





Original Research

Understanding Green Cosmetic Adoption in Indonesia: Environmental Consciousness and the Theory of Reasoned Action Perspective

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Received 17 August 2023 Revised 22 October 2023 Accepted 28 October 2023

Abstract

Amidst growing concerns about environmental degradation, global trends increasingly emphasize the urgency to adopt eco-friendly consumption patterns. This paradigm shift drives the emergence of sustainability-centered products, especially in the cosmetics sector. Despite experiencing substantial growth, the eco-friendly cosmetics industry in Indonesia continues to grapple with various obstacles that require resolution. In addition, researchers' attention to green cosmetics still needs to be increased. This study integrates environmental consciousness into the Theory of Reasoned Action (TRA) framework to bridge this research gap. The main objective is to comprehensively examine consumers' intention to purchase environmentally friendly cosmetic products. By employing a quantitative approach, we surveyed a sample of 305 respondents from Indonesia. The collected data was then analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) technique to validate the hypotheses. The results showed that environmental consciousness and subjective norms directly and significantly affect consumer attitudes. Likewise, environmental consciousness, subjective norms, and consumer attitudes influence consumers' intention to purchase green cosmetics. In addition, it was revealed that consumer attitude serves as a potential mediator in mediating the effect of environmental consciousness and subjective norms on consumer purchase intention. This study offers insights into sustainable cosmetics. Companies can use this to enhance marketing strategies for environmentally conscious products.

Keywords: Environmental Consciousness, Green Purchase Intention, Green Cosmetic, Subjective Norms, Theory of Reasoned Action (TRA) Integration.

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Introduction

The advancements in social sciences and technology have brought about significant changes in societal life. While these changes offer convenience and comfort, their impacts also carry the potential emergence of severe environmental issues (Nam et al., 2017). The gradual deterioration of environmental conditions poses a threat to the fragile environmental balance of nature. In response, the current global trends increasingly emphasize environmental protection and encourage the adoption of environmentally friendly consumption patterns in alignment with the evolution of nature (Akturan, 2018).

The global initiative to produce and market environmentally friendly products continues to evolve in response to the increasing demand (Leonidou & Skarmeas, 2015). This drives a shift in consumer purchasing behavior from conventional patterns toward choosing more environmentally friendly products (Quoquab et al., 2019). This paradigm shift is also evident in the cosmetic industry, where the global demand for sustainable cosmetics grows (Ali et al., 2022; Ghazali et al., 2017). According to Statista data (Statista, 2022), the estimated global market value of environmentally friendly cosmetics will reach USD 54.5 billion by 2027, up from the USD 35 billion figure in 2021.

The growth trend in the cosmetic industry is also observed in Asia, particularly in Indonesia. Currently, Indonesia possesses a local cosmetic market with a value of approximately USD 6.3 billion. This figure continues to experience an increase with an annual growth rate of 5.81 percent (Mutia, 2022). This growth is primarily driven by the continuously expanding demand, especially from the middle segment in Indonesia, which seeks cosmetic products that are not only of high quality but also financially accessible. As a result, this sustained growth contributes to the overall expansion of the cosmetic sector and personal care products (Chin et al., 2018).

The increasing consciousness of the importance of health, the environment, and the dangers posed by synthetic chemicals has driven an interest in adopting a healthier lifestyle (Zollo et al., 2021). Its impact is evident in the green cosmetic trend, which has become a focal point in the personal beauty industry (Lin et al., 2018). Despite the growth of the green cosmetic market in Indonesia following global directions, its market share remains relatively low compared to conventional cosmetics. Significant challenges arise due to higher prices of green cosmetic products in the Indonesian market (Basumbul, 2016).

Hence, there is a need for research on consumer behavior within the realm of environmentally friendly cosmetics in Indonesia, aiming to heighten consumer inclination towards eco-conscious merchandise. Given the substantial potential embedded within Indonesia's cosmetics market, an opportunity emerges for eco-friendly cosmetics to amass a more significant market segment, concurrently fostering contributions towards environmental preservation. Furthermore, it is noteworthy to accentuate that despite the escalating vogue of eco-friendly cosmetics, this specific product category remains deficient in attention within the extant research paradigm (Liobikienė & Bernatoniene, 2017).

The Theory of Reasoned Action (TRA) has been broadly employed across diverse domains of green consumerist conduct. Examples include organic food products (Roh et al., 2022), electric vehicles (Alzahrani et al., 2019), general environmentally friendly purchasing behavior (Kautish et al., 2019), green smartphones (Liu & Tsaur, 2020), and sustainable clothing (Rausch & Kopplin, 2021), all aimed at investigating consumer environmentally friendly purchasing behavior. In the classical TRA, subjective norms and attitudes are critical variables in the model. This model identifies the drivers of consumer behavior by examining the effects of these variables on behavioral intentions (Ajzen, 1985; Fishbein & Ajzen, 1975).

This study seeks to expand the range of attitudes and subjective norms by incorporating environmental consciousness into the original Theory of Reasoned Action (TRA). The main objective is to offer a more comprehensive explanation of the factors that impact purchase intentions of green cosmetics. The growing emphasis on environmental and sustainability concerns adds depth to the framework by integrating environmental consciousness. Consumers increasingly demonstrate a heightened consciousness of the significance of lessening detrimental ecological effects through their purchasing choices as the global conversation on environmental consciousness gains momentum. This heightened environmental consciousness can shape consumer attitudes toward eco-friendly products, thus fostering a more favorable evaluation of purchasing behavior (Khaleeli & Jawabri, 2021).

By integrating environmental consciousness variables, this study can provide a more comprehensive picture of the determinants influencing consumer intention to purchase environmentally friendly cosmetic products. The findings of this study are expected to enhance our understanding of the Theory of Reasoned Action (TRA) in the context of green product consumption. In addition, the findings are also expected to provide practical insights for manufacturers and marketers to help them design more vital strategies to influence consumers' intention to purchase environmentally friendly cosmetic products.

Literature review

The Determinants of the TRA Model

To understand consumer behavior, especially regarding sustainable purchase decisions, researchers have relied heavily on robust theoretical frameworks to explain the dynamics behind individual decisions. One theory that has received widespread attention is the Theory of Reasoned Action (TRA), developed by Fishbein & Ajzen (1983). The theory explains how intentions, attitudes, and subjective norms influence individual actions. This review aims to outline the application and significance of TRA in sustainable purchasing, with a particular emphasis on green cosmetics in Indonesia. Further expands on this, emphasizing the predictive power of an individual's intention, formulated through subjective norms and attitude, in determining the likelihood of executing a specific behavior.

