

Exploring The Impact of Green Knowledge and Packaging on Consumer Purchase Intentions

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ABSTRACT

Growing environmental concerns have increased attention to sustainable consumption, yet inconsistencies remain in how cognitive and tangible factors shape consumer purchase intentions. This study aims to examine the effects of green knowledge and green packaging on consumer purchase intention among Millennials and Generation Z in Solo. This research employs a quantitative, cross-sectional design to examine relationships among variables at a single point in time. Data were collected from 155 respondents via structured questionnaires and analysed using multiple linear regression in SPSS. The results indicate that green packaging has a positive and significant effect on purchase intention, reflecting the importance of tangible product attributes in shaping consumer decisions. In contrast, green knowledge shows no significant effect, suggesting that cognitive awareness alone does not necessarily translate into purchasing intention. These findings imply that companies should prioritise the development of environmentally friendly packaging as a strategic tool to enhance consumer interest and trust. This study contributes to the literature by highlighting the gap between knowledge and behavior and emphasizing the stronger role of visible product attributes in shaping sustainable consumption decisions.

Keywords:

Green Knowledge

Green Packaging

Purchase Intention

Millennial Generation

Z generation

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1. Introduction

The phenomenon of increased consumer interest in the food and beverage sector has led to an increase in plastic waste from food packaging, especially for ready-to-eat food and beverage products that use disposable materials (Hidayat et al., 2025). According to the United Nations Environment Program (UNEP), approximately 36% of total plastic production is used for packaging and ends up in landfills or unmanaged waste (Ceballos-Santos et al., 2024). Several studies, such as Fatqiyah (2025), show that plastic packaging is considered an industry standard that must be followed, ultimately leading consumers to choose plastic for many reasons, ranging from convenience and availability to perceptions of food safety. These conditions contribute greatly to the increase in plastic waste.

Indonesia is one of the countries facing a waste crisis, particularly plastic waste, which continues to increase daily. Indonesia produces more than 64 million tons of waste per year, with 10.5 tons of plastic waste. Poor and inadequate management practices contribute an environmental pollution. In response to the current situation, the Indonesian government is making various efforts to tackle the problem through various policies, one of which is the 2029 Indonesia Free of Waste Program, which aims to reduce the use of single-use plastics, raise public awareness about waste management, and encourage companies to switch to environmentally friendly packaging. This policy is further supported by several steps taken by regions that have begun banning single-use plastics, including the city of Solo. The Solo City Government has begun to strengthen its waste management system and is considering regulations to restrict or reduce single-use plastics. This has encouraged many industrial sectors to pursue innovations and developments in green packaging and green knowledge. The current trend also encourages industry players to reinvent the form and materials of their packaging to be more environmentally friendly, as consumer awareness of environmental issues is increasing (Kusumawati & Tiarawati, 2022). Research from Kantar shows that the number of consumers who care about the environment in Indonesia increased by 112% from 2019 to 2020.

Two factors in this study can influence consumer purchasing interest: green packaging. Product packaging is very important in providing information about the product, which can motivate consumers to buy. Green packaging is a packaging concept made from natural materials that are recyclable, biodegradable, and support sustainable development because they are not harmful to living things or the surrounding environment (Amalia Putri et al., 2023). Not only that, green packaging has a tangible impact on companies' contributions to sustainable environmental development. If implemented by companies and industries, this will provide added value to consumers, reflecting the companies' commitment to sustainability and concern for environmental issues, which in turn increases trust and purchasing interest. Consumers who are aware of environmental issues are more interested in buying products with environmentally friendly packaging, even at a relatively high price.

