



## Environmental Sustainability Practices In The F&B Industry In Indonesia

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**Abstract.** Food and beverage (F&B) businesses in Indonesia have experienced rapid growth, but this expansion has come with environmental challenges such as waste and carbon emissions. This study aims to explore how consumer perception, product innovation, and moral responsibility influence environmental sustainability, with environmental awareness as a mediating variable, using the Norm Activation Model (NAM) as the theoretical framework. A quantitative approach was employed using a descriptive-verify method. Data were collected through an online questionnaire distributed to 150 respondents who had consumed environmentally friendly F&B products. Path analysis results show that consumer perception, product innovation, and moral responsibility significantly influence sustainable consumption behavior. Product innovation and moral responsibility were found to affect sustainability through the mediation of environmental awareness, whereas consumer perception has a direct effect without mediation. These findings reinforce the important role of environmental awareness in activating personal norms and support sustainability communication strategies in the F&B industry. The practical implications of this study encourage companies to enhance green product innovation and consumer education to promote more environmentally responsible consumption behavior.

**Keywords:** Consumer perception, environmental awareness, moral responsibility, Product innovation, sustainability.

**Abstrak.** Industri makanan dan minuman (F&B) di Indonesia mengalami pertumbuhan pesat, namun menimbulkan tantangan lingkungan seperti limbah dan emisi karbon. Penelitian ini bertujuan untuk mengeksplorasi bagaimana persepsi konsumen, inovasi produk, dan tanggung jawab moral memengaruhi keberlanjutan lingkungan, dengan kesadaran lingkungan sebagai variabel mediasi, menggunakan kerangka Norm Activation Model (NAM). Penelitian ini menggunakan pendekatan kuantitatif dengan metode deskriptif-verifikatif. Data dikumpulkan melalui kuesioner daring kepada 150 responden yang pernah mengonsumsi produk F&B ramah lingkungan. Hasil analisis jalur menunjukkan bahwa persepsi konsumen, inovasi produk, dan tanggung jawab moral secara signifikan memengaruhi perilaku konsumsi berkelanjutan. Inovasi produk dan tanggung jawab moral terbukti memengaruhi keberlanjutan melalui mediasi kesadaran lingkungan, sementara persepsi konsumen memiliki pengaruh langsung tanpa mediasi. Temuan ini memperkuat peran penting kesadaran lingkungan sebagai pemicu norma pribadi serta mendukung strategi komunikasi keberlanjutan di industri F&B. Implikasi operasional dari penelitian ini mendorong perusahaan untuk meningkatkan inovasi produk hijau dan edukasi konsumen guna mendorong perilaku konsumsi yang lebih bertanggung jawab terhadap lingkungan.

**Kata kunci:** inovasi produk, kesadaran lingkungan, keberlanjutan, persepsi konsumen, dan tanggung jawab moral

## INTRODUCTION

The food and beverage (F&B) industry in Indonesia has experienced consistent growth and become a major contributor to the national economy. According to Statistics Indonesia (BPS), the country's economy grew by 5.05% year-on-year in the second quarter of 2024, with the accommodation and food and beverage sector recording the highest growth at 10.17%. This expansion reflects rising consumer demand, yet it also brings environmental challenges,

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including carbon emissions, excessive use of non-recyclable packaging, and food waste throughout the supply chain issues also highlighted by the Organisation for Economic Co-operation and Development (OECD, 2021). These concerns have pushed environmental sustainability into the spotlight, especially as consumers become more aware of the ecological consequences of their consumption choices (Wijaya et al., 2022; Wulandari & Hasanah, 2022; Andriani & Taufik, 2023).

As awareness grows, consumer behavior emerges as a key force in advancing sustainability. Individuals who understand the environmental impact of their habits are more likely to adopt pro-environmental behavior. Recent studies show that heightened environmental awareness is strongly associated with support for sustainable brands and more responsible consumption patterns (Utomo & Cahyani, 2022; Fitriani & Hidayat, 2023). However, many of these studies treat awareness in isolation, without integrating it with other important variables like consumer perception or product innovation.