TRA theory rests on the premise that individuals' behavior is controlled by their intentions, which are influenced by attitudes toward the behavior and subjective norms

(Ajzen, 2020). Attitudes involve a person's positive or negative evaluation of specific actions (Wang et al., 2021; Yang et al., 2018), whereas subjective norm refers to the perceived social pressure to perform or not perform a behavior (Pena-Garcia et al., 2020). These two factors form intentions, directly influencing the actions taken.

The application of TRA has extended to various contexts of sustainable behavior. Research has examined the purchase of organic products (Roh et al., 2022), electric vehicles (Alzahrani et al., 2019), environmentally-friendly products in general (Kautish et al., 2019), eco-friendly smartphones (Liu & Tsaur, 2020), and sustainable clothing (Rausch & Kopplin, 2021), demonstrating the adaptability and relevance of TRA across multiple domains. Interestingly, TRA explains product selection and has been used to understand practices such as implementing Green Information Technology (GIT) in the workplace (Mishra et al., 2014) and adherence to conservation agriculture practices (Van Hulst & Posthumus, 2016).

In a more specific study, Jang & Cho (2022) found that although organic food is often visually unappealing, recognition of its benefits significantly influences consumers' positive attitudes. This confirms that perceptions of product quality and benefits can overcome aesthetic prejudices. Similarly, Zhu et al. (2022) used the TRA to suggest strategies for assessing and addressing food safety hazards, confirming the flexibility of the theory in informing practical interventions.

This literature review also identified the need to understand better how attitude mediates between subjective norms and environmental consciousness with purchase intention. Previous research has explored the relationship between environmental consciousness, subjective norms, attitudes toward green products, and purchase intentions (Echchad & Ghaith, 2022; Grappe et al., 2021; Leclercq-Machado et al., 2022; Mamun et al., 2020), but often do not fully recognize the critical role of attitude as a mediator.

In this context, our research aims to fill this gap, providing new insights into the dynamics of interactions between variables in TRA, especially in green cosmetics. We believe that with the growth of the green cosmetics market, understanding the factors influencing consumers' intention to choose green cosmetics is essential. Through a more in-depth approach, this study seeks to articulate the interactions between variables and communicate the findings in a way that has not been done before. TRA remains a valuable and relevant theoretical framework, guiding research in various sustainable behavioral contexts. By integrating a deep understanding of the mediating role of attitudes and applying it to the green cosmetics industry in Indonesia, this study contributes to the existing literature by clarifying and expanding our understanding of the factors that motivate consumer purchasing decisions. This marks an essential step towards developing more effective marketing strategies and sustainable sustainability initiatives.

Environmental Consciousness

Environmental consciousness that emerges as a social-altruistic orientation is a response to the environmental crisis. It encourages individuals to pay more attention to environmental impacts that affect the well-being of others (Newton et al., 2015). Many

researchers have focused their studies on environmental awareness as a response to the increasingly pressing environmental issues in various parts of the world.

Several studies have shown a close relationship between environmental protection consciousness and environmentally friendly behavior. For example, Huang et al. (2014) found a correlation between environmental protection consciousness and behaviors that support environmental sustainability. On the other hand, Bittar (2018) states that environmental consciousness does not always influence economic dynamics. However, other studies, such as Kautish et al. (2019) and Xu et al. (2019), confirmed that environmental consciousness is essential in moderating green purchasing behavior and willingness to pay for green products.

Not only in the consumption aspect, but environmental consciousness also influences travelers' intention in choosing a green destination (Ahmad et al., 2020). In Europe, public environmental consciousness is divided into three segments: pro-environmentalists, moderate environmentalists, and sideline environmentalists (Golob & Kronegger, 2019). In the context of education, Agull et al. (2019) found that the environmental consciousness of elementary school students is higher than that of secondary school students.

Technology is also inseparable from the influence of environmental consciousness. This can be seen from the influence of environmental consciousness on consumer intentions in adopting 5G technology (Shah et al., 2021). In the current context, Generation Z's green practices are also influenced by environmental consciousness (Agrawal et al., 2023). This is reflected in China's consumption of organic food and eco-friendly cell phones (Parashar et al., 2023; Kerber et al., 2023). Further, Chang et al. (2022) found that environmental consciousness is essential in tracking pollution sources.

However, most of the above studies are based on the TPB framework, where environmental consciousness serves more as a precursor to attitude than behavioral intention (Echchad & Ghaith, 2022; Mamun et al., 2020). Environmental consciousness reflects an individual's ability to recognize, understand, and care about the environmental impact of purchasing and consumption decisions (Kim & Lee, 2023).

Referring to this background, our research aims to integrate environmental awareness into the Theory of Reasoned Action (TRA) to provide a more holistic explanation of the factors influencing consumers' intentions and attitudes in purchasing green cosmetic products in Indonesia. This is based on the gap between environmental sustainability issues and the increasing level of conventional consumption (Grooten & Almond, 2018).

Hypothesis Development

Environmental Consciousness

Despite decades of efforts to increase environmental consciousness, the consumption rate of conventional products continues to rise (Grooten & Almond, 2018). According to Kennedy et al. (2009), consumers recognize a gap between their environmental consciousness and high consumption levels. This dichotomy underscores the need for a more thorough examination of how environmental consciousness, directly or indirectly,

drives intentions to engage in sustainable consumption behavior. Much evidence supports the direct impact of environmental consciousness on the intention to purchase sustainable products (Andika et al., 2023; Kamalanon et al., 2022; Mamun et al., 2020). However, some previous studies have focused more on highlighting the influence of environmental consciousness as an antecedent of attitude rather than behavioral intention (Echchad & Ghaith, 2022; Mamun et al., 2020). Therefore, in line with the TRA, this study aims to validate the direct influence of environmental consciousness on consumer attitudes and intentions to purchase green cosmetic products through the formulation of the following hypotheses:

