & Sutanto, 2025). However, environmental awareness does not necessarily result in consistent purchasing behavior. Generation Z is also critical of unsupported sustainability claims and particularly sensitive to greenwashing (Di Pillo et al., 2025; Djafarova & Bowes, 2021). Although eco-labeling, environmental concern, and purchase intention have been widely studied, limited research has examined these variables together with packaging aesthetics, particularly in the context of RTD beverages. Research addressing this relationship in localized markets such as North Sulawesi also remains limited.

To address this gap, this study integrates Green Marketing Theory, Stimulus-Organism-Response (S-O-R) Theory, and Cue Utilization Theory. Green Marketing Theory explains the use of environmental communication and product attributes, such as eco-labels and environmentally oriented packaging, as part of firms' marketing strategies (Chen, 2010; Biswas & Roy, 2015). S-O-R Theory explains how external stimuli influence consumers' internal

states and behavioral responses (Mehrabian & Russell, 1974). In this study, eco-labeling and packaging aesthetics represent external stimuli, environmental concern represents the internal organism, and purchase intention represents the behavioral response. Cue Utilization Theory further explains how consumers use observable extrinsic cues, such as eco-labels and packaging design, to infer product attributes when environmental quality cannot be directly evaluated before purchase (Olson & Jacoby, 1972). Together, these perspectives provide a framework for understanding how informational, psychological, and aesthetic factors shape purchase intention.

Based on this background, this study aims to analyze the simultaneous and partial influence of eco-labeling, environmental concern, and packaging aesthetics on Generation Z's purchase intention toward RTD beverages in North Sulawesi. By combining an external informational factor, an internal psychological factor, and a visual-emotional factor, this study contributes to sustainability and consumer research while providing practical insights for developing more effective green marketing strategies. Accordingly, the hypotheses are: H1: eco-labeling, environmental concern, and packaging aesthetics simultaneously have a positive influence on Generation Z's purchase intention toward RTD beverages in North Sulawesi; H2: eco-labeling has a positive influence on purchase intention; H3: environmental concern has a positive influence on purchase intention; and H4: packaging aesthetics has a positive influence on purchase intention.

2. Research Methodology

This study employed a quantitative approach with an explanatory research design to test the cause-and-effect relationships between eco-labeling (X1), environmental concern (X2), and packaging aesthetics (X3) as independent variables, and purchase intention (Y) as the dependent variable (Creswell & Creswell, 2018). The population consisted of Generation Z consumers in North Sulawesi who were familiar with eco-labeling and had experience purchasing RTD beverages. Sample size was determined following Hair et al.'s (2019) multivariate analysis guideline of five to ten observations per indicator; with 20 indicators across the four constructs, the maximum recommended sample of 200 respondents was adopted. Respondents were selected using purposive, non-probability sampling based on their familiarity with eco-labels and their RTD beverage purchasing experience (Sekaran & Bougie, 2016).

Primary data were collected through a structured questionnaire distributed online via Google Forms between 19 and 24 June 2026, using a six-point Likert scale ranging from 1 (strongly disagree) to 6 (strongly agree). Secondary data, including academic journals and prior empirical studies, supported the theoretical foundation and hypothesis development. Eco-labeling was measured through indicators of label visibility, informativeness, and credibility; environmental concern through indicators of environmental awareness and personal responsibility; packaging aesthetics through indicators of color, layout, and design quality; and purchase intention through indicators of willingness to buy, consider, and recommend RTD beverages perceived as environmentally responsible.

Instrument validity was tested using Pearson product-moment correlation, with items considered valid when the r -count exceeded the r -table value of 0.138 ($n = 200$, $\alpha = 0.05$) and the significance value was below 0.05. Reliability was assessed using Cronbach's Alpha, with a threshold of 0.70 indicating acceptable internal consistency (Hair et al., 2019). Classical assumption testing included a normality test using the Kolmogorov-Smirnov statistic together with a histogram and Normal P-P Plot of regression residuals, a multicollinearity test using Tolerance and Variance Inflation Factor (VIF) values, and a heteroscedasticity test using a residual scatterplot and the Glejser test. Data were analyzed using multiple linear regression with the assistance of SPSS, following the model:

$$Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + e \quad (1)$$

where Y denotes purchase intention, α the constant, β_1 - β_3 the regression coefficients of eco-labeling, environmental concern, and packaging aesthetics respectively, X_1 - X_3 the corresponding independent variables, and e the error term. Hypotheses were tested using the t-test for partial effects and the F-test for the simultaneous effect of the independent variables, with significance evaluated at the 0.05 level, while the coefficient of determination (R^2) measured the proportion of variance in purchase intention explained by the model.

