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## The Influence of Eco-Label on Environmental Concern of Local Skincare Brand Consumers in Aceh with Product Attributes and Perceived of Effectiveness as Mediation

Jihan Fadhila<sup>1</sup>, Hendra Halim<sup>2\*</sup>, Burhanis Sulthan DM<sup>3</sup>

<sup>1,2,3</sup> Fakultas Ekonomi dan Bisnis, Universitas Syiah Kuala, Banda Aceh, Indonesia

Email: [hendra.halim@usk.ac.id](mailto:hendra.halim@usk.ac.id)

\*Corresponding Author

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### ABSTRACT

The purpose of this study is to examine how consumers of local skincare brands in Aceh are affected by eco-labels regarding their environmental concerns, using product features and perceived efficacy as a moderator. This study employed primary data for its analysis. This research applies a quantitative method with a population of local skincare brand users in Aceh. Using purposive and non-probability sampling strategies, 104 respondents made up the overall sample size. With the use of SPSS, mediation regression is a data analysis approach. The study's findings demonstrate that environmental concern is positively impacted by the eco-label variable. The impact of eco-labels on environmental concern is partially mediated by perceived efficacy and product attribute factors.

### 1. Introduction

Environmental concern has changed the consumption pattern of the people of Indonesia, from consuming conventional services or goods to consuming environmentally friendly services or goods (Chin et al., 2018). Green products, or eco-friendly items, like packaging, are those that don't harm the environment and can be recycled (Paul et al., 2016).

Consumers' desire to use green products is not a discourse as shown by the Nielsen report where 73 percent of customers are ready to switch to environmentally friendly products and 41 percent prefer products that have organic or natural components. In addition, consumers who

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already use green products feel that their purchases can help preserve the environment and also like green products (Media Indonesia, 2021).

As a result of the "Katadata Consumer Survey on Sustainability" organized by the Katadata Insight Center (KIC) in 2021, food is the most purchased product. As many as 56.7 percent of them have purchased food as an environmentally friendly product in the past year. Among other environmentally friendly goods that are widely purchased are household goods as much as 47.8 percent, clothes 37.4 percent, as many as 30.6 percent health products and cosmetics (skincare). Then electronic goods 19.2 percent and vehicles 8.3 percent (Databoks, 2021).

A Statista analysis estimates that Indonesia's income from body care and cosmetics items would rise annually. In 2020, the revenue was close to US\$7 billion or around Rp100.02 trillion (with an exchange rate of Rp14,381/US\$). It is projected to rise by 7.25 percent to US\$7.46 billion in 2021. It is anticipated that sales of this product would increase by 7.29 percent to reach US\$8 billion a year later. In 2023, the revenue is estimated to increase by 7.26 percent to US\$8.6 billion and is predicted to grow again by 5.64 percent to reach US\$9.07 billion in 2024. By 2025, this revenue is expected to increase by 5.65 percent to US\$9.58 billion (Data Indonesia, 2022).

This prediction is consistent with Indonesians' growing interest in beauty and body care goods, which are increasingly diversified to meet the high market demand. Cosmetic and skincare trends around the world, including in Indonesia, are harmful to the environment. According to Lyfe with Less Indonesia, the waste of beauty products such as cosmetics and skincare accounts for 50 percent of waste in Indonesia. According to Zero Waste Week research, half of the plastic waste comes from cosmetic containers. Lyfe with Less Indonesia states that around 120 billion cosmetics are produced worldwide. This means that the more cosmetics are produced the more plastic is thrown away. Complicating matters, of the hundreds of billions of cosmetic product packaging, only 9 percent are recycled and 79 percent end up in landfills. Consumers usually don't know what they're buying, so many throw it away before using it (Envira.id, 2023).

This condition is very concerning considering that Indonesia's waste management system is not yet effective. In addition, the waste policy that is not firm is still not realized by the public. If not handled properly, used plastics, skincare products, and cosmetics can pollute the environment, not only the packaging, but also the materials left in the container. Used plastic cosmetic bottles will pile up if not treated with plastic and other material recycling solutions. On the other hand, the remnants of skincare products that are still stuck in the container contain chemicals that can contaminate water and soil. Therefore, cosmetic waste must be taken care of properly (Waste4Change, 2022).