H₁: *Environmental consciousness has a significant effect on attitudes*

H₂: *Environmental consciousness has a significant effect on purchase intention*

Subjective Norms

Subjective norms (SN) include individuals' subjective perceptions of social pressures, which may shape their participation in certain behaviors. Influences such as peers, family, or colleagues, coupled with the aspiration to receive positive evaluations from others, intensify their influence on the intention to purchase environmentally friendly cosmetic products (Ali et al., 2022; Limbu et al., 2022; Mamun et al., 2020; Tengli & Srinivasan, 2022), eco-friendly clothing (Leclercq-Machado et al., 2022), and conventional cosmetics (Lu & Chen, 2017). It is rooted in the psychosocial perspective and significantly supports positive attitudes and purchase intentions regarding cosmetic products (Hillhouse et al., 2000). However, previous research has focused more on understanding the influence of subjective norms on purchase intention and is limited to attitudes (Grappe et al., 2021). Therefore, we present the following hypothesis:

H₃: *Subjective norms have a significant effect on attitudes toward green cosmetics*

H₄: *Subjective norms have a significant effect on purchase intention*

Attitude toward Green Cosmetic

Several studies have demonstrated a strong relationship between attitude and intention to purchase green cosmetic products (Ali et al., 2022; Limbu et al., 2022; Mamun et al., 2020; Tengli & Srinivasan, 2022). For instance, (Limbu et al., 2022) discovered a significant and positive correlation between consumer attitudes and the intention to purchase green cosmetic products among young female consumers in Vietnam. Attitudes also influence the willingness of the Malaysian public to buy environmentally friendly skincare products (Mamun et al., 2020). However, inconsistent findings regarding the influence of attitudes on the intention to purchase green cosmetic products have been reported by (Boon et al., 2020), who found that subjective norms did not exhibit a significant relationship to buying natural skin care products in Malaysia. To address this inconsistency, our research aims to clarify this relationship by proposing the following hypotheses:

H₅: *Attitude has a significant effect on the purchase intention*

Although studies have linked environmental consciousness, subjective norms, attitudes towards eco-friendly products, and purchase intention (Echchad & Ghaith, 2022; Grappe et al., 2021; Leclercq-Machado et al., 2022; Mamun et al., 2020), few studies explore this relationship in greater depth, especially in attitude mediation. Some previous studies, such as (Grappe et al., 2021; Leclercq-Machado et al., 2022; Mamun et al., 2020), have only focused on the direct relationship between these variables. This study aims to fill this knowledge gap by exploring the potential mediating role of attitude in linking subjective norms and environmental consciousness to purchase intention. In recognizing the importance of attitude as a potential mediator in this model, the study puts forward the following hypotheses:

H₆: *Attitude mediates the influence of environmental consciousness on purchase intention*

H₇: *Attitude mediates the effect of subjective norms on purchase intention*

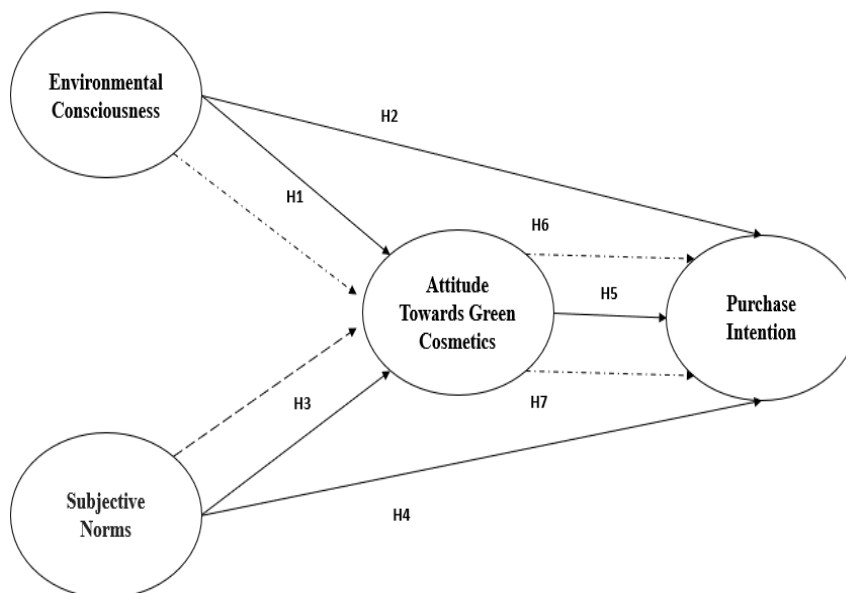


Figure 1. Research Framework

Methodology

This study uses a quantitative approach with a descriptive research design to investigate consumer purchasing behavior towards environmentally friendly cosmetic products in Indonesia. The sample consisted of 305 respondents with an age range of 17 to 58 years. Data was collected through an online questionnaire distributed through the Google Form application, using the Purposive Sampling method on green cosmetics consumers. The final questionnaire consisted of 16 questions on a four-point Likert scale, ranging from strongly disagree (1) to agree (4) strongly. The development of the questionnaire was based on various sources from previous research (Chin et al., 2018; Kapoor et al., 2019; Limbu et al., 2022; Promotosh & Sajedul, 2011; Shimul et al., 2022). The collected data were analyzed using the Partial Least Squares (PLS) method based on the Structural Equation Model (SEM). The evaluation process includes an assessment of

the measurement model (Outer Model), an evaluation of the structural model (Inner Model), and a path coefficient analysis following predetermined guidelines (Hair et al., 2017).

We conducted a mediation regression analysis to examine the indirect influence of an independent variable on a dependent variable through a mediator variable (Agler & De Boeck, 2017). Mediation analysis follows the criteria outlined by (Dastgeer et al., 2020), where variable X affects variables M and Y, and variable M affects variable Y. The Sobel Test was employed to assess the mediator variable's significance. The Sobel Test was conducted using the program provided on the website by Daniel Soper (Soper, n.d.), regarding a critical z-value of > 1.96 (Yay, 2017) and a p-value of < 0.05 (Dastgeer et al., 2020). Below is table 1 and 2 display the operational variables of the study.