This broader perspective is essential, as consumer perception of a brand's environmental responsibility significantly influences trust, loyalty, and purchase intention especially when such perception aligns with consumers' environmental concerns (Zhra & Hardiyanto, 2022; Prayoga & Rahmawati, 2023). Moreover, environmental awareness often acts as a mediating factor between perception and sustainable behavior, shaping how individuals interpret and act upon sustainability messages (Yuliani et al., 2023). Therefore, understanding how these psychological and perceptual factors interact can help brands communicate sustainability more effectively and enhance the impact of their green innovations.

To analyze this dynamic more comprehensively, the Norm Activation Model (NAM) proposed by Schwartz (1977) provides a useful theoretical framework. NAM suggests that personal norms defined as feelings of moral obligation are activated when individuals are aware of the consequences of their actions and accept responsibility for them. In the F&B context, awareness of environmental degradation can trigger these personal norms, leading to sustainable consumption behavior. These norms are reinforced when consumers perceive that products reflect environmental responsibility through innovations such as recyclable packaging or plant-based ingredients (Khalili et al., 2022; Prieto et al., 2021; Games et al., 2021). However, such innovations are only effective when they resonate with consumers' values and are interpreted as morally meaningful again underscoring the importance of environmental awareness as a psychological trigger.

Despite increasing attention to sustainable consumption, research that integrates consumer perception, green product innovation, and environmental awareness under a unified behavioral theory like NAM remains limited, especially in emerging markets like Indonesia. Many previous studies analyze these variables separately or in narrow combinations, while most are conducted in developed countries, making contextual application difficult. Addressing this gap, the present study investigates how consumer perception of environmental initiatives and green product innovation influence sustainable consumption behavior, with environmental awareness as a mediating variable, using the Norm Activation Model. Focusing on Indonesian F&B consumers, this research aims to generate empirical insights that support sustainable marketing, policy development, and behavioral change toward environmentally responsible consumption.

## **LITERATURE REVIEW**

The Norm Activation Model (NAM), developed by Schwartz (1977), explains prosocial and pro-environmental behavior. According to this model, personal norms are activated when individuals become aware of the environmental consequences of their actions (awareness of consequences/AC) and feel morally responsible (ascribed responsibility/AR) (Harland et al., 1999; Stern et al., 1999). In Indonesia's food and beverage (F&B) industry, NAM helps explain how consumer perception, product innovation, and moral responsibility influence environmentally friendly choices. A key mediating variable is environmental awareness, which emerges when individuals understand the impact of their consumption and are exposed to sustainability-focused marketing or innovations such as recyclable packaging and carbon labeling (Bamberg et al., 2007; Peattie & Crane, 2005).

Consumer perception of a product's sustainability can enhance environmental awareness, especially when innovations like organic ingredients or low-emission processes are involved (Chen, 2008; Jansson et al., 2010). This awareness then activates personal norms that encourage green behavior. Meanwhile, ascribed responsibility refers to consumers feeling personally accountable for environmental impacts (Schwartz, 1977; Thøgersen, 2006). When consumers recognize their role in environmental issues, they are more likely to adopt sustainable actions, such as choosing local products or eco-friendly brands. In summary, this study uses the NAM framework to position consumer perception, product innovation, and ascribed responsibility as

key drivers of environmental awareness, which activates personal norms and promotes sustainable behavior in Indonesia's F&B sector.

## **HYPOTHESES DEVELOPMENT**

### **Consumer Perception, Environmental Awareness, and Environmental Sustainability**

Consumer perception is the process of selecting, organizing, and interpreting information to understand a product or brand. In the F&B industry, positive perceptions of sustainable practices such as biodegradable packaging or organic ingredients can enhance environmental awareness and influence purchase intentions (Zhra & Hardiyanto, 2022). Studies show that perceived value of green products affects buying decisions through environmental awareness (Ningrum et al., 2022), and green advertising and eco-friendly branding reinforce these perceptions (Alamsyah et al., 2020). In Indonesia, consumer perceptions of a product's environmental attributes significantly impact purchase decisions, especially among environmentally conscious individuals (Prayoga et al., 2020), while perceived green quality boosts trust through increased awareness (Irfan, 2023). Based on these findings, the following hypotheses are proposed:

*H1a: There is a positive relationship between consumer perception and environmental awareness.*

*H1b: There is a positive relationship between consumer perception and environmental sustainability.*

### **Product Innovation, Environmental Awareness, and Environmental Sustainability**

Product innovation involves creating or modifying products to meet changing market demands, often by adding creative and sustainable elements (Kotler & Keller, 2020). In the F&B industry, innovations like eco-friendly packaging and organic ingredients help raise environmental awareness. Studies show that appealing green innovations can enhance brand perception, especially among environmentally conscious consumers (Hariasih, 2024). Eco-labels and certifications also boost consumer trust and promote sustainable choices (Ningrum et al., 2022). Moreover, green innovations signal competitiveness in eco-aware markets (Sari et al., 2021). Thus, product innovation is key to encouraging environmentally responsible consumer behavior. The following hypotheses are proposed:

*H2a: There is a positive relationship between product innovation and environmental awareness.*

*H2b: There is a positive relationship between product innovation and environmental sustainability.*

### **Ascribed responsibility, Environmental Awareness, and Environmental Sustainability**

Ascribed responsibility refers to the perception that individuals or companies have a moral obligation to protect the environment. In the F&B industry, consumer environmental awareness is often influenced by the perceived responsibility of businesses in minimizing environmental harm. Eco-friendly practices, such as using biodegradable packaging and sourcing sustainable ingredients, help shape positive consumer attitudes toward environmental preservation (Rinnanik et al., 2022). Consumer satisfaction and loyalty toward green products are also influenced by companies' pro-environmental initiatives (Pondaag, 2019). Ascribed responsibility plays a key role in shaping personal norms, which drive pro-environmental behavior (Radde et al., 2024; Zhu et al., 2021). Other studies show that communication strategies highlighting a restaurant's environmental commitment can enhance consumers' sense of responsibility and promote sustainable consumption choices (Shin et al., 2022; Han et al., 2022). The following hypotheses are proposed:

*H3a: There is a positive relationship between ascribed responsibility and environmental awareness.*

*H3b: There is a positive relationship between ascribed responsibility and environmental sustainability.*

### **Environmental Awareness and Environmental Sustainability**

Environmental awareness refers to individual or group attitudes reflected in thoughts, behaviors, and actions that support the preservation and development of the environment (KBBI Kemendikbud, 2016b). At the consumer level, this awareness arises from their knowledge of the importance of maintaining a healthy environment as a foundation for improving human life quality (Kusuma et al., 2017). High levels of awareness lead consumers to demand that companies adopt sustainability practices—such as reducing carbon emissions which in turn contribute to environmental sustainability across various sectors (Hauschild et al., 2020). Previous studies indicate that pressure from environmentally conscious consumers encourages companies to manage waste responsibly, particularly in the F&B industry, which often produces large volumes of packaging waste. For example, consumer awareness of the negative impact of plastic packaging has driven companies to adopt recyclable materials as an

environmental responsibility (Shalmont, 2020). In Indonesia, the high environmental awareness among Generation Z has strengthened this trend, increasing demand for green products and motivating F&B companies to implement sustainable practices such as waste management and carbon footprint reduction (Adialita et al., 2022).

Based on these findings, the following hypothesis is proposed:

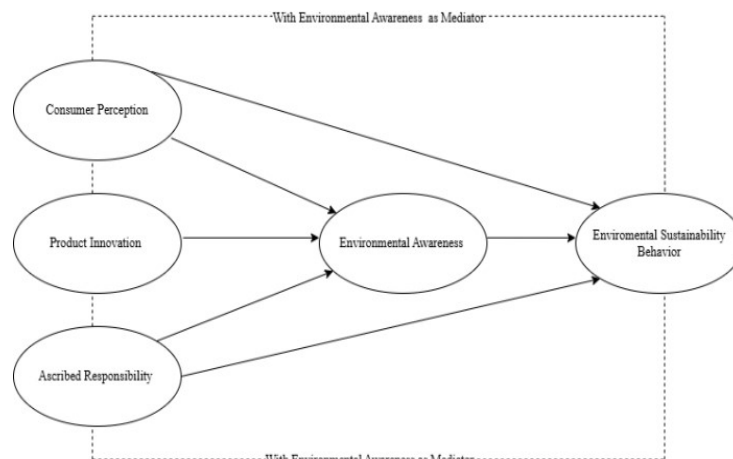
*H3: There is a positive relationship between environmental awareness and environmental sustainability.*