3. Result and Discussion

A total of 200 valid responses were collected from Generation Z consumers across North Sulawesi. The respondent profile, summarized in Table 1, shows that the sample was dominated by consumers aged 20-24 years (76.5%), reflecting the age segment with growing purchasing autonomy and frequent RTD beverage consumption, while female respondents (60%) outnumbered male respondents (40%), consistent with prior findings that female consumers tend to show greater attentiveness to packaging and environmental information. Respondents were concentrated in Manado (66%), the provincial capital with the largest Generation Z population and greatest product accessibility, and the majority were students (89%), consistent with the dominant 20-24 age group and this segment's high exposure to sustainability issues through education and digital media.

Table 1. Respondent Profile (n = 200)

Category	Group	N	%
Age	14-19 / 20-24 / 25-29 years	32 / 153 / 15	16.0 / 76.5 / 7.5
Gender	Female / Male	120 / 80	60.0 / 40.0
Domicile	Manado	132	66.0
	Tomohon / Minahasa / North Minahasa	23 / 14 / 11	11.5 / 7.0 / 5.5
	South Minahasa / Bitung / others	9 / 7 / 4	4.5 / 3.5 / 2.0
Occupation	Student / employed / other	178 / 16 / 6	89.0 / 8.0 / 3.0

Source: Processed primary data, 2026

Prior to hypothesis testing, all 20 questionnaire items were tested for validity and reliability. Validity, assessed with Pearson product-moment correlation, showed that all items produced r-count values ranging from 0.757 to 0.939, well above the r-table threshold of 0.138, with significance values of 0.001 for every item, confirming that all indicators validly represented their respective constructs. Reliability, assessed with Cronbach's Alpha, likewise exceeded the recommended 0.70 threshold for every variable, indicating excellent internal consistency (Table 2). No items were removed, and the full instrument was retained for further analysis.

Table 2. Validity and Reliability Test Results

Variable	Items	R-count Range	Cronbach's α	Status
Eco-Labeling (X1)	5	0.798-0.875	0.901	Reliable
Environmental Concern (X2)	5	0.757-0.939	0.934	Reliable
Packaging Aesthetics (X3)	5	0.849-0.918	0.928	Reliable
Purchase Intention (Y)	5	0.870-0.927	0.945	Reliable

Source: Processed data from SPSS, 2026

The classical assumption tests confirmed that the regression model met the requirements for valid statistical inference. The normality test showed a Kolmogorov-Smirnov Z of 0.086 with an asymptotic significance of 0.001; because this value tends to be overly conservative in large samples, a Monte Carlo correction was applied, yielding a significance of 0.093 (99% CI: 0.085-0.100), which exceeds 0.05 and indicates that the null hypothesis of normally distributed residuals cannot be rejected. This conclusion is supported visually by the Normal P-P Plot in Figure 1, in which the standardized residuals follow closely along the diagonal reference line.

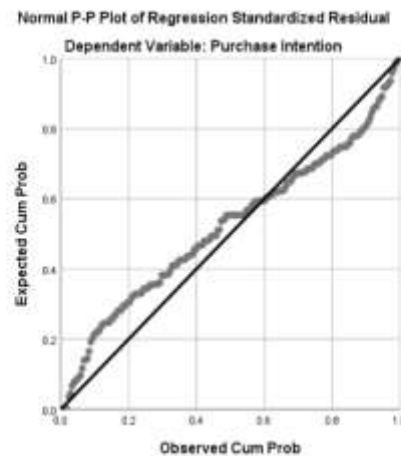


Figure 1. Normal P-P Plot of Regression Standardized Residuals

The multicollinearity test showed Tolerance values of 0.410, 0.335, and 0.419 and VIF values of 2.438, 2.981, and 2.389 for eco-labeling, environmental concern, and packaging aesthetics respectively, all comfortably within the required thresholds (Tolerance > 0.10; VIF < 10), indicating that multicollinearity was not present and that each predictor contributes unique explanatory information. The heteroscedasticity test, evaluated through the residual scatterplot in Figure 2 and the Glejser test, similarly showed no systematic pattern in the distribution of residuals; the Glejser test produced significance values of 0.819, 0.935, and 0.833 for the three predictors, all well above 0.05, confirming that the homoscedasticity assumption was satisfied.