Table 1. Operational Research Variables

Variable Names	Item Code	Indicator
Attitude Towards Green Cosmetics (Limbu et al., 2022; Shimul et al., 2022)	ATGC	1. Experience a sense of pride when purchasing green cosmetics.
		2. Eco-conscious products always take precedence.
		3. There's a firm conviction that green cosmetics outperform traditional ones.
		4. When faced with green and conventional cosmetics at the same price, the tendency is towards the green option.
Purchase Intention (Chin et al., 2018)	PI	1. They are likely to prefer green cosmetic items.
		2. Plan to acquire green cosmetics as soon as their existing ones are depleted.
		3. Plan to suggest green cosmetics to peers.
Subjective Norms (Promotosh et al., 2011)	SN	1. The recommendation of a family member can lead to the favored choice of green cosmetics.
		2. Recommendations from friends can incline individuals to opt for green beauty products.
		3. My parents educated me to differentiate between green and conventional cosmetic products.
		4. Friends have helped me understand the distinction between sustainable and regular cosmetics.
		5. Social media is essential in shaping the choice to buy green cosmetic products.
Environmental Consciousness (Kapoor et al., 2019)	EC	1. Choosing green cosmetics can mitigate environmental challenges.
		2. Green cosmetics are a superior choice due to their environmental safety.

Variable Names	Item Code	Indicator
		3. Due to its organic components, green cosmetics are favored.
		4. Selecting green cosmetics supports a more sustainable environment.

Results

Demographic characteristics of the respondents

Table 2. Sample Descriptions

Category	Subcategory	Frequency	%	Cumulative percent
Gender	Men	113	37%	37%
	Female	192	63%	100%
Age	17-27	260	85%	85%
	28-42	41	14%	99%
	43-58	4	1%	100%
Education Level	<High School	10	3%	3%
	High School	79	26%	29%
	Diploma I/II/III/Bachelor's Degree	199	65%	94%
	Master's/Doctoral Degree	17	6%	100%
Income Level	Rp <1 million	141	46%	46%
	Rp 1-2 million	78	25%	71%
	Rp 3-5 million	62	20%	91%
	Rp 6-8 million	14	6%	97%
	Rp >8 million	10	3%	100%

Table 3. Sample Descriptions

Frequency of purchase	Once a month	230	75%	75%
	Every two months	46	15%	90%
	Every three months	2	1%	91%
	Three times a month	15	5%	96%
	Others.	12	4%	100%
The five most used green cosmetics brand	Male		Women	
	Kahf	45	Wardah	66
	Nivea men	24	Npure	31
	Wardah	11	Innisfree	19
	Ms. Glow for Men	7	The Body Shop	16
	Banner, Garnier, Ponds Men	3	Mustika ratu	10

Table 2 and 3 illustrates the number and percentage of samples by gender, age, education level, income level, frequency of purchase, and most frequently used brand.

From the table, the majority of respondents are female (63%), their age is between 17 to 27 years old (85%), have a DI-IV/S1 education (65%), an income of less than 1 million (46%), purchase products once a month (75%), and women tend to use the Wardah brand as their most frequently used (34%). In comparison, men tend to use the Kahf brand more (40%).

Indicator test

The indicator test, also known as the Outer model or measurement model, produces outputs of model validity and reliability measured by criteria such as discriminant validity, composite reliability, and convergent validity, which are explained as follows:

Table 4. Discriminant Validity Test Results (AVE)

Variable	Criteria	AVE
Subjective Norms	> 0.50	0.667
Environmental		0.827
Attitude Toward Green Cosmetic		0.782
Purchase Intention		0.765

Discriminant validity refers to the degree to which a construct is significantly differentiated from other constructs based on empirical standards. This measurement is done through cross-loading between indicators and related constructs. An indicator is considered valid if its association with its construct is more robust than with other constructs. Another alternative to measuring this is through the AVE value, which must be more than 0.50. Based on Table 4, all indicators are considered valid because the AVE value of all variables exceeds 0.50. Similarly, based on Table 5, the discriminant validity test, which measures cross-loading, shows that all indicators are valid because the relationship between the indicator and the related construct is more significant than its relationship with other constructs.

Table 5. Discriminant Validity Test Results (Cross Loading)

	Subjective Norms	Environmental Consciousness	Attitude Toward Green Cosmetic	Purchase Intention
ATGC1	0.555	0.612	0.876	0.609
ATGC2	0.57	0.577	0.882	0.622
ATGC3	0.582	0.631	0.896	0.645
ATGC4	0.511	0.658	0.884	0.553
EC1	0.617	0.912	0.656	0.688
EC2	0.632	0.934	0.648	0.683
EC3	0.586	0.899	0.592	0.63
EC4	0.596	0.891	0.646	0.667
PI1	0.582	0.612	0.556	0.848
PI2	0.651	0.681	0.624	0.898
PI3	0.636	0.631	0.621	0.877
SN1	0.869	0.603	0.572	0.64

	Subjective Norms	Environmental Consciousness	Attitude Toward Green Cosmetic	Purchase Intention
SN2	0.872	0.572	0.516	0.584
SN3	0.791	0.464	0.464	0.552
SN4	0.854	0.525	0.521	0.614
SN5	0.681	0.562	0.479	0.51

Table 6. Composite Reliability Test Results

Variable	Criteria	Composite Reliability
Subjective Norms	> 0.70	0.909
Environmental		0.95
Attitude Toward Green Cosmetic		0.935
Purchase Intention		0.907

The degree of depth within the constructed variable is demonstrated by the indicators of the variable, which are assessed through composite reliability. A construct is considered reliable if its composite reliability value is > 0.70 . Table 6 indicates that all constructs have composite reliability values above 0.70, indicating high consistency and stability in the instrument used. In other words, the reliability of the instrument has been met.

Convergent validity involves the correlation between indicator scores and the associated construct. Convergent indicators are considered valid with a correlation value higher than 0.50. If any indicator does not meet this criterion, it should be removed. A loading factor value > 0.70 is considered excellent, while a value > 0.60 is considered adequate. This study confirms that the minimum acceptable factor loading value is 0.60. If the value is less than 0.60, the value should be excluded. Through the convergent test using outer loading in Table 7, all items show values that meet the requirements of convergent validity, namely values > 0.60 . Therefore, the construct is valid.

