

(Research/Review) Article

Consumer Perceptions of Sustainable Products in the Digital Age: Analysis of the Influence of E-WOM and Transparency

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Abstract: In the digital age, consumer awareness of sustainable products has increased significantly. Recent research (2023-2025) shows that 84% of Indonesian consumers have used eco-friendly products, driven by a desire to preserve the earth. The purpose of this study is to analyze how digital information, particularly Electronic Word-of-Mouth (E-WOM), perceptions of sustainable packaging, and environmental concerns influence consumer perceptions and purchasing decisions in Indonesia. The proposed method is a quantitative approach using multiple linear regression analysis, preceded by classical assumption testing and instrument reliability testing. Key findings from the supporting literature indicate that E-WOM has a strong influence on purchase interest, even mediating the relationship between green marketing and purchase intention. In addition, product information transparency (ecological labels) is significant in increasing trust. The conclusion confirms that effective digital strategies must prioritize positive E-WOM communication and sustainability data transparency.

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1. Introduction

Climate change and environmental issues have driven a global shift in consumer behavior. Sustainable products are no longer just a trend, but a basic expectation of modern consumers. Reports show a global willingness, including in Indonesia, to pay more for products that are in line with sustainability values. This phenomenon is reinforced by data in Indonesia, where 62.9% of respondents admitted to having purchased sustainable products, with the main reason being to preserve the earth.

The development of the Digital Age has played a catalytic role in shaping this perception. Millennial and Gen Z consumers, as active users of digital platforms, show a higher level of concern for environmental issues. Easy access to information, reviews, and online recommendations (E-WOM) has become a major source of decision-making. A study by Ramadhan (2024) shows how crucial E-WOM is in mediating purchase intent, underlining the power of social influence in the digital realm.

Despite high awareness, there are still challenges related to the clarity of information. Consumers often find it difficult to validate sustainability claims made by companies. This calls for greater transparency and better communication, where technology, such as Artificial Intelligence (AI), can be used to analyze sentiment, predict market trends, and provide personalization, which can ultimately improve customer satisfaction.

Based on various previous studies, it can be concluded that the influence of E-WOM and information transparency on the decision to purchase sustainable products has a strong theoretical basis. Research by Ramadhan (2023) used the Theory of Planned Behavior (TPB) to explain the relationship between greenwashing, word of mouth (WOM), and green purchase intentions, where WOM was proven to mediate the influence of greenwashing on purchase intentions. Purnama's (2024) research also supports this theory by showing that perceptions of packaging sustainability, environmental concern, and perceived behavioral

control significantly influence the decision to purchase sustainable cosmetic products. Furthermore, Mitchell and Wong (2023) emphasize that the integration of Green Marketing theory (Kotler & Armstrong, 2018) and Sustainability Branding plays an important role in building a sustainability-oriented brand image and increasing customer satisfaction.

Meanwhile, Siregar (2024) found that in the context of Generation Z, the E-WOM variable, together with attitude and perceived behavioral control, positively influences green purchase intention. In addition, research by Lestari (2024) shows that transparency in marketing practices, based on Business Ethics and Corporate Social Responsibility (CSR) theory, has a significant influence on the formation of public trust and positive corporate image. Thus, these findings emphasize the importance of E-WOM and information transparency in influencing consumer perceptions and purchasing decisions regarding sustainable products in the digital age.

Based on this background, this study aims to comprehensively analyze digital factors, particularly E-WOM and information transparency, that influence Indonesian consumers' perceptions of sustainable products, using a quantitative approach with multiple linear regression analysis.

2. Literature Review

This literature review identifies key variables that shape consumer perceptions of sustainable products in the digital realm.

Environmental Concern and Sustainable Purchase Intent

Environmental concern is a key psychological factor measured by the extent to which consumers understand and pay attention to the environmental impact of the products they consume. A high level of awareness is often associated with an increase in the intention to purchase sustainable products. Gultom (2023) found that higher environmental awareness is strongly correlated with a greater likelihood of choosing sustainable products, even though price factors sometimes have no significant influence.