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The application of green marketing in developing countries is still very limited. Markets and companies that offer eco-friendly products are still rare, so this phenomenon is interesting to study in developing countries (Agustini et al., 2021). Meanwhile, Indonesia has a specific target related to the sustainable development goals (SDGs) that must be achieved by 2030. In addition, consumer interest in natural and eco-friendly beauty products is increasing (Pangestu, 2021), encouraging cosmetics and skincare companies to develop sustainable beauty concepts (Lin et al., 2018). Blair (1992) concluded the meaning of 'eco-friendly' as sympathy for the environment in the production process and product life cycle, good use of natural resources, biodegradable packaging, reduction in the use of non-renewable resources, and the use of natural basic materials.

Some companies in Indonesia also see sustainability opportunities to make eco-friendly products and apply the concept in their production processes (Molina-Azorin et al., 2009). These companies include companies engaged in the beauty industry. Various local beauty and skincare brands that believe in the concept of sustainable beauty are starting to emerge. Lutfi (2013) said that "local" can be defined as the surrounding area to produce goods or services, or local areas. Therefore, local cosmetics and skincare products are beauty brands that are established, marketed, and made in Indonesia.

Several local cosmetics and skincare brands have adopted sustainability principles, which are evaluated from the ingredients used to programs that support sustainability such as Somethinc, Avoskin, Npure, Keina Beauty, Klen & Kind, Scarlett Whitening, REI Skin, Envygreen, Aizen Beauty Care, Control Zero, Skinoia, Oh My Skin and Segara Natural (Lindungi Hutan, 2022). The local skincare brands that are the focus of this study are Somethinc and Avoskin, referring to the data on the purchase of the best-selling skincare products in E-commerce, namely Somethinc achieved a total sales of IDR53.2 billion and managed to occupy the first position while Avoskin managed to achieve sales with a total of IDR 28 billion (Compas.co.id, 2022).

Somethinc is one of the beauty brands that recognizes Skinproof's facilities regarding clinical trials and supporting beauty claims, to ensure that Somethinc products are safe and function properly, they have undergone a testing evaluation at Skinproof. Arya Noble's subsidiary, Skinproof itself focuses on consumer research and cosmetic evaluation (Info Brand, 2023). In addition, Somethinc collaborates with Waste4Change to get used skincare packaging. They do this through dropboxes provided at their various outlets. Customers who collect five empty packages will get a voucher worth IDR 10,000 as compensation (Info Brand, 2023).

Avoskin is a local beauty brand under the auspices of PT. Avo Innovation & Technology. The brand has chosen to follow the principle of "green beauty" since 2020. The concept of green beauty products applied by Avoskin emphasizes the use of care and beauty products that are not

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only safe for the body but also do not damage the environment caused by the raw materials made from plants (Zahra & Hardiyanto, 2022). Avoskin focuses on improving the quality of its products through the use of clean and more environmentally friendly raw materials. In terms of packaging, Avoskin uses environmentally friendly plastics and long-lasting materials, one of which comes from sugarcane. In terms of composition, Avoskin is committed to making its products free from excessive ingredients. The product does not contain alcohol, SLS, parabens, perfumes, silicones, and no animal testing is done (Avoskinbeauty.com).

The increasing environmental concern encourages users to look for products with eco-labels creating a good influence between environmental concern and consumer awareness in choosing eco-friendly products. According to Ackermann (1976), in the case of complex industrial products, not only buyers cannot know the source or the manufacturing process of the product, moreover, the product procurement authorities are unable to discern between environmentally friendly items and numerous subtly promoted goods.

Eco-labels are one of the most identifiable aspects of green products. According to McKenzie-Mohr (2002) and Thøgersen & Olander (2002), eco-labels can promote openness when making claims about environmentally friendly items because consumers frequently struggle to recognize products that include environmentally friendly components. According to the American Marketing Association (2018), product attributes are the characteristics that distinguish a product from others. In addition to eco-friendly properties, other attributes include health, quality, taste, price, and brand equity. Because the background of the product affects consumers, they often consider the environmental attributes of the product (Schuitema & De Groot 2014).