### **Consumer Perception, Product Innovation, Ascribed Responsibility on Environmental Sustainability through Environmental Awareness**

Eco-friendly innovations reduce environmental impact and increase consumer preference for green products. Environmental awareness mediates the link between sustainable marketing and consumer choices, while also boosting brand trust and competitiveness (Khuan et al., 2024; Hariasih, 2024; Rizkalla & Setiadi, 2020). Ascribed responsibility consumers' sense of obligation to the environment—also drives sustainable purchases, especially when awareness is high, notably among Gen Z (Ningrum et al., 2022). Based on this, the following hypotheses are proposed:

*H4a: Environmental awareness significantly mediates the relationship between consumer perception and environmental sustainability.*

*H4b: Environmental awareness significantly mediates the relationship between product innovation, ascribed responsibility, and environmental sustainability.*



**Figure 1. Research Model**  
Source: Autor(s) own compilation

## **RESEARCH METHODOLOGY**

### **Research Design**

This study uses a quantitative approach with descriptive-verbatim methods to analyze the effects of consumer perception and product innovation on environmental sustainability, mediated by environmental awareness. The quantitative method allows objective analysis of variable relationships (Saunders et al., 2019). The descriptive method illustrates how the F&B industry applies product innovations and how consumers perceive sustainability efforts (Jabbour et al., 2020), while the verbatim method tests the causal links among key variables (Zhou et al., 2021). This combined approach is suitable for assessing sustainability practices in Indonesia's F&B sector.

### **Population and Sample**

This study targets Indonesian consumers who have purchased F&B products with environmental sustainability claims, reflecting the growing concern for eco-friendly consumption (Aryal et al., 2020). Using purposive sampling, respondents are selected based on their experience with environmentally labeled products and awareness of sustainability issues (Palinkas et al., 2021). There are no age restrictions, as long as participants meet the criteria. The minimum sample size is 100 respondents, following Hair et al. (2021), who recommend 100–200 samples for descriptive quantitative studies. This ensures data validity and reliability for broader generalization.

### **Data Collection Method**

Data is collected using online questionnaires distributed through social media platforms such as WhatsApp, Instagram, Facebook, and LinkedIn, allowing the study to reach respondents across various regions efficiently in terms of both time and cost (Hassan et al., 2021). The questionnaire is structured with close-ended items using a five-point Likert scale ranging from "Strongly Disagree" (1) to "Strongly Agree" (5). This scale is effective for measuring perceptions, attitudes, and individual awareness related to sustainability issues, as validated by Kurniawan (2020). Prior to data collection, the questionnaire undergoes validity and reliability testing to ensure that the items accurately measure the intended constructs and that responses are consistent across participants. Hair et al. (2018) emphasize the importance of these tests for ensuring data accuracy and reliability in quantitative research.

### **Research Instrument**

The research uses a closed-ended questionnaire with indicators adapted from prior studies. Consumer perception is measured by knowledge of sustainable products, trust in green claims, and satisfaction with eco-innovations (Chen et al., 2020). Product innovation includes the use of eco-friendly materials, biodegradable packaging, and green technologies (Khalili et al., 2022). Environmental awareness is measured by concern for environmental issues, responsible consumption, and support for regulations. Environmental sustainability is assessed through waste reduction, resource efficiency, and sustainability reporting, based on Tura et al. (2019) and tailored to Indonesia's F&B industry.

### **Data Analysis**

This study uses multiple linear regression with a mediation model to analyze the effects of consumer perception and product innovation on environmental sustainability, both directly and through environmental awareness. Data analysis includes validity, reliability, and classical assumption tests to ensure model accuracy. SPSS is used for data processing (Hair et al., 2018). The Sobel test or Bootstrapping assesses the mediating effect, while t-tests, F-tests, and  $R^2$  determine variable significance and contribution. This method follows Zhang et al. (2021) and aims to offer data-driven insights into sustainability factors in Indonesia's F&B industry.