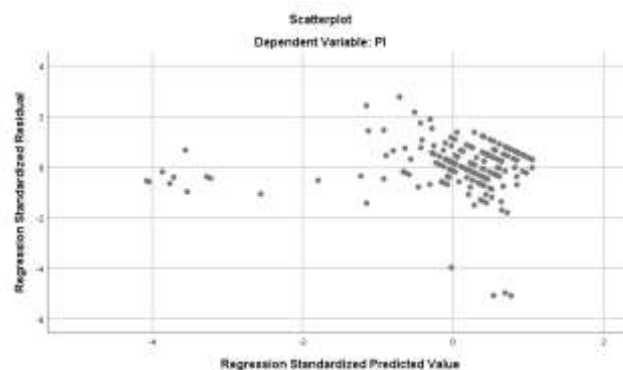


Figure 2. Scatterplot of Standardized Residuals

Multiple linear regression analysis produced the equation $Y = 2.218 + 0.110X_1 + 0.448X_2 + 0.337X_3$, presented in Table 3 together with the results of the partial (t) test. All three independent variables show positive coefficients, indicating that improvements in eco-labeling, environmental concern, and packaging aesthetics are each associated with higher purchase intention. Environmental concern recorded the largest coefficient ($\beta = 0.448$), followed by packaging aesthetics ($\beta = 0.337$), while eco-labeling recorded the smallest coefficient ($\beta = 0.110$).

Table 3. Multiple Linear Regression and Partial (t) Test Results

Variable	B	t-count	t-table	Sig.	Conclusion
(Constant)	2.218	-	-	-	-
Eco-Labeling (X1)	0.110	1.716	1.972	0.088	H2 rejected
Environmental Concern (X2)	0.448	6.087	1.972	0.000	H3 accepted
Packaging Aesthetics (X3)	0.337	5.430	1.972	0.000	H4 accepted

Source: Processed data from SPSS, 2026. Dependent variable: Purchase Intention.

The coefficient of determination in Table 4 shows an R value of 0.816, indicating a strong positive relationship between the independent variables and purchase intention, and an R^2 of 0.666, meaning that eco-labeling, environmental concern, and packaging aesthetics jointly explain 66.6% of the variance in purchase intention, while the remaining 33.4% is explained by factors outside the scope of this study. The Adjusted R^2 of 0.661 is close to the R^2 value, indicating that the model's explanatory power is not artificially inflated by the number of predictors included.

Table 4. Model Summary

R	R Square	Adjusted R Square	Std. Error of Estimate
0.816	0.666	0.661	2.014

Source: Processed data from SPSS, 2026

The simultaneous effect of the three independent variables was confirmed by the F-test presented in Table 5. With $df_1 = 3$ and $df_2 = 196$, the F-table value at $\alpha = 0.05$ is approximately 2.65; the analysis produced an F-count of 130.434 with a significance value of 0.000, far exceeding the critical threshold. Eco-labeling, environmental concern, and packaging aesthetics therefore simultaneously exert a significant influence on Generation Z's purchase intention toward RTD beverages in North Sulawesi, and H1 is accepted.

Table 5. Simultaneous (F) Test Results (ANOVA)

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1,584.68	3	528.23	130.434	0.000
Residual	793.31	196	4.05		
Total	2,377.99	199			