Although Eco-labels are useful for demonstrating one of the knowledge about environmental concerns, the role of eco-labels is also useful in increasing the perceived consumer effectiveness in the context of green consumption (Taufique et al., 2016). Consumer effectiveness perception is defined as an internal evaluation process in which individuals feel they can contribute to environmental issues (Kim & Choi, 2005). A significant contribution of consumer effectiveness perceptions to environmental research, particularly prosocial behavior, is made. Scientific interest has long been drawn to the connection between perceived consumer effectiveness and environmental consciousness (Cho et al., 2013; Tan, 2011).

According to Song et al. (2020), eco-label information influences perceptions of consumer effectiveness and product attributes, drawing on prior research that examined the mediating role of product attributes, perceived consumer effectiveness, and environmental concern in green purchasing, product attributes and consumer effectiveness perceptions also affect environmental concerns and product attributes and consumer effectiveness perceptions

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significantly moderate the impact of eco-labels on customer perceptions of product efficacy and environmental concerns, as well as the relationship between product features and environmental concerns. The same results were also carried out by Djajadiwangsa and Yeshika (2022) and Arsyistawa and Hartono (2022).

In the research of Song et al. (2019) and Sabilla (2022) found that product attributes have no effect on environmental concerns. According to the definition given by Hao & Song (2020), environmental concern is an individual's awareness of environmental issues as well as support for efforts to address them, including the readiness to personally contribute to solutions. This shows that environmental care is more focused on concrete actions and commitments to the environment.

As explained above, there is a discrepancy from the results of the previous study, so this is interesting to do. In addition, this research was conducted with a special consumer target of local skincare brands Somethinc and Avoskin in Aceh. In this context, it is important to understand how consumers in Aceh respond to eco-labels in their skincare products.

## **2. Literature Review**

### **Environmental Concern**

Environmental concern can be defined as a view that includes overarching values towards the natural environment, concerns about the future of the environment, and the negative impact generated by human activities on the environment (Vainio and Paloniemi, 2014). Environmental concern is the knowledge that excessive use of natural resources and pollution caused by human activity can have a negative impact on the sustainability of the environment (Kalafatis et al., 2013). Andreas (2018) states that consumers who have a high level of environmental concern will often choose to use green products. People who are more environmentally conscious tend to choose to buy items that have eco-friendly labels, even though sometimes concern for environmental issues cannot directly encourage pro-environmental actions.

### **Eco-Label**

Priansa (2017) states that eco-labels can be in the form of statements, symbols, symbols, or graphics found on product packaging. Eco-label which combines the word eco which refers to the environment then label means a sign that is used to promote environmentally friendly products and assist consumers in distinguishing environmentally friendly products from those

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that are not (Lestiani et al., 2020; Setyaningrum et al., 2015). According to research by Gosselt et al. (2019), eco-labels are defined as easily recognizable symbols on products or packaging that show the brand or quality of green products.

### **Product Attributes**

Product attributes refer to the characteristics that define and rather a product from others (American Marketing Association, 2018). In addition to considering eco-friendly attributes, consumers also pay attention to aspects such as health, quality, taste, price, and brand reputation. Important attributes such as price, quality and brand are the main factors considered by consumers when choosing products with eco-labels (Dubihlela & Ngxukumeshe, 2016). Product characteristics, as opposed to traditional product attributes like product quality, have a bigger importance in the context of eco-labels (Song et al., 2019).

### **Perceived Consumer Effectiveness (PCE)**

The capacity to make judgments based on the outcomes of confidence in the general efficacy of consumer choices is known as PCE (Dehgani & Tumer, 2015). The degree to which consumers think their actions have an impact on resolving an issue is known as PCE (Ellen et al., 1991). While some people lack confidence in their abilities to effect change, others think that their activities produce specific effects that allow them to effect change (Widodo & Qurniawati, 2015).