Table 7. Outer Loading test results (Convergent Validity)

Code Variable	Variable Latin			
	Subjective Norms	Environmental Consciousness	Attitude Toward Green Cosmetic	Purchase Intention
SN1	0.869			
SN2	0.872			
SN3	0.791			
SN4	0.854			
SN5	0.681			
EC1		0.912		
EC2		0.934		
EC3		0.899		
EC4		0.891		
ATGC1			0.876	
ATGC2			0.882	

Code Variable	Variable Latin			
	Subjective Norms	Environmental Consciousness	Attitude Toward Green Cosmetic	Purchase Intention
ATGC3			0.896	
ATGC4			0.884	
PI1				0.848
PI2				0.898
PI3				0.877

Evaluation of Model's Goodness and Fit

PLS (Partial Least Squares) is a variance-based SEM analysis that aims to test model theory with a focus on prediction studies (Luthfiana et al., 2023). Therefore, researchers developed several measures to indicate the acceptance of the proposed model, such as R square, Q square, SRMR, PLS prediction (Hair et al., 2019), and Goodness of Fit Index (GoF Index) (Henseler & Sarstedt, 2013). In addition, they also check the robustness of the model by testing the linearity of the relationship between variables (Hair et al., 2019; Sarstedt et al., 2020). The following is an explanation and criteria that can be described:

Table 8. R Square and Q Square test results

	R Square	Q Square
Attitude Toward Green Cosmetic	0.536	0.412
Purchase Intention	0.654	0.493

The R square statistical measure illustrates the variation in endogenous variables that can be explained by other exogenous/endogenous variables in the model. According to Hair et al. (2011), we can interpret the R square value qualitatively as follows: 0.25 indicates a low influence, 0.50 indicates a moderate influence, and 0.75 indicates a strong influence. Based on the R Square test results in Table 8, subjective norms and environmental consciousness moderately influence attitudes towards green cosmetics with a value of 0.536. In addition, subjective norms, environmental consciousness, and attitudes towards green cosmetics also moderately influence purchase intention, with a value of 0.654.

Q square describes the accuracy of the prediction measure, which is how well each change in exogenous/endogenous variables can predict endogenous variables. In PLS, this measure is a form of validation to state the suitability of model predictions (predictive relevance). According to Hair et al. (2019), the qualitative interpretation of the Q square value is as follows: 0 (low influence), 0.25 (moderate influence), and 0.50 (high influence). The test results in Table 8 show that the Q square value for the attitude variable towards green cosmetics is 0.412, more significant than 0.25. Therefore, the prediction accuracy in this study is moderate. The same also applies to the Q square value on the purchase intention variable, which is $0.493 > 0.25$, so the prediction accuracy in this study is also moderate.

Table 9. SRMR test results

	Saturated Model	Estimated Model
SRMR	0.052	0.052

SRMR, or Standardized Root Mean Square Residual, assesses the absolute value of the mean residual covariance by converting the sample covariance matrix and the predicted covariance matrix into a correlation matrix. It evaluates the mean value of the difference between the observed and expected correlations as an absolute measure of the criterion (model) fit. A value less than 0.10 is appropriate (Henseler et al., 2014). The value is a measure of fit for PLS-SEM that can be used to avoid model misspecification. We obtained a model estimation result of 0.052 in this study, which means that the model has an acceptable level of fit. The empirical data in this study can explain the influence between variables in the model.

Table 10. GoF Index

Mean Communality	Mean R square	GoF Index
0.579	0.595	0.587

The Goodness of Fit Index (GoF Index) evaluates the overall fit of both the measurement and structural models. This GoF index can only be computed from the reflective measurement model, which is the square root of the geometric mean of communality multiplied by the mean R square. According to Ghazali & Latan (2015), the interpretation of the GoF value is as follows: a GoF value of 0.1 indicates low fit, 0.25 indicates moderate fit, and 0.36 indicates high fit. The GoF Index value in Table 10 is 0.587, thus indicating that the empirical data in this study effectively explains the measurement model with a high fit.

Hair et al. (2019) revealed that PLS is an SEM analysis that aims for prediction. Therefore, researchers need to develop a measure to validate the model's shape to show how good the predictive power of their proposed model is. PLS prediction serves as a form of validation of the power of the PLS prediction test, which shows that PLS results have a better measure of predictive power. Therefore, it must be compared with the basic linear regression (LM) model. The PLS model is said to have predictive power if the RMSE (Root mean squared error) or MAE (mean absolute error) size of the PLS model is lower than the linear regression model. (a) If all measurement items of the PLS model have lower RMSE and MAE values than the linear regression model, then the PLS model has high predictive power. (b) This model has moderate predictive power if most items have lower values. Based on the PLS prediction test results in Table 11, we find that most of the measurement items of the PLS model have lower RMSE and MAE values than the LM (linear regression) model. This indicates that the proposed PLS model has moderate predictive power.

Table 11. PLS Predict test results

	PLS		LM	
	RMSE	MAE	RMSE	MAE
ATGC1	0.7	0.521	0.72	0.534
ATGC2	0.732	0.538	0.731	0.536
ATGC3	0.686	0.505	0.693	0.495
ATGC4	0.652	0.471	0.668	0.477
PI1	0.733	0.532	0.76	0.552
PI2	0.632	0.46	0.637	0.446
PI3	0.639	0.471	0.652	0.479

Hair et al. (2019) state that checking the linearity of the relationship between variables is necessary. The underlying assumption is that the relationship between variables is considered linear. This check is part of the robustness model in SEM PLS. The check is done by testing the squared shape of the variables. Based on the linearity test results in Table 12, it is found that the squared forms of environmental consciousness, subjective norms, and attitudes have no significance on purchase intention. Therefore, it can be concluded that the effect of environmental consciousness, subjective norms, and attitudes on purchase intention is linear, or the linearity effect of the model is met (robust).