In addition to green packaging, this study also found that green knowledge is an important factor in determining consumer purchasing interest. Green knowledge is defined as the extent of consumers' knowledge and information about environmentally friendly products, their environmental benefits, and responsible consumption behaviour, which greatly influences consumer purchasing decisions. Consumers with higher green knowledge have a better understanding of the importance of choosing products with environmentally friendly packaging. This knowledge shapes attitudes that support sustainability, encouraging decisions to purchase products. This shows that green knowledge directly increases consumer interest in purchasing. Green knowledge plays an important role in shaping consumer interest in purchasing environmentally friendly products, as consumers with better knowledge of sustainability are more likely to choose products that align with those principles. Consumers who have a good understanding of the negative impacts of single-use plastics will be more interested in purchasing products with environmentally friendly packaging (Rosyihuddin & Krisnawati, 2025).

This study focuses on green packaging and green knowledge as determining factors of consumer purchasing interest. In line with the Theory of Planned Behaviour (TPB) developed by Ajzen (1991), one of the main theories in social psychology that explains the relationships among attitudes, subjective norms, and perceived behavioural control, which can influence a person's intention to act, such as purchasing interest. Consumers with a positive attitude towards environmental sustainability are more likely to choose products with green packaging. Packaging is currently required to have a dual function, not only to protect the main product, but also to reduce environmental problems caused by waste (Fayad & Hairudinor, 2024). This study will involve Millennials and Generation Z because these two demographic groups are known to be more concerned about environmental issues than older generations. Consumer awareness of environmental responsibility reaches 85% among millennials, and around 80% of Generation Z also supports companies in creating environmentally friendly products (Kusumawati & Tiarawati, 2022).

The changing behaviour of consumers, increasingly concerned about environmental sustainability, is a phenomenon that cannot be ignored in today's industrial world. This indicates that green packaging and green knowledge have become major considerations in consumer purchasing decisions. Therefore, this research is important to determine the extent of the influence of green packaging and green knowledge on consumer purchasing interest, especially among Generation Z.

2. Methods

This study employs a quantitative research approach using a cross-sectional design, in which data are collected at a single point in time to examine the relationships among variables. The unit of analysis consists of individual consumers from the Millennial and Generation Z cohorts in Solo, Indonesia. Data were collected via a structured questionnaire distributed to 155 respondents selected through purposive sampling. The criteria for respondents include individuals who belong to the Millennial and Generation Z groups and have prior experience purchasing food or beverage products. The questionnaire was administered in Indonesian to ensure clarity and comprehension. All items were measured using a five-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), which is widely adopted in behavioural and consumer research.

Measurement of Variables

This study examines one dependent variable and two independent variables:

1. Dependent variable: Purchase Intention

Purchase Intention reflects the consumer's willingness to purchase environmentally friendly products.

2. Independent variables: Green Packaging and Green Knowledge

- Green Packaging refers to packaging characteristics that are recyclable, reusable, and environmentally safe.
- Green knowledge captures the extent of consumers' understanding of environmentally friendly products and their impacts.

Table 1. Measurement of Variables

Variables	Measurement	Indicators
Dependent	Purchase Intention	<ul style="list-style-type: none"> • Interest in buying products with green packaging because it is beneficial for the environment • Interest in buying products with green packaging because they do not cause environmental pollution • Interest in buying products with green packaging because they have more attention to the environment than other products
Independent	Green Packaging	<ul style="list-style-type: none"> • Packaging on food products is recyclable • Packaging on food products is reusable • Packaging of food products made from recycled materials • Packaging of food products does not use harmful ingredients
	Green Knowledge	<ul style="list-style-type: none"> • Understanding of environmentally friendly product packaging • Understanding the benefits of eco-friendly products for survival • Understanding the characteristics of eco-friendly packaging • Understanding the dangers of packaging that is not environmentally friendly for survival

The measurement items were adapted from prior validated studies, including Wu & Chen (2014), Chekima et al. (2016), and Barnes et al. (2011), ensuring content validity and theoretical consistency.