### **Interrelationships Among Enviromental Concern, Eco-label, Product Attributes and PCE**

Eco-labels have a significant impact on consumers' attitudes and environmental concerns (Song et al., 2019). These results confirm that eco-labels play an important role in developing environmental attitudes and concerns. McDougale et al. (2011) stated that individuals are more likely to be aware of the need for environmental preservation in the context of sustainable nature. Eco-labels have a positive and significant impact on product attributes (Sabilla and Hendayani, 2022; Song et al., 2019). This shows that eco-labels as an information tool affect consumer perceptions of product characteristics. Djajadiwangsa and Yeshika (2022) and Song et al. (2020) revealed that a product equipped with an eco-label can affect the PCE. With eco-labels, consumers can understand the significance and reasons behind the importance of environmental attitudes (Taufique et al., 2017). Eco-labels that present information about environmental attitudes serve as a means for young consumers to internalize the concept of self-efficacy and build confidence in the role of individuals in overcoming environmental problems (Kinnear et al., 1974; Schunk, 1989; Song et al., 2020).

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H1 : Eco-label has positive and significant effect on environmental concern

H2 : Eco-label has positive and significant effect on product attributes

H3 : Eco-label has positive and significant effect on PCE

Product attributes have an influence on environmental concerns (Arsytawa and Hartono, 2022). The statement that the attributes of the product have a positive effect on environmental concern is accepted. This result is the same as a study by Gan et al. (2008) which shows that customers who care about the environment tend to buy environmentally friendly products. Pohjolainen et al. (2016) also discussed the positive relationship between product attributes and environmental concerns.

H4 : Product attributes has positive and significant effect on environmental concern

PCE towards environmental concern (Arsytawa and Hartono, 2022). Therefore, the perceived effectiveness of consumers has a positive effect on environmental concerns. As found in the research Vermeir & Verbeke (2006) and Tan (2011) the relationship between consumer perception of effectiveness and environmental concern is significant. Consumers who have a high perception of consumer effectiveness will show positive concern for the environment, while consumers who have a low perception of consumer effectiveness will tend to care less about the environment.

H5 : PCE has positive and significant effect on environmental concern

The influence of product attributes based on eco-label information on environmental concerns results that product attributes can mediate eco-labels on environmental concerns are confirm by Song et al. (2020).

H6 : Product attributes mediates the effect of eco-labels on environmental concern

In the research of Song et al. (2020), confirmation of the influence of consumer perception of effectiveness based on eco-label information on environmental concerns resulted in the perception of consumer effectiveness mediating the influence of eco-labels on environmental concerns.

H7 : PCE mediates the effect of eco-labels on environmental concern

### **3. Methods**

This study uses a quantitative method. The data of this study was collected through a questionnaire from consumers of local skincare brands something and avoskin in Aceh. In

selecting respondents, this study uses a purposive sampling technique with the criteria of the Acehese community, especially consumers of local skincare brands Somethinc and Avoskin. Data was obtained from 104 respondents, samples were taken using the purposive sampling method.

From the questionnaire that was satisfactorily completed, the sample was dominated by women, namely 97 respondents (93.3 percent) and the rest of the male respondents, namely 7 respondents (6.7 percent). Sample profiles are shown in Table 1.

**Table 1.** Demographic Profile of the Respondents

No	Variable	Content	Frequency	Percentage
1	Gender	Male	97	93,3
		Female	7	6,7
2	Age	< 17 Years Old	6	5,8
		18 – 22 Years Old	66	63,5
		23 – 27 Years Old	30	28,8
		28 – 32 Years Old	2	1,9
		33 – 37 Years Old	0	0
		38 – 42 Years Old	0	0
		>42 Years Old	0	0
3	Domicile	Banda Aceh City	21	20,2
		Aceh Besar	8	7,7
		Pidie	13	12,5
		Pidie Jaya	9	8,7
		Bireuen	8	7,7
		Sabang	5	4,8
		Lhokseumawe City	7	6,7
		Nagan Raya	5	4,8
		Bener Meriah	2	1,9
		Langsa City	4	2,9
		Aceh Tamiang	4	2,9
		North Aceh	5	4,8
		West Aceh	2	1,9
South Aceh	4	3,8		