### **Gap Analysis**

Gap analysis is used to identify the gap between current and ideal conditions. In this study, it evaluates discrepancies between consumer behavior and F&B industry practices in achieving environmental sustainability, based on frameworks like the SDGs and Norm Activation Model (NAM) (Clark & Clark, 2014). It helps reveal mismatches—such as between company green initiatives and consumer perceptions—and highlights areas where innovations or communication may fall short. Gap analysis also guides strategic recommendations by assessing whether green products are well-received, awareness is activated, and responsibility leads to sustainable actions, offering a holistic view of where sustainable behavior breaks down.

### **Justification for Using Path Analysis**

Path analysis is applied because it enables a clear understanding of both direct and indirect relationships among multiple variables. It is particularly suitable for testing mediation effects, which are central to this research (Hayes, 2018). Path analysis can reveal the strength and direction of each hypothesized relationship within a structural model, providing clarity on how consumer perception, product innovation, and ascribed responsibility influence sustainability behavior through environmental awareness. Mediating Variable and Model Structure This



study designates Environmental Awareness as a mediating variable in the proposed model. As defined by Schwartz's Norm Activation Model (NAM), individuals adopt environmentally responsible behavior when they are aware of the consequences of their actions and feel morally obligated to respond (Schwartz, 1977; De Groot & Steg, 2009). Environmental awareness, therefore, plays a pivotal role in activating these personal norms. The hypothesized mediation paths are as follows:

- Consumer Perception → Environmental Awareness → Environmental Sustainability
- Product Innovation → Environmental Awareness → Environmental Sustainability
- Ascribed Responsibility → Environmental Awareness → Environmental Sustainability

To test these mediation paths, the study uses Sobel test and Bootstrapping, which are recommended by Preacher & Hayes (2008) for testing indirect effects in mediation models.

## **RESULT DAN ANALYSIS**

### **Demographic Characteristics**

The questionnaire used in this study was answered by 150 respondents, and the respondents were compiled based on status, gender, age, and education. Based on the compilation in Table 1, 35.3% of the respondents were male, while the remaining 64.7% were female. This study was dominated by respondents aged 26–35 years, with 54.9% of respondents in that age group, 24.7% aged 17–25 years, 12.0% aged 36–45 years, 5.3% under 17 years, and 3.3% over 45 years old. Among all respondents, 47.3% held a bachelor's degree, while 44.7% had not yet attained one. In terms of occupation, the majority 30.7% were private employees, 26.7% were civil servants, and 21.3% were students or entrepreneurs.

**Table 1. Demographic Characteristics**

	n	%
<b><i>Gender</i></b>		
Male	53	35.3
Female	97	64.7
Total	150	100
<b><i>Age</i></b>		
Under 17 years old	8	5.3
17–25 years old	37	24.7
26–35 years old	82	54.7
36–45 years old	18	12.0
Over 45 years old	5	3.3
Total	150	100
<b><i>Education</i></b>		

	n	%
Diploma	25	16.7
Postgraduate (Master/PhD)	12	8.0
Bachelor's Degree	71	47.3
High School/Vocational School	34	22.7
Junior High School/Equivalent	8	5.3
<b>Total</b>	<b>150</b>	<b>100</b>
<b>Occupation</b>		
Civil Servant	40	26.7
Private Employee	46	30.7
Student/University Student	32	21.3
Entrepreneur	32	21.3
<b>Total</b>	<b>150</b>	<b>100</b>

Source: Autor(s) own compilation

### Validity and Reability

A preliminary study with a sample of 150 respondents was conducted to test the research instrument, including validity and reliability tests. The validity test is used to assess whether the methodology used in a study effectively measures what it is intended to measure (Shuttleworth, 2019). Meanwhile, the reliability test is used to determine the consistency and dependability of the test, as well as to assess whether the results are consistent and trustworthy (Sugiyono, 2020). An instrument is considered reliable if the Cronbach's Alpha value reaches or exceeds 0.70, indicating that the instrument can be trusted to produce stable and consistent data over time (Sugiyono, 2017). Table 2 below shows that each variable has a Cronbach's Alpha value greater than 0.7. In addition, Table 2 also provides further details on the validity and reliability tests using SPSS.