Table 12. Linearity Test Results

	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics ((O/STDEV))	P Values
Quadratic Effect 1 -> ATGC	-0.04	-0.039	0.041	0.96	0.337
Quadratic Effect 2 -> ATGC	0.005	0	0.051	0.102	0.919
Quadratic Effect 3 -> PI	0.018	0.02	0.044	0.402	0.688
Quadratic Effect 4 -> PI	0.01	0.012	0.049	0.199	0.843
Quadratic Effect 5 -> PI	0.034	0.031	0.052	0.657	0.511

Hypothesis test results

Analyzing the relationship and influence between latent variables based on objective theory is done through hypothesis testing. The significance of the influence between constructs is tested by evaluating the significant parameter coefficient value and t-statistic. The hypothesis is considered proven if the t-statistic > t table or P-Value < 0.05,

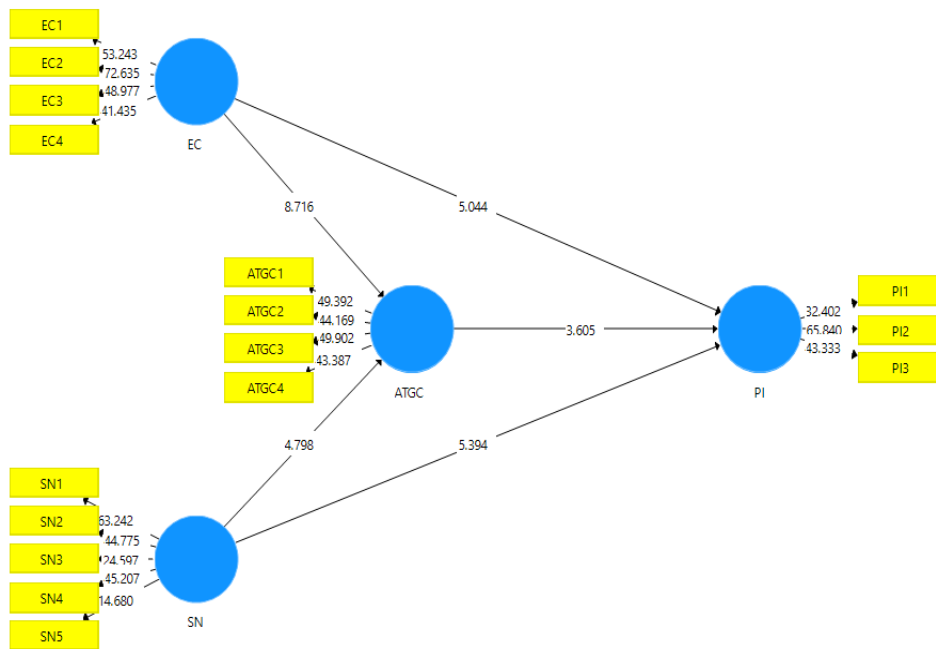


Figure 2. Bootstrapping Model After Indicator Test

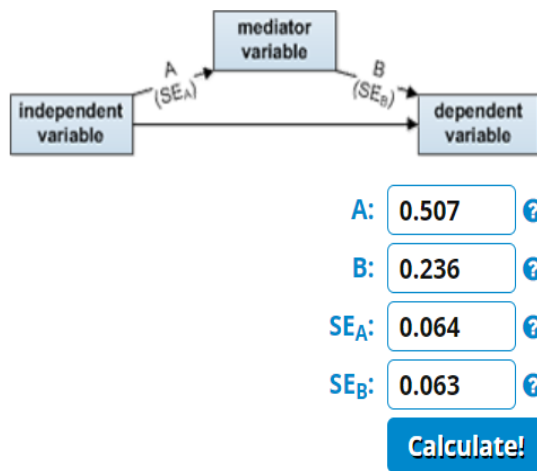
Table 13. Hypothesis Test Results

	Original Sample (O)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values	Conclusion
EC -> ATGC	0.507	0.064	7.895	0.000	Accepted
EC -> PI	0.345	0.071	4.879	0.000	Accepted
SN -> ATGC	0.288	0.065	4.466	0.000	Accepted
SN -> PI	0.335	0.067	5.027	0.000	Accepted
ATGC -> PI	0.236	0.063	3.723	0.000	Accepted

Table 13 shows that environmental consciousness and subjective norms directly influence attitudes towards environmentally friendly cosmetics and purchase intention, with a statistical t value > 1.96 and a sig value < 0.05. The direction of the relationship is also positive. Therefore, H1, H2, H3, H4, and H5 are statistically proven.

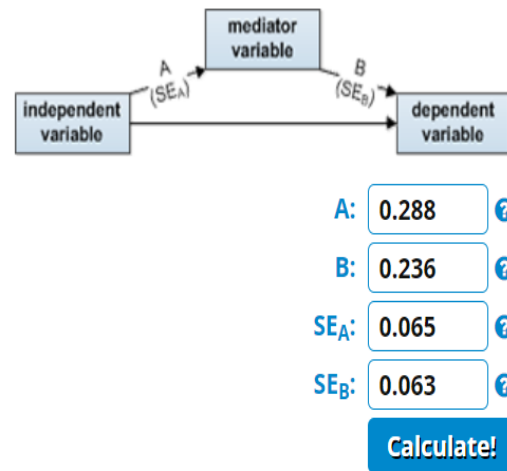
Mediation test results

The results of the mediation test using the Sobel test in Figures 3 and 4 show evidence that attitude significantly mediates the effect of environmental consciousness and subjective norms on purchase intention, with the t value of the Sobel test > 1.96 and v value < 0.05. Therefore, it can be concluded that H6 and H7 are statistically proven.



Sobel test statistic: 3.38649420
One-tailed probability: 0.00035396
Two-tailed probability: 0.00070792

Figure 3. Environmental consciousness Sobel test results



Sobel test statistic: 2.86064980
One-tailed probability: 0.00211387
Two-tailed probability: 0.00422774

Figure 4. Subjective norm Sobel test results

Discussion

Integrating environmental consciousness into the TRA model is a focal point of our research, contributing substantially to its development. Many previous studies using the TRA model have delved into understanding the motives behind consumer purchasing behavior in general environmental products, organic food, eco-friendly smartphones, eco-friendly clothing, and electric vehicles (Alzahrani et al., 2019; Kautish et al., 2019; Liu & Tsaur, 2020; Rausch & Kopplin, 2021; Roh et al., 2022). Our focus on Indonesia revealed that incorporating environmental awareness into the TRA model effectively showed a positive correlation between environmental consciousness and attitude and intention to purchase green cosmetics. In addition, our research also highlights that attitude acts as a mediating factor between environmental consciousness and the intention to purchase green cosmetics in the Indonesian context.

The influence of environmental consciousness on purchase intention

The analysis results strongly support the relationship between environmental consciousness and attitudes toward eco-friendly cosmetics. This finding has a significant impact on the understanding of how psychological factors influence consumer preferences for sustainable products. Environmental consciousness influences attitudes towards eco-friendly cosmetics from a psychological perspective. The level of consciousness reflects an individual's knowledge and concern for environmental issues and the impact of consumed products.