Regarding age, the most respondents (63.5%) were between 18-22 years old plus 28.8% were 23-27 years old. Furthermore, research projects were carried out in various domiciles, with the most dominant domicile being Banda Aceh City (20.2%). The majority of respondents have an income below IDR 1,000,000 (59.6%). Finally, in relation to the purchase of skincare products, most respondents (54.8%) bought both products, namely Somethinc and Avoskin, and 31.7% bought only Somethinc products. A thorough analysis of consumer research on the skincare products Somethinc and Avoskin served as the foundation for the development of the questionnaire. This study used an impact scale created by Liu et al. (2018) to quantify positive and negative effective states. The first part consists of 4 statements about environmental concerns, the

second part consists of 3 statements about eco-labels, the third part consists of 3 statements about product attributes and 3 statements about the perception of effectiveness for the fourth part. That made a total of 13 statements. Hierarchical Linear Modelling (HLM) was used to analyse the data. According to Woltman, Feldstain, MacKay, and Rocchi (2012), this sophisticated version of ordinary least squares regression (OLS) is utilized to examine variation in result variables when the predictor variable is at the hierarchical level of the variable. Because the data for the participants are arranged at several levels, HLM is an ideal match for the study's design.

#### 4. Result and Discussion

##### Validity and Reliability Test

Validity testing, it can be seen in Table 2 that all items in the variables in this study were declared valid in the validity test via SPSS software. There for, they are suitable for further analysis. The questionnaire is declared valid because  $r_{\text{value}} > r_{\text{table}}$ , where  $r_{\text{table}}$  is 0.193, and the significance value is  $< 0.05$ . The results of the reliability test in Table 2 show that the Cronbach's Alpha value for all variables exceeds the standard Cronbach's Alpha value namely 0.60, so it can be said to be reliable.

**Table 2** Validity and Reliability Test

No	Indicator	R <sub>value</sub>	Cronbach Alpha	Remarks
	Environmental Concern (Y)		0.802	Reliable
1	Y <sub>1</sub>	0.743		Valid
2	Y <sub>2</sub>	0.848		Valid
3	Y <sub>3</sub>	0.761		Valid
4	Y <sub>4</sub>	0.684		Valid
	Eco-Label (X)		0.836	Reliable
1	X <sub>1</sub>	0.791		Valid
2	X <sub>2</sub>	0.867		Valid
3	X <sub>3</sub>	0.810		Valid
	Product Attribute (Z <sub>1</sub> )		0.820	Reliable
1	Z <sub>11</sub>	0.768		Valid
2	Z <sub>12</sub>	0.820		Valid
3	Z <sub>13</sub>	0.768		Valid
	Perceived Consumer Effectiveness (Z <sub>2</sub> )		0.840	Reliable
1	Z <sub>21</sub>	0.852		Valid
2	Z <sub>22</sub>	0.863		Valid
3	Z <sub>23</sub>	0.781		Valid

##### Normality Test

Table 3 explains the results of the normality test that uses the Kolmogorov-Smirnov Nonparametric test to check the distribution of data. In the event that the significance value  $> 0.05$  in the normality test shows that the data is normally distributed, the conclusion is based on

the significance value. The residual data is regularly distributed, as indicated by the significance value of this normality test, which is 0.120 or less than 0.05.

**Table 3** Normality Test

<b>One-Sample Kolmogorov-Smirnov Test</b>		Unstandardized Residual
N		104
Normal Parameters <sup>a,b</sup>	Mean	,0000000
	Std. Deviation	1,09852498
Most Extreme Differences	Absolute	,078
	Positive	,069
	Negative	-,078
Test Statistic		,078
Asymp. Sig. (2-tailed)		,120 <sup>c</sup>