**Tabel 2. Summary of Validity Test & Reability Test**

Variabel	Item	Pearson Correlation	Cronbach's Alpha
Consumer Perception	CP1	0.847	0.986
	CP2	0.825	0.986
	CP3	0.862	0.986
	CP4	0.853	0.985
	CP5	0.827	0.985
	CP6	0.810	0.985
Product Innovation	PI1	0.891	0.985
	PI2	0.877	0.985
	PI3	0.909	0.985
	PI4	0.857	0.985
	PI5	0.841	0.985
	PI6	0.802	0.986
Ascribed Responsibility	AS1	0.889	0.985
	AS2	0.881	0.985
	AS3	0.871	0.985

	AS4	0.868	0.985
	AS5	0.864	0.985
	AS6	0.843	0.985
	EA1	0.877	0.985
	EA2	0.873	0.985
Enviromental Awareness	EA3	0.873	0.985
	EA4	0.823	0.986
	EA5	0.859	0.985
	EA6	0.833	0.985
	ES1	0.896	0.985
	ES2	0.884	0.985
Enviromental Sustainability	ES3	0.874	0.985
	ES4	0.862	0.985
	ES5	0.858	0.985
	ES6	0.843	0.985

Source: Autor(s) own compilation

### **Direct and Mediation Path Analysis**

The path analysis results indicate that the variables of consumer perception (X1), product innovation (X2), ethical perception (X3), and environmental awareness (Z) have a direct influence on sustainable consumption behavior (Y). Specifically, consumer perception (X1) has a direct effect on Y with a standardized coefficient of 0.172 ( $p < 0.05$ ), product innovation (X2) shows a stronger influence with a coefficient of 0.331 ( $p < 0.05$ ), and ethical perception (X3) also has a significant impact with a coefficient of 0.284 ( $p < 0.05$ ). In addition, the environmental awareness variable (Z) contributes significantly to Y with a coefficient of 0.212 ( $p < 0.05$ ).

The mediation effect analysis using the Sobel test indicates that only the paths  $X2 \rightarrow Z \rightarrow Y$  and  $X3 \rightarrow Z \rightarrow Y$  show significant mediation effects, with p-values of 0.008 and 0.020 respectively ( $p < 0.05$ ). This suggests that environmental awareness (Z) significantly mediates the relationship between product innovation (X2) and ethical perception (X3) on sustainable consumption behavior (Y). In contrast, the path  $X1 \rightarrow Z \rightarrow Y$  shows a p-value of 0.206 ( $p > 0.05$ ), indicating it is not statistically significant. Furthermore, the direct paths from X2 and X3 to Y remain significant despite the presence of mediation, indicating partial mediation. On the other hand, the influence of X1 on Y remains significant without mediation, suggesting that the direct path is more dominant and that mediation is not necessary to explain this relationship.

Thus, these findings highlight the importance of environmental awareness as a mediator, particularly in the context of product innovation and ethical perception, while consumer perception of corporate sustainability is already strong enough to influence behavior without requiring mediation.

**Table 3. Direct and Mediation Path Analysis**

variabel	Direct Effect Coef. (standardized)	Unstandardize Coeff. (B)	Std. Error
Z->Y	0.212	0.215	0.078
X1->Y	0.172	0.186	0.049
X2->Y	0.331	0.335	0.081
X3->Y	0.284	0.299	0.074
X1->Z	0.070	0.074 (a1)	0.052 (sa1)
X2->Z	0.618	0.619 (a2)	0.069 (sa2)
X3->Z	0.302	0.314 (a3)	0.074 (sa3)

**Hasil Uji Hipotesis**

Variabel	Sig.
CP->AR	0.000
PI->AR	0.000
EA->AR	0.000
ES->AR	0.007
CP->ES->AR	0.206
PI->ES->AR	0.008
EA->ES->AR	0.020