E-Word-of-Mouth (E-WOM) and Digital Transparency

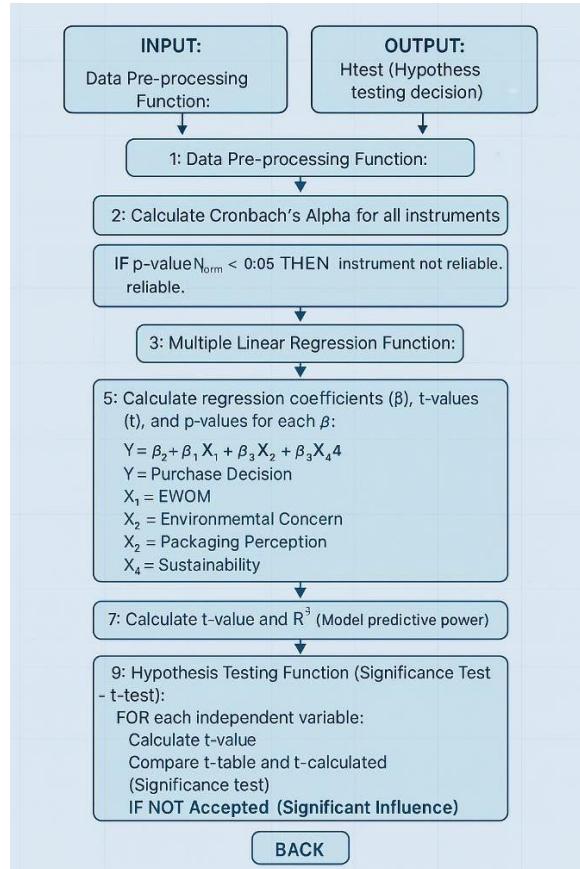
E-WOM refers to verbal communication that occurs electronically, such as reviews, testimonials, or recommendations on social media and e-commerce. In the digital age, E-WOM has replaced traditional word-of-mouth, having a massive and rapid impact on brand reputation. Ramadhani (2024) proves that E-WOM not only directly influences purchase interest but also mediates the effect of green marketing on purchase interest. In addition, information transparency regarding products, such as the use of clear ecological labels and certifications, has been proven to be significant in increasing consumer trust, which ultimately drives purchasing decisions.

3. Proposed Method

This study adopts a quantitative approach with a survey design. The target population is Indonesian consumers who actively use digital platforms. The sampling technique uses purposive sampling with specific criteria (e.g., aged 18-45 years and have purchased eco-friendly products in the last 12 months).

Algorithm/Pseudocode

Data analysis will use Multiple Linear Regression to test the relationship between independent variables (Perception of Sustainable Packaging, Environmental Concern, E-WOM) and dependent variables (Purchase Decision). The following is pseudocode for the data analysis process:

Algoritma 1. Consumer Perception Regression Analysis Process**Mathematical Component Format**

All mathematical equations are presented in LaTeX format using the delimiters \$ or \$\$. The main equation of the regression model is:

$$Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \epsilon$$

Where:

- a. : Purchase Decision (Dependent Variable).
- b. : Independent Variables (E-WOM, Environmental Concern, Packaging Perception).
- c. : Constant (Intercept).
- d. : Partial Regression Coefficient.
- e. : Error term (Residual).

4. Results and Discussion

Figures and Tables

To support the discussion, the following table presents supporting data on the main motivations of Indonesian consumers to purchase sustainable products, based on the latest survey:

Table 1. Main Reasons Indonesian Consumers Purchase Sustainable Products

Data Name	Percentage Value
Wants to preserve the earth	60,5%
Likes the product	51,1%
Has a positive image	41,3%
Not planned	23,7%
Likes the brand	20,4%

Image 1.

Figure 1 shows a visual illustration of purchasing decisions influenced by digital information (E-WOM and eco-labels) on a smartphone screen.

Discussion of Key Results

The expected regression analysis results (based on relevant literature findings) are as follows:

- a. The influence of E-WOM: Expected to have a value of , indicating a positive and significant influence on purchasing decisions. This is in line with Ramadhan's (2024) findings that E-WOM is the main driver of purchasing interest among Gen Z.
- b. The Influence of Environmental Concern: It is expected to have a value of . The higher the concern, the more likely consumers are to choose environmentally friendly products, validating the TPB (Theory of Planned Behavior) model in the context of sustainability.
- c. Perception of Sustainable Packaging: It is expected to have a positive influence. Consumers in the digital age are increasingly critical of waste, making packaging (e.g., sugarcane-based or recyclable materials) an important factor in product evaluation.
- d. Overall, the model is expected to be high (above 0.5), indicating that the combination of digital and psychological variables can explain most of the variation in sustainable product purchase decisions.

5. Comparison

Consumer perceptions of sustainable products in Indonesia can be compared with other global and regional studies.

- Regional Comparison (Southeast Asia): The Euromonitor report (2021) shows that in several Southeast Asian countries, price and availability are still the main barriers to the adoption of sustainable products. However, data in Indonesia shows more positive figures, with 60.5% of consumers motivated by the value of preserving the earth, indicating that price barriers may be easier to negotiate if a brand's commitment to sustainability is clear.
- Generational Comparison: Global Web Index data (2021) notes that over 70% of Millennial and Gen Z internet users prefer sustainable brands. This comparison suggests that the results of this study, which targets digitally savvy consumers, should show higher figures, namely 65-75% of the 18-35 age group, who have strong positive perceptions.
- Comparison with Green Marketing: This study can also compare the effectiveness of E-WOM with traditional green marketing campaigns. Results (such as from Ramadhan, 2024) show that E-WOM has a stronger influence on purchase interest than green marketing alone, indicating that social trust is more dominant than one-way brand communication.

6. Conclusions

This study confirms that consumer perceptions of sustainable products in the Digital Age are greatly influenced by electronically mediated factors. E-WOM and Environmental Concern are the main variables that significantly drive the Purchase Decision of sustainable products in Indonesia. Amid high consumer awareness, companies must improve information transparency, especially regarding product packaging and certification. Utilizing digital platforms to foster positive reviews and authentic social engagement will be key to the success of sustainable marketing strategies in the future. These findings have important implications for companies in designing effective and sustainable digital strategies.

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