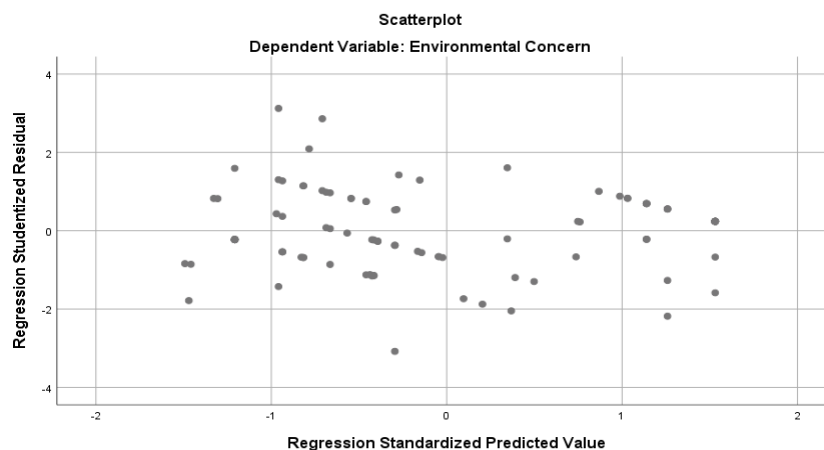
**Multicollinearity and Heteroscedasticity Test**

Table 4 demonstrates that there is no significant association between any of the independent variables, since each one has a tolerance value greater than 0.10. Thus, it can be said that the independent variables in this study did not exhibit multicollinearity.

**Table 4** Multicollinearity Test

<b>Independent Variables</b>	<b>Tolerance</b>	<b>VIF</b>
Eco-label	.631	1.585
Product Attribute	.652	1.534
Perceived Consumer Effectiveness	.604	1.657

Because there was no discernible pattern among the dots on the plot above and below the number 0 on the Y axis, the heteroscedasticity test findings in this research indicated that there was no heteroscedasticity issue in the regression model.



**Figure 1.** Heteroscedasticity Test

**Analytical Regression**

**Table 5** Analytical Regression

Model	Influence Between Variables	$\beta$	Sign	Adj.R <sup>2</sup>
1	Eco-label variable affects the environmental concern variable	0,599	0,000	0,353
2	Eco-label variable affects the product attributes variable	0,504	0,000	0,247
3	Eco-label variable affects the perceived consumer effectiveness variable	0,556	0,000	0,303
4	Product attribute variables affect the environmental concern variable	0,589	0,000	0,341
5	Perceived consumer effectiveness variable affects the environmental concern variable	0,682	0,000	0,460

The table above shows that eco-labels have a significant influence on environmental concerns, with a probability value of  $< 0.05$  and a regression coefficient ( $\beta$ ) value of 0.599. In addition, the value of the adjusted R square determination coefficient of 0.353 percent shows that eco-labels have the ability to explain the variation of 3.53 percent in environmental concerns. Thus, these results support hypothesis 1 that eco-labels affect environmental concerns. The findings of this study are consistent with those of Song et al. (2019), who demonstrate that eco-labels have a major impact on environmental concerns. According to Aman et al. (2012), commitment to the environment, actual conduct, and emotional response are all strongly correlated with environmental concern. On the other hand, this finding differs with that of Sabilla and Hendayani's (2022) study, which concluded that eco-labels do not significantly and favorably affect environmental concerns.

Eco-labels have a significant influence on product attributes, with a probability value of  $< 0.05$  and a regression coefficient ( $\beta$ ) value of 0.504. In addition, the value of the adjusted R square determination coefficient of 0.247 percent shows that eco-labels have the ability to explain 24.7 percent variation in product attributes. Thus these results support hypothesis 2 that eco-labels affect product attributes. The results of this study hypothesis 2 was accepted, in line with the results of Sabilla and Hendayani's (2022) research which resulted that eco-labels have a positive and significant impact on product attributes. Eco-labels serve to inform and encourage consumers about the features of environmentally friendly products (Bougherara & Combris, 2009; Clemenz,

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2010). Research Song et al. (2020) also supports these findings by showing that green labels serve as an important indicator in communicating eco-friendly product features to Generation Z.