Validity and Reliability Testing

To ensure the robustness of the measurement instrument, construct validity and reliability were assessed using SPSS.

a. Validity Test

Construct validity was evaluated using Kaiser-Meyer-Olkin (KMO) and factor loading criteria. The KMO value of 0.802 indicates sampling adequacy, exceeding the recommended threshold of 0.50. All measurement items demonstrated factor loadings greater than 0.50, confirming that the indicators are valid and appropriately represent their respective constructs.

b. Reliability Test

Reliability was assessed using Cronbach's Alpha, with all variables exceeding the acceptable threshold of 0.60, indicating that the instrument is reliable and consistent in measuring each variable. Green knowledge obtained a result of 0.829, green packaging 0.737, and purchase interest 0.760.

Data Analysis Technique

The data were analysed using multiple linear regression in SPSS to examine the effects of independent variables on purchase intention. Before hypothesis testing, classical assumption tests were conducted to assess the validity of the regression model, including the Normality test (Kolmogorov-Smirnov), the Multicollinearity test (Variance Inflation Factor/VIF), and the Heteroscedasticity test.

The regression model is specified as follows:

$$PI = \beta_0 + \beta_1GK + \beta_2GP + e$$

PI = Purchase Intention

GK = Green Knowledge

GP = Green Purchase

e = Error term

Based on the validity and reliability test results, it can be concluded that the questionnaire instrument used in this study is valid and reliable for measuring green knowledge, green packaging, and consumer purchase intention. This provides a strong basis for further analysis of the proposed hypotheses.

3. Results

This study examines the relationships among green knowledge, green packaging, and purchase intention using multiple linear regression. The analysis aims to identify the extent to which the independent variables are associated with variations in consumer purchase intention. The regression model yields an R^2 of 0.268 and an adjusted R^2 of 0.258, indicating that approximately 26.8% of the variance in purchase intention is explained by green knowledge and green packaging. While this suggests a moderate explanatory power, it also indicates that other factors beyond the scope of this study may contribute to consumer purchase intention.

Relationship between Green Knowledge and Purchase Intention

The statistical results indicate that green knowledge has no significant effect on purchase intention, thus the result is not supported (H1). This finding suggests that variations in consumers' environmental knowledge do not correspond to meaningful differences in their purchase intention within the observed sample. This pattern may reflect a gap between cognitive awareness and

behavioural inclination, in which knowledge alone does not necessarily translate into action. In the context of cross-sectional data, this result should be interpreted as indicating the absence of a statistically significant relationship, rather than implying that green knowledge plays no role in shaping consumer behaviour.

The p-value for Green Knowledge is 0.378 (> 0.05), and the t-value is 0.884. This can be explained by the phenomenon that, even though consumers may be aware of environmental issues, these factors do not always directly influence their purchasing decisions. Consumer knowledge about environmental impacts is often not translated into real changes in their consumption behavior, especially when this knowledge is not accompanied by easy access to environmentally friendly products or by companies that present them attractively. This finding is in line with previous studies that also show that consumer knowledge about environmental issues does not always have a direct impact on purchase interest (Yulianingsih et al., 2025). In addition, Simanjuntak et al. (2025) also found that green knowledge has a limited influence on consumer purchase interest. Many consumers with more knowledge about environmental issues are often influenced by product price and practicality. Similarly, Fatqiyah et al. (2025) found in their research that even though consumers have green knowledge, its influence on consumer purchasing interest is not always direct.

Relationship between Green Packaging and Purchase Intention

Conversely, H2, which states that green packaging has a positive and significant effect on consumer purchasing interest, is supported by the analysis results, with a p-value of $0.000 < 0.05$ and a t-value of 7.434. This shows that green packaging does have a positive effect on consumer purchasing interest. Consumers who view packaging as part of a company's social responsibility towards environmental sustainability are more likely to intend to purchase the product. Green packaging not only reflects a company's commitment to sustainability but also adds value to the product, which in many cases increases consumer trust and preference. The results of this study are supported by Rahmawati & Dermawan (2024), which found that green packaging has a significant effect on consumer purchasing interest (Fayad & Hairudinor, 2024)—confirmed that green packaging has a significant effect on consumer purchasing interest, especially for consumers who have a positive attitude towards environmental sustainability. They state that environmentally friendly packaging is not only a marketing strategy but also reflects the company's commitment to sustainability, which in turn, increases consumer interest in the product.