Source: Processed data from SPSS, 2026

The finding that eco-labeling, environmental concern, and packaging aesthetics simultaneously influence purchase intention, explaining 66.6% of its variance, indicates that Generation Z consumers do not base their purchasing decisions on a single product attribute but instead weigh environmental values, sustainability information, and product presentation together. This result is best understood through the integration of the three theories underlying this study: Green Marketing Theory explains why firms communicate environmental commitment through eco-labels and environmentally oriented packaging (Chen, 2010; Biswas & Roy, 2015); these attributes function as external stimuli within the S-O-R framework, while environmental concern represents the internal psychological state through which consumers process those stimuli before forming purchase intention (Mehrabian & Russell, 1974); and because consumers cannot directly verify the environmental quality of RTD beverages before purchase, they rely on observable cues, consistent with Cue Utilization Theory (Olson & Jacoby, 1972). The explanatory power obtained here compares favorably with related studies using more complex modeling: Rana et al. (2026) reported an R^2 of 0.798 using four predictors and moderating interaction terms in a PLS-SEM model, while Nguyen Quoc et al. (2025) reported adjusted R^2 values between 48.7% and 62.3% across affective, cognitive, and conative attitudes within an S-O-R framework, suggesting that the present model retains strong explanatory ability despite relying on only three predictors and multiple linear regression. These results also extend the discussion of the attitude-behavior gap (Golob et al., 2023): environmental concern alone appears insufficient to generate purchase intention unless reinforced by credible external cues such as eco-labels and attractive packaging, implying that sustainable purchasing decisions emerge from the interaction between internal motivation and external marketing cues rather than from environmental awareness in isolation. Managerially, this points to the value of an integrated green marketing strategy in which eco-labels are paired with clear environmental communication and packaging designed to capture attention while reinforcing sustainability perceptions.

Partially, eco-labeling did not show a significant influence on purchase intention ($t = 1.716 < t\text{-table} = 1.972$; sig. = 0.088), leading to the rejection of H2. Although its coefficient remains positive, this contribution becomes statistically negligible once environmental concern and packaging aesthetics are included in the model, suggesting that the mere presence of an eco-label is insufficient to independently drive purchase intention among Generation Z. Cue Utilization Theory helps explain this outcome: the usefulness of an extrinsic cue depends not only on its presence but also on consumers' confidence in interpreting it (Olson & Jacoby, 1972), and public understanding of official eco-label certification in Indonesia remains relatively limited (Isharyadi et al., 2022; Widodo et al.,

2025). Because consumers who pay attention to eco-labels are typically those who already hold stronger environmental values, much of eco-labeling's explanatory power is likely absorbed by environmental concern once the latter is statistically controlled for. Generation Z's well-documented skepticism toward corporate sustainability claims and sensitivity to greenwashing (Di Pillo et al., 2025; Djafarova & Bowes, 2021) further reinforces this pattern: this generation may appreciate the idea of eco-labeling yet hesitate to rely on it unless it is perceived as credible. This finding parallels Rana et al. (2026), who found eco-label credibility significant but secondary to environmental concern, while diverging from Nguyen-Viet (2022), who reported eco-labels as a significant driver among Vietnamese milk consumers, suggesting that eco-labeling's effectiveness is highly context-dependent. RTD beverage companies should therefore treat eco-labels as a complementary element of green marketing, supported by transparent explanations of certification meaning, rather than assuming that a label alone will move Generation Z consumers to purchase.

Environmental concern showed a significant positive influence on purchase intention ($t = 6.087 > t\text{-table} = 1.972$; $\text{sig.} = 0.000$) and recorded the largest standardized coefficient among the three predictors, confirming H3 as the strongest driver identified in this study. This result is consistent with the S-O-R framework, in which environmental concern functions as the organism component that directly shapes how consumers interpret sustainability-related information, and aligns with prior findings that consumers with stronger environmental concern are more likely to develop intentions to purchase environmentally friendly products because they perceive their choices as contributing to environmental protection (Yadav & Pathak, 2017) and that Generation Z consumers in particular show stronger purchase intention when products align with their environmental values (De Canio et al., 2021). Nonetheless, this finding should not be read as evidence that environmental concern has already translated into environmentally responsible behavior across North Sulawesi; the region's persistent waste management challenges illustrate the same attitude-behavior gap discussed earlier (Golob et al., 2023), reminding companies and policymakers that purchase intention represents only one stage of the decision process. For RTD beverage producers, these results imply that reinforcing consumers' existing environmental values through transparent sustainability communication and recyclable packaging innovation is likely to be more effective than eco-labeling alone.