Environmentally conscious individuals tend to be sensitive to environmental issues, including the impact of consumption products. A sense of responsibility towards the environment influences attitudes towards environmentally friendly cosmetics. Environmentally conscious individuals tend to feel responsible for choosing products that have a positive impact. A positive attitude towards environmentally friendly cosmetics demonstrates individual efforts to reduce negative impacts and contribute to sustainability.

This finding aligns with previous research by Zhang et al. (2019), which found that environmental consciousness significantly affects attitudes toward green products. This alignment confirms the critical role of environmental consciousness in shaping consumer attitudes toward sustainable products.

This research further explains the psychological factors influencing consumer preferences for sustainable products. The implication for cosmetics companies is to design more effective marketing strategies for green products. This research also demonstrates the potential of environmental consciousness in educating people towards more sustainable consumption.

The influence of environmental consciousness on attitude toward green cosmetic

The results of this study reveal the significant role of environmental consciousness in influencing the purchase intention of environmentally friendly cosmetics. Environmental consciousness is a crucial foundation in sustainable consumer behavior. As individuals become more aware of the consequences of their consumption choices on the environment, they are more likely to take positive action. The findings verify that the higher a person's level of environmental consciousness, the more likely they are to purchase environmentally friendly cosmetics. Environmental consciousness triggers this purchase intention, as individuals highly concerned about the environment are more sensitive to environmental issues in their consumption.

This finding aligns with research conducted by Kamalanon et al. (2022), which revealed environmental consciousness as a significant antecedent factor to the intention to purchase environmentally friendly products. Likewise, a study by Mamun et al. (2020) found that environmental consciousness significantly influences the purchase intention of eco-friendly skincare products among Malaysians. These findings further cement the idea that environmental consciousness is essential in motivating individuals to choose better products for the environment.

In a practical context, these findings provide valuable guidance for the cosmetics industry. Companies should view environmental consciousness as a critical trigger in consumer purchasing decisions. To encourage consumers to be more inclined to purchase environmentally friendly cosmetics, companies need to include environmental messages in their marketing strategies. In addition, precise information on the environmental impact of products should be provided so that consumers can make informed decisions.

The influence of subjective norms on attitude toward green cosmetic

The results of the analysis show that the subjective norm variable has a significant influence on consumer attitudes toward environmentally friendly cosmetics. This finding is consistent with previous research conducted by Chhetri et al. (2021) and Grappe et al. (2021), who also found that subjective norms significantly influence consumer attitudes toward environmentally friendly cosmetic products.

One important implication of this finding is that individuals' perceptions of social norms and influences from their surrounding environment significantly affect how they respond to environmentally friendly cosmetic products. In this case, subjective norms reflect the views and expectations individuals internalize from their social group or environment. Thus, consumer attitudes towards environmentally friendly cosmetics are not only influenced by intrinsic product factors but also by social norms that exist within the consumer community.

This finding also aligns with social psychology theory, which underlines the importance of social conformity and judgments from close people in shaping individual views and behaviors (Krieger et al., 2017). In this context, individuals may feel pressure to conform to existing norms, including preferences for cosmetic products. Suppose the subjective norms in an individual's environment encourage the use of environmentally friendly products. In that case, the individual may be more likely to have a positive attitude towards such cosmetics.

Furthermore, these findings can make a valuable contribution to practitioners and marketers of cosmetic products. By understanding subjective norms' role in shaping consumer attitudes, marketers can design more effective strategies for promoting environmentally friendly cosmetic products. For example, they can develop campaigns emphasizing environmental values and positive norms related to such products to influence consumer attitudes more effectively.

The influence of subjective norms on purchase intention

The results of the research analysis show that subjective norms have a significant influence on the purchase intention of environmentally friendly cosmetics. This indicates that the views and opinions in a person's social environment play a crucial role in shaping their attitude and purchase intention towards cosmetic products that focus on environmental sustainability. In other words, when individuals perceive that those around them encourage green cosmetics, they are more likely to have purchase intentions towards such products.

Subjective norms can also be linked to deeper psychological aspects, such as the need to be accepted and recognized by the surrounding environment (Madsen & Wilson, 2012). Individuals strive to comply with the norms accepted by their group to feel connected and accepted by the environment. In the context of green cosmetics purchase intention, individuals who feel that their friends or social environment value buying environmentally friendly products may feel a more excellent drive to fulfill these expectations.

The results of this study are consistent with the findings of Ali et al. (2022) conducted in Pakistan, showing that subjective norms significantly impact male consumers' purchase intention on green cosmetic products. Likewise, a study by Limbu et al. (2022) found that subjective norms influence young Vietnamese women's intention to buy green cosmetics. This suggests that the influence of subjective norms applies to the current research context and has relevance across cultures and the genders of consumers. These findings reinforce the conclusion that subjective norms have a consistent universal role in shaping purchase intentions for green cosmetics.

The results of this study have important implications in the context of marketing and consumer behavior. By understanding that subjective norms affect green cosmetics purchase intentions, cosmetics companies, and marketers can take steps to capitalize on this social influence in their marketing efforts. Campaigns focusing on the consciousness of the positive impact of green cosmetic products and support from the social environment can be more successful in changing consumer behavior.

The influence of attitude toward green cosmetics on Purchase Intention

The results of the research analysis show that attitudes toward green cosmetics have a significant impact on the purchase intention of green cosmetics. This finding indicates that a positive attitude toward green cosmetics can motivate individuals to have stronger purchase intentions toward these products. These positive attitudes reflect individuals' recognition of environmental values and their concern for the impact of conventional cosmetic products on the environment. In this context, when consumers feel that green cosmetics express their values, they will be more likely to take concrete action in the form of a purchase.

This finding is consistent with previous research from Limbu et al. (2022) in Vietnam and Mamun et al. (2020) in Malaysia. The existence of a significant and positive correlation between consumers' attitudes towards environmentally friendly cosmetics and purchase intention indicates consistency in the influence of attitudes in different contexts. This strengthens the argument that attitude is critical in shaping consumer purchase behavior towards environmentally friendly cosmetic products.