Table 3. Multiple Linear Regression Analysis Results

Variables	Purchase Intention			
	Coefficient (β)	t-value	p-value	Interpretation
Green Knowledge	—	0.884	0.378	Not Significant
Green Packaging	—	7.434	0	Significant Positive
R²	0.268			
Adjusted R²	0.258			

4. Discussion

H1: Green Knowledge and Purchase Intention

The findings indicate that green knowledge is not significantly associated with purchase intention, suggesting that consumers' level of environmental understanding does not necessarily correspond to their purchase intention for environmentally friendly products. This result highlights a gap between intentions and eco-friendly purchases, influenced by convenience, eco-label credibility, and situational factors (Grimmer & Miles, 2017; Kim & Lee, 2023). Within the Theory of Planned Behaviour, green knowledge can be linked to the formation of attitudes toward environmental sustainability. However, the absence of a significant relationship suggests that knowledge alone

may not be sufficient to shape favorable attitudes strong enough to influence purchase intention. In cross-sectional contexts, this finding reflects that awareness does not automatically translate into behavioral readiness (Wang et al., 2019).

Furthermore, this result may also be interpreted in terms of the roles of subjective norms and perceived behavioural control in the TPB. Even when consumers possess adequate environmental knowledge, their purchasing decisions may still be influenced by external pressures such as social expectations, product availability, and price considerations. Perceived barriers, such as limited access to environmentally friendly products or higher costs, may weaken the translation of knowledge into intention. Thus, the findings suggest that green knowledge operates as a supporting cognitive factor rather than a dominant driver of purchasing intention within the observed context.

H2: Green Packaging and Purchase Intention

In contrast, green packaging shows a strong, statistically significant positive association with purchase intention, suggesting that tangible product attributes play a more prominent role in shaping purchase intention. From the perspective of the Theory of Planned Behaviour, green packaging can be seen as a factor that directly influences consumers' attitudes toward a product, as it serves as a visible, immediate indicator of environmental responsibility. The physical presence of environmentally friendly packaging may enhance consumers' perceptions of product quality, safety, and corporate commitment to sustainability, thereby strengthening their intention to purchase (Otto et al., 2021).

Additionally, green packaging may also reinforce subjective norms and perceived behavioral control. Subjective norms drive purchase intent, particularly among women who care about the environment and are willing to pay more (Auliandri et al., 2024). Consumers may perceive that choosing products with environmentally friendly packaging aligns with socially desirable behavior (Oliver et al., 2023), thereby increasing normative pressure to act accordingly (Lan et al., 2023). At the same time, the visibility and accessibility of such packaging reduce perceived barriers (Suryani et al., 2024), making environmentally responsible choices easier to perform. This combination of attitudinal, normative, and control-related influences helps explain why green packaging shows a stronger association with purchase intention than green knowledge. However, consistent with the cross-sectional design, these findings should be interpreted as reflecting associative patterns rather than causal relationships.

5. Conclusion

This study has several limitations that need to be considered. First, the research respondents were from the city of Solo, limiting the generalizability of the research results to a wider population. Consumers in Solo may differ in characteristics, preferences, and levels of environmental awareness from those in other regions of Indonesia. Therefore, the results of this study need to be further tested in areas with different consumer characteristics. Second, this study did not consider other external factors, such as the influence of advertising, promotions, or company campaigns, which can play an important role in influencing consumer purchasing interest in environmentally friendly packaged products. For future research, it is recommended to expand the population of respondents in various cities in Indonesia to produce more representative and generalizable findings. Research can also be conducted by adding other variables, such as the influence of social media, promotions, or emotional factors, which can enrich the analysis of consumer purchasing interest. In addition, longitudinal research that observes changes in consumer behaviour over time will provide deeper insights into the dynamics of interest in environmentally friendly products. Given the importance of developing green packaging and green knowledge in support sustainability, further research can also examine the long-term impact of corporate sustainability policies on consumer trust and loyalty.

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