Packaging aesthetics also showed a significant positive influence on purchase intention ($t = 5.430 > t\text{-table} = 1.972$; $\text{sig.} = 0.000$), confirming H4 as the second strongest predictor after environmental concern. Unlike eco-labels, which require consumers to recognize and trust a certification before it becomes persuasive, visual elements such as color, layout, and design quality generate immediate cognitive and emotional impressions that can be evaluated without prior sustainability knowledge, consistent with Cue Utilization Theory's emphasis on cues that are easily observed and confidently interpreted (Olson & Jacoby, 1972). This is particularly relevant for Generation Z, a cohort highly accustomed to processing visual information through digital and social media, for whom first impressions carry substantial weight in a competitive, low-involvement product category such as RTD beverages. These findings align with previous research showing that visually balanced packaging positively influences consumer evaluation (Bigoin-Gagnan & Lacoste-Badie, 2018) and that attractive packaging strengthens purchase intention toward environmentally friendly products (Mohd Radzol et al., 2024; Testa et al., 2020). For RTD beverage companies, this suggests that packaging design should be treated as a strategic marketing investment integrated with, rather than separate from, sustainability communication, so that consumers are first drawn in by visual appeal and subsequently engaged with the product's environmental credentials.

Taken together, these findings contribute to sustainable consumption literature by demonstrating the different roles of internal environmental values and external product cues within a single model. The stronger influence of packaging aesthetics compared with eco-labeling suggests that cues that are immediately observable and easily interpreted may exert greater influence on purchase intention than formal sustainability certifications, particularly in the RTD beverage context. This finding reinforces the importance of integrating credible environmental communication with visually appealing packaging rather than relying on eco-labels alone. From a practical perspective, RTD beverage producers should prioritize substantive environmental communication that resonates with consumers' existing environmental concerns while maintaining attractive packaging design. Companies and certification bodies should also improve consumer familiarity and trust in eco-labels, considering their insignificant partial effect in this study. However, because this study focuses on self-reported purchase intention among Generation Z consumers in North Sulawesi, future research should examine actual purchasing behavior across broader geographic contexts and consider additional factors such as price sensitivity, greenwashing skepticism, and brand trust.

4. Conclusion

Eco-labeling, environmental concern, and packaging aesthetics simultaneously influence Generation Z's purchase intention toward RTD beverages in North Sulawesi, jointly explaining 66.6% of its variance, confirming that sustainable purchasing decisions in this segment emerge from the interaction of informational, psychological, and visual-design factors rather than from any single attribute acting alone. Partially, environmental concern is the strongest predictor, followed by packaging aesthetics, while eco-labeling shows no significant independent effect once the other two variables are accounted for. Generation Z's purchase intention toward RTD beverages is therefore driven more by internalized environmental values and visual appeal than by certification labels alone, indicating that the presence of an eco-label, by itself, is not a sufficient driver of green purchasing behavior in this market. RTD beverage companies are accordingly encouraged to pair transparent, substantive sustainability communication with visually attractive packaging design, and to invest in consumer education that strengthens trust in eco-label certification, rather than treating these three instruments as separate or interchangeable initiatives. Future research may examine eco-label credibility and familiarity in greater depth, incorporate moderating variables such as price sensitivity or greenwashing skepticism, and extend the present model toward actual purchasing behavior across broader geographic contexts.