Eco-labels have a significant influence on PCE, with a probability value of  $< 0.05$  and a regression coefficient ( $\beta$ ) value of 0.556. In addition, the value of the adjusted R square determination coefficient of 0.303 percent indicates that eco-labels have the ability to explain 30.3 percent variation in PCE. Thus these results support hypothesis 3 that eco-labels affect PCE. The results of this study are in line with the results of Song et al. (2020) which show that PCE influenced by products with eco-labels. Eco labels that include information about eco-friendly behavior help young people create the concept of self-efficacy and build confidence about their responsibility for environmental issues (Kinnear et al., 1974; Schunk, 1989; Song et al., 2020).

Product attributes have a significant influence on environmental concerns, with a probability value of  $< 0.05$  and a regression coefficient ( $\beta$ ) value of 0.589. In addition, the value of the adjusted R square determination coefficient of 0.341 percent shows that the product attribute has the ability to explain the 34.1 percent variation in environmental concerns. Thus these results support hypothesis 4 that product attributes affect environmental concerns. The findings of this research are consistent with the findings of Arsyntawa and Hartono (2022) which show that product attributes affect environmental concerns. Consumers' concern for the environment tends to prefer environmentally friendly products, as expressed by Gan et al. (2008). Pohjolainen et al. (2016) also stated that there is a positive relationship between product attributes and environmental concerns. However, research by Song et al. (2019) shows that product attributes do not have a significant influence on environmental concerns, perhaps because actualization factors, emotions, and consumer commitment to the environment are considered more important than the attributes of the product itself. In contrast, research by Song et al. (2020) found that product attributes can influence environmental concern as one of the ways consumers support environmental initiatives.

PCE has a significant influence on environmental concerns, with a probability value of  $< 0.05$  and a regression coefficient ( $\beta$ ) value of 0.682. In addition, the value of the adjusted R square determination coefficient of 0.460 percent shows that the PCE has the ability to explain the 34.1 percent variation in environmental concerns. Thus these results support hypothesis 5 that the PCE affects environmental concerns. The results of this study are in line with the results of Song et al. (2020) and Arsyntawa and Hartono (2022), which show that environmental concerns is related to the PCE. Research by Vermeir and Verbeke (2006) found a significant relationship between PCE and environmental concerns. Tan (2011) stated that consumers with high PCE tend to have a positive attitude towards the environment, while those with low PCE usually careless about environmental issues.

Furthermore, hypothesis 6 predicts the effect of mediation using regression analysis. The effect of the independent variable, namely Eco-label (X), on the dependent namely environmental concern (Y), when the mediator, namely the product attribute ( $Z_1$ ), was tested simultaneously and completely. Based on table 6, the eco-label regression coefficient value on environmental concern is in the second stage with a value ( $\beta$ ) of 0.599 at a significance of  $<0.05$ . The effect of eco-labels on environmental concerns remained significant at a value of  $0.000 < 0.05$  with a value of ( $\beta$ ) 0.405. Therefore, hypothesis 6 is supported because the product attribute variable mediates the influence of eco-labels on environmental concerns in a partial mediation. The findings of this research are consistent with the findings of Song et al. of (2020), which confirms the influence of product features based on eco-labels on environmental concerns. Previous research (Testa et al., 2015) found that eco-labels help convey consumers' attitudes and environmental concern. However, mediators relating to all three components of environmental concern are rarely examined simultaneously.

**Tabel 6** Mediation Effects of Product Attributes

Stages of Equation	Product Attributes ( $Z_1$ )	Environmental Concern (Y)	
	Stage 1 ( $\beta$ )	Stage 2 ( $\beta$ )	Stage 3 ( $\beta$ )
<i>Eco-label</i> (X)	0,504*	0,599*	0,405*
Product attributes ( $Z_1$ )			0,385
R	0,504	0,599	0,685
R2	0,254	0,359	0,469
$\Delta R^2$	0,247	0,353	0,459

Hypothesis 7 analyzes the mediation effect through regression analysis. The following table shows the simultaneous and complete tests of the independent variables eco-label (X) and environmental concern dependent (Y) and PCE mediators ( $Z_2$ ).