**Mediating**

X1->Z->Y	0.015
X2->Z->Y	0.106
X3->Z->Y	0.100

Source: Author(s) own compilation

**F<sup>2</sup> Test**

The F<sup>2</sup> test is used to assess the contribution of the effect of each independent variable on the dependent variable by observing the change in the R<sup>2</sup> value when one of the variables is removed from the model. This test measures the effect size of the predictor variables, with threshold values of 0.02, 0.15, and 0.35 representing small, medium, and large effect sizes, respectively (Hair et al., 2014). The F<sup>2</sup> test was conducted in this study and compiled in Table 3 below. The significance value is 0.000, which means the sig. value of 0.000 < 0.05. Based on this decision rule, it can be concluded that the variables environmental awareness, consumer perception, ascribed responsibility, and product innovation have a significant influence on the dependent variable, environmental sustainability behavior.

**Table 4. F<sup>2</sup> Test Results**

Model	Sum of Squares	ANOVA <sup>a</sup>		F	Sig.
		df	Mean Square		
Regression	3801.464	4	950.366	908.818	.000 <sup>b</sup>
Residual	151.629	145	1.046		
Total	3953.093	149			

Source: Autor(s) own compilation

### R<sup>2</sup> Test

Based on the results of the regression test, the R<sup>2</sup> value is 0.956, which means that 95.6% of the variation in environmental sustainability is explained by the independent variables. After the mediator was added, R<sup>2</sup> increased to 0.958, showing an increase of 0.2%. This increase indicates that environmental awareness strengthens the model, although the contribution is relatively small.

**Table 5. R<sup>2</sup> Test Results**

Model	R Square	Adjusted R Square	Std. Error of the Estimate
1	.979 <sup>a</sup>	.958	1.058
1	.978 <sup>a</sup>	.956	1.085

Source: Autor(s) own compilation

### CONCLUSION

This study shows that consumer perceptions, product innovation, and responsibility have a significant impact on consumption patterns in Indonesia's food and beverage industry. Product innovation and responsibility that are developed bring about an impact, either gradually or rapidly, through environmental monitoring. On the other hand, consumer perception has a direct influence without the use of a mediator, indicating the ability of perception to shape independent action. These findings affirm the relevance of the Norm Activation Model (NAM) in explaining consumer psychological mechanisms in this context. However, it is important to carefully consider the geographical context and respondent characteristics when generalizing the results of this study.

### Managerial Implication

This study offers key insights for F&B industry managers in shaping long-term strategies. First, prioritize green product innovation using organic materials and sustainability certifications to boost consumer perception and awareness. Second, base communication strategies on customer feedback to highlight environmental impact. Third, implement consumer education to strengthen environmental awareness. Lastly, target younger segments like Gen Z

and millennials, who show higher concern for sustainability, to create more focused and effective marketing.

## **SUGGESTIONS**

Based on the results of this study, companies in the food and beverage (F&B) industry are advised to actively involve their customers in sustainability campaigns to build positive perceptions and enhance their sense of environmental responsibility. Product innovation should not only focus on technology or production efficiency but also be designed in a way that makes its environmental benefits easily understood and directly experienced by customers. This is important to ensure that customers are not only aware of the innovations but also motivated to adopt them in their daily lives. Furthermore, a more environmentally responsible industry ecosystem can be established if governments and industry associations implement firm policies and support public education programs that emphasize the importance of sustainable consumption.

## **Limitation and Future Research**

This study has several limitations that should be acknowledged. First, the geographical focus is restricted to Indonesia, which limits the generalizability of findings across different cultural or regional contexts that may shape consumer perceptions and sustainable behaviors. Second, the reliance on online survey methods may result in respondent bias and underrepresentation of individuals who are less active on digital platforms. Third, the scope of psychological analysis is limited to environmental awareness as a mediating variable, without incorporating other influential factors such as personal attitudes, values, or perceived behavioral control. Future research is recommended to expand the scope through cross-cultural or cross-regional comparisons and longitudinal studies that can capture changes in consumer behavior over time, particularly in response to environmental policies or technological innovations. Additionally, integrating multiple psychological constructs and employing mixed-methods approaches combining quantitative surveys with qualitative techniques such as interviews or focus groups may offer deeper insights into consumer motivations, barriers, and behavioral patterns. These enhancements will contribute to a more comprehensive and contextually adaptive understanding of sustainable consumption behavior.

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