Reference

1. Arijeniwa, V. F., Akinsemolu, A. A., Chukwugozie, D. C., Onawo, U. G., Ochulor, C. E., Nwauzoma, U. M., Kawino, D. A., & Onyeaka, H. (2024). Closing the loop: A framework for tackling single-use plastic waste in the food and beverage industry through circular economy—A review. *Journal of Environmental Management*, 359(1), 120816. <https://doi.org/10.1016/j.jenvman.2024.120816>
2. Bakri, A. A., Masbullah, M., Ekowati, D., Ridhwan, M., & Winarno, B. (2023). The influence of environmental knowledge and lifestyle on purchase intention of eco-labeled beverage products. *Community Development Journal: Jurnal Pengabdian Masyarakat*, 4(4), 7914-7920. <https://doi.org/10.31004/cdj.v4i4.19364>
3. Basyaiban, K., Rahmatullah, M. A., & Rizqiyah, Z. (2024). Evaluating the contribution of plastic waste to environmental pollution in Indonesia. ResearchGate.
4. Bigoin-Gagnan, A., & Lacoste-Badie, S. (2018). Symmetry influences packaging aesthetic evaluation and purchase intention. *International Journal of Retail & Distribution Management*, 46(11/12), 1026-1040. <https://doi.org/10.1108/ijrdm-06-2017-0123>
5. Biswas, A., & Roy, M. (2015). Green products: An exploratory study on the consumer behaviour in emerging economies of the East. *Journal of Cleaner Production*, 87(1), 463-468. <https://doi.org/10.1016/j.jclepro.2014.09.075>
6. Bocken, N. M. P., Harsch, A., & Weissbrod, I. (2022). Circular business models for the fast-moving consumer goods industry: Desirability, feasibility, and viability. *Sustainable Production and Consumption*, 30(1), 799-814. <https://doi.org/10.1016/j.spc.2022.01.012>
7. Chen, Y.-S. (2010). The drivers of green brand equity: Green brand image, green satisfaction, and green trust. *Journal of Business Ethics*, 93(2), 307-319. <https://doi.org/10.1007/s10551-009-0223-9>
8. Creswell, J. W., & Creswell, J. D. (2018). *Research design: Qualitative, quantitative, and mixed methods approaches* (5th ed.). SAGE.
9. De Canio, F., Martinelli, E., & Endrighi, E. (2021). Enhancing consumers' pro-environmental purchase intentions: The moderating role of environmental concern. *International Journal of Retail & Distribution Management*, 49(9), 1312-1329. <https://doi.org/10.1108/ijrdm-08-2020-0301>
10. Di Pillo, F., Palombi, G., & Strazzullo, S. (2025). Does greenwashing wash away Gen Z's green purchase intention? *Business Strategy and the Environment*. <https://doi.org/10.1002/bse.70064>
11. Djafarova, E., & Bowes, T. (2021). "Instagram made me buy it": Generation Z impulse purchases in fashion industry. *Journal of Retailing and Consumer Services*, 59, 102345. <https://doi.org/10.1016/j.jretconser.2020.102345>
12. Golob, U., Podnar, K., & Zabkar, V. (2023). Sustainability communication. *International Journal of Advertising*, 42(1), 42-51. <https://doi.org/10.1080/02650487.2022.2144035>
13. Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2019). *Multivariate data analysis* (8th ed.). Pearson.
14. Isharyadi, F., Ayuningtyas, U., Kiemas, R. A., Aditiyawan, Ulfah, F., Purnamasari, B. D., & Pratiwi, A. I. (2022). Analysis of eco-label certification implementation on eco-friendly products in Indonesia. *IOP Conference Series: Earth and Environmental Science*, 1108(1), 012002. <https://doi.org/10.1088/1755-1315/1108/1/012002>
15. Ismainar, H., Marlina, H., Afriza, B., & Atika, W. (2021). Gerakan mengurangi sampah plastik dan risiko membakar sampah dengan pemberian edukasi kesehatan melalui penyuluhan. *Jurnal Pengabdian Kesehatan Komunitas*, 1(3), 188-195. <https://doi.org/10.25311/jpkk.vol1.iss3.1031>
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. <https://doi.org/10.14453/aabfj.v17i1.11>
17. Kumaresan, P. R., Hidangmayum, N., Singh, A., Yadav, D., Shabnam, Brajendra, Devi, A. B., & Asmatullah. (2023). A comprehensive report on environmental sustainability: A global perspective. *International Journal of Environment and Climate Change*, 13(11), 1310-1316. <https://doi.org/10.9734/ijecc/2023/v13i113283>
18. Liu, Y., Wu, Y., Feng, X., & Jung, E. (2025). A study on the driving factors of continued use of sustainable ready-to-drink packaging: The moderating roles of perceived sustainability and perceived value fit. *Sustainability*, 17(17), 7797. <https://doi.org/10.3390/su17177797>
19. Marpaung, C. R., Tsabit, I. A. Z., & Rini, I. (2024). The role of Gen-Z in supporting sustainable development through green economy towards Golden Indonesia 2045. *Research Horizon*, 4(4), 315-320. <https://doi.org/10.54518/rh.4.4.2024.341>
20. Mehrabian, A., & Russell, J. A. (1974). *An approach to environmental psychology*. MIT Press.
21. Mohd Radzol, A. R., Hassan, S., Che Shalifullizam, I. F., & Ismail, N. Z. F. (2024). Aesthetic packaging and purchase intention. *International Journal of Art and Design*, 8(2/SI), 119-125. <https://doi.org/10.24191/ijad.v8i2/si.3700>