**Tabel 7** Mediation Effects of Perceived Consumer Effectiveness

Stages of Equation	Perceived Consumer Effectiveness ( $Z_2$ )	Environmental Concern (Y)	
	Stage 1 ( $\beta$ )	Stage 2 ( $\beta$ )	Stage 3 ( $\beta$ )

Eco-label (X)	0,556*	0,599*	0,318*
Perceived Consumer Effectiveness (Z <sub>2</sub> )			0,505
R	0,556	0,599	0,731
R <sup>2</sup>	0,309	0,359	0,535
ΔR <sup>2</sup>	0,303	0,460	0,526

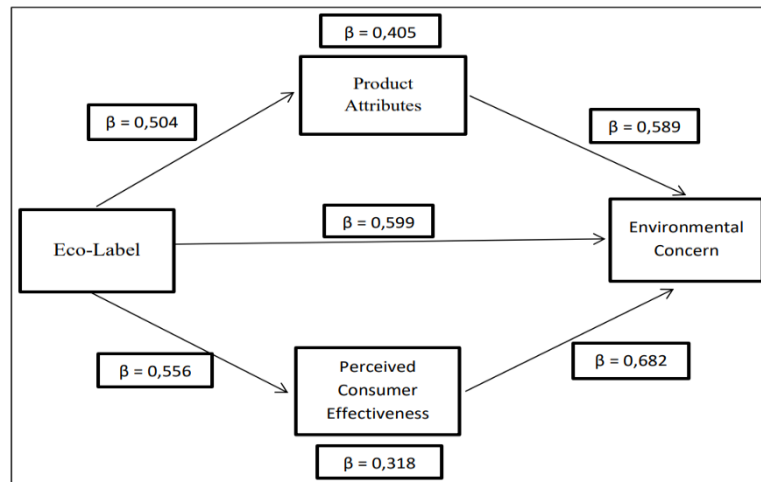
Based on the table 7, the value of the regression coefficient of eco-labels on environmental concerns is 0.599 in the second stage with a significance of <0.05. The value of the eco-label regression coefficient on environmental concern remained significant at a value of 0.000 <0.05 with a value of (β) 0.318. Therefore, hypothesis 7 is supported because the variable of PCE mediates the influence of eco-labels on environmental concerns in a partial mediation. The findings of this research are consistent with the findings of Song et al. (2020). This confirms the influence of PCE on environmental concerns by Eco-labels. Mediation analysis shows that the influence of Eco-label on environmental concerns is mediated by PCE. kalafat

**Table 8** Research Hypothesis Testing Results

	<b>Hypothesis</b>	<b>Information</b>
<b>H1</b>	Eco-label variable affects the environmental concern variable	Accepted
<b>H2</b>	Eco-label variable affects the product attributes variable	Accepted
<b>H3</b>	Eco-label variable affects the perceived consumer effectiveness variable	Accepted
<b>H4</b>	Product attribute variable affect the environmental concern variable	Accepted
<b>H5</b>	Perceived consumer effectiveness variable affects the environmental concern variable	Accepted
<b>H6</b>	Product attribute variable partially mediates the influence of the eco-label variable on the environmental concern variable	Accepted
<b>H7</b>	Perceived consumer effectiveness variable partially mediates the influence of the eco-label variable on the environmental concern variable	Accepted

The following is an overview of the relationship between eco-label variables on

environmental concern with product attributes and perceived consumer effectiveness as a mediator that can be observed in the following framework of thought:



**Figure 1.** Relationship among the constructs

## 5. Conclusion

A conclusion was drawn from the study based on the findings of the hypothesis test, namely the first hypothesis (H1), which found that eco-labels significantly affect environmental concerns. According to the findings of the second hypothesis test (H2), eco-labels significantly affect the characteristics of products. The third hypothesis test's (H3) findings demonstrated that eco-labels significantly impacted PCE. According to the findings of the fourth hypothesis test (H4), product characteristics significantly influence environmental concerns. According to the findings of the fifth hypothesis test (H5), PCE significantly affects environmental concerns. The sixth hypothesis test (H6) yielded the following conclusion: product qualities mitigate the impact of eco-labels on environmental concerns to some extent. According to the findings of the seventh hypothesis test (H7), PCE mediates the impact of eco-labels on environmental concerns to some extent.

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