The link between attitude and purchase intention also has broader implications in marketing and communication. Cosmetic companies that focus on environmentally friendly products can use these findings to design more effective marketing campaigns. Developing strategies that promote environmental values and care for the earth can increase consumers' positive attitudes toward products and encourage higher purchase intentions.

The mediating role of attitude on the influence of environmental consciousness on purchase intention

The research analysis results show that attitudes towards green cosmetics are a critical mediator in the relationship between environmental consciousness and purchase intention. In this case, consumers' beliefs and views towards cosmetics that focus on sustainability and care for the environment significantly influence the correlation between

environmental consciousness and purchase intention of green cosmetics. As such, these findings add a new dimension to the consumer behavior literature, particularly regarding attitudes' critical mediating role in sustainable product purchases.

The findings also contain relevant practical implications. In an era where the consciousness of environmental issues is increasing, a deeper understanding of how environmental consciousness can influence the purchase intention of environmentally friendly cosmetics can serve as a foundation for the cosmetics industry in developing more effective marketing strategies. By emphasizing the importance of positive views towards green cosmetics, companies have the opportunity to communicate the environmental values of their products more effectively, thereby attracting consumers with high levels of environmental consciousness.

The mediating role of attitude on the influence of subjective norms on purchase intention

The analysis results in this study consistently show that attitudes towards green cosmetics are essential in linking subjective norms with the purchase intention of green cosmetics. This finding substantively supports the theoretical framework proposed in this study. This result is consistent with previous research, which shows that attitude is a variable capable of mediating the relationship between other factors (Domínguez-Valerio et al., 2019; Sari et al., 2022), such as subjective norms and specific behavioral intentions (Haliman & Tan, 2023). Thus, this finding confirms that attitudes not only directly impact the purchase intention of green cosmetics but also play a role in articulating the impact of subjective norms on purchase intention.

The results of this study have significant implications for practitioners and marketers in the green cosmetics industry. The fact that attitudes towards green cosmetics mediate the influence of subjective norms on purchase intention suggests that marketing efforts should focus on more than just building positive social norms related to purchasing green products. However, it should also consider changing consumer attitudes towards these products. Marketers can design strategies that focus on increasing consumer understanding of the environmental and personal health benefits of green cosmetics, which can then lead to more positive attitude changes.

Conclusion, Recommendations, and Limitations

Conclusion

In this study, the authors explicitly raised the research question: how much influence do environmental consciousness and subjective norms have on the purchase intention of green cosmetics, and does attitude mediate in this dynamic? The research began by identifying gaps in the observed phenomenon and briefly explaining fundamental concepts and hypotheses. A structured survey was implemented as the primary methodology, with data collection and analysis procedures outlined to facilitate in-depth interpretation.

The research findings can be concluded that environmental consciousness is crucial in shaping consumers' positive attitudes and strengthening their intention to purchase green cosmetic products. The psychological factors underlying environmental consciousness amplify consumers' responses to ecological issues, sharpening their awareness of the personal impact of consumption choices. In line with this, subjective norms, as a manifestation of internalized social expectations, also determine attitudes and purchase intentions. These norms shape consumers' behavior by directing their attitudes towards specific products and guiding their purchase intentions, which reflect a desire to fit in and interact harmoniously within their social context. Furthermore, this study identified attitude as an essential mediator in the relationship between environmental consciousness and subjective norms with purchase intention. The practical implications are that the cosmetics industry faces a strategic imperative to cultivate positive consumer attitudes, designing initiatives that raise environmental consciousness and instill pro-environmental norms to garner widespread support for sustainable products.

Recommendations

Here are some suggestions for further research:

The Influence of Cultural Variations on Attitudes Toward Green Cosmetics: Investigating how cultural differences influence attitudes towards eco-friendly cosmetics across different countries. The purpose is to explore whether the observed relationships between environmental awareness, subjective norms, and attitudes towards green cosmetics are consistent across different cultures or whether there are significant variations that should be considered in designing effective marketing strategies.

Long-term Impact of Attitudes on Purchase Behavior: Conduct a longitudinal study to test whether positive attitudes towards eco-friendly cosmetics impact purchase behavior. Track participants' purchasing patterns over an extended period to understand how sustained positive attitudes lead to the purchase of sustainable green cosmetic products.

Interaction between Social Media and Purchase Intention: Studied the role of social media in shaping subjective norms and attitudes toward green cosmetics. Investigate how influencers, peer recommendations, and online communities contribute to attitude formation and subsequent purchase decisions regarding sustainable beauty products.

Cross-Generational Analysis: Analyze how different generations perceive and prioritize eco-friendly cosmetics. Investigate whether attitudes, subjective norms, and purchase intentions vary among different age groups, and consider how generational perspectives can influence marketing strategies.

The Impact of Pricing on Purchase Intentions: Explore how pricing strategies influence the relationship between attitudes and purchase intentions for eco-friendly cosmetics. Investigate whether pricing that reflects the product's environmental benefits enhances attitude's mediating role in this context.

Limitations

While this study provides valuable insights, some limitations need to be recognized:

Limited Generalizability: The study's findings need to be more generalizable due to the need for more diversity in the sample. The results may not apply universally to all consumer segments if participants are from a specific demographic group, such as a particular age group or cultural background.

Social Will Bias: Respondents may give answers they deem socially desirable rather than reflecting their attitudes or intentions. This bias can lead to overestimated correlations between variables, affecting the accuracy of the results.

Limited Factor Coverage: Although the study focused on environmental consciousness, attitudes, and subjective norms, there may be other essential variables not considered in the analysis that could also influence purchase intention, such as economic factors or product availability.

Situational Factors Ignored: Research emphasizes individual psychological factors, ignoring situational influences that may affect purchase intentions. External factors such as price, product availability, and marketing strategies can play an important role.

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<p>HOW TO CITE THIS ARTICLE</p> <p>Andika, A., Nadia, N., Harnaji, B., & Najmudin, M. (2023). Understanding Green Cosmetic Adoption in Indonesia: Environmental Consciousness and the Theory of Reasoned Action Perspective. <i>International Journal of Management, Accounting and Economics</i>, 10(11), 875-903.</p> <p>DOI: https://doi.org/10.5281/zenodo.10468042</p> <p>URL: https://www.ijmae.com/article_186921.html</p>	