DOI: <https://doi.org/10.69693/ijmst.v4i3.13797>

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22. Mudgal, D., Pagone, E., & Salonitis, K. (2024). Selecting sustainable packaging materials and strategies: A holistic approach considering whole life cycle and customer preferences. *Journal of Cleaner Production*, 481, 144133. <https://doi.org/10.1016/j.jclepro.2024.144133>
23. Nguyen Quoc, T., Nghiem Phuc, N., & Duong, N.-H. (2025). Examining green packaging, branding, and eco-labeling strategies: The case of young consumers' perceptions and responses in F&B industry. *Cleaner and Responsible Consumption*, 16, 100258. <https://doi.org/10.1016/j.clrc.2025.100258>
24. Nguyen-Viet, B. (2022). Understanding the influence of eco-label and green advertising on green purchase intention: The mediating role of green brand equity. *Journal of Food Products Marketing*, 28(2), 1-17. <https://doi.org/10.1080/10454446.2022.2043212>
25. Olson, J. C., & Jacoby, J. (1972). Cue utilization in the quality perception process. *Proceedings of the 3rd Annual Conference of the Association for Consumer Research*, 3, 167-179.
26. Prihatini, H., & Sutanto, J. E. (2025). The role of environmental awareness, personal values and pro-environmental behavior as mediating variables on Gen Z's intention to purchase organic products. *International Journal of Economics, Business and Accounting Research*, 9(2). <https://doi.org/10.29040/ijebar.v9i2.16665>
27. Rana, M. S., Sharmin, S., Amin, M. B., Mishad, N.-A., & Oláh, J. (2026). Assessing the effectiveness of eco-labels on consumer purchase intentions in the food and beverage industry: A PLS-SEM approach. *Social Sciences & Humanities Open*, 13, 102422. <https://doi.org/10.1016/j.ssaho.2025.102422>
28. Raman, R., Das, P., Mandal, S., Vijayan, V., AR, A., & Nedungadi, P. (2024). The impact of Gen Z's pro-environmental behavior on sustainable development goals through tree planting. *Sustainable Futures*, 8, 100251. <https://doi.org/10.1016/j.sfr.2024.100251>
29. Sekaran, U., & Bougie, R. (2016). *Research methods for business: A skill-building approach* (7th ed.). Wiley.
30. Tan, C. N.-L., Fauzi, M. A., & Harun, S. A. B. (2025). From perceived green product quality to purchase intention: The roles of price sensitivity and environmental concern. *Marketing Intelligence & Planning*. <https://doi.org/10.1108/mip-10-2024-0703>
31. Testa, F., Iovino, R., & Iraldo, F. (2020). The circular economy and consumer behaviour: The mediating role of information seeking in buying circular packaging. *Business Strategy and the Environment*, 29(8), 3435-3448. <https://doi.org/10.1002/bse.2587>
32. Waris, I., Mohd Suki, N., Ahmed, A., & Barkat, W. (2024). Environmental corporate social responsibility initiatives and green customer citizenship behavior in tourism industry: The mediating roles of green trust, customer-company identification and green corporate image. *Social Responsibility Journal*. <https://doi.org/10.1108/srj-07-2023-0378>
33. Weder, F., & Stranzl, J. M. (2025). Internal communication for sustainability: Expanding corporate sustainability communication with the inner development goals (IDGs). *Corporate Communications: An International Journal*, 30(7), 121-137. <https://doi.org/10.1108/ccij-02-2025-0049>
34. Widodo, A., Rubiyanti, N., & Madiawati, P. N. (2025). Investigating the influence of eco-labels on consumer behavior in Indonesia's developing green market. *Management & Sustainability: An Arab Review*. <https://doi.org/10.1108/msar-02-2025-0054>
35. Yadav, R., & Pathak, G. S. (2017). Determinants of consumers' green purchase behavior in a developing nation: Applying and extending the theory of planned behavior. *Ecological Economics*, 134(1), 114-122. <https://doi.org/10.1016/j.ecolecon.2016.12.019>