Studi Ilmu Manajemen dan Organisasi (SIMO)
ISSN: 2745-7826, Vol 7, No 3, 2026, 651-669 *https://doi.org/ 10.61401/simo.v7.n3.p651-669.2026*

The Role of Eco-Friendly Labels in Shaping Consumer Behavior among The MZ Generation

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Article History
Received on 02 September 2026
1st Revision on 05 September 2026
2nd Revision on 29 September 2026
3rd Revision on 27 October 2026
Accepted on 28 October 2026

Abstract

Purpose: The MZ Generation is the dominant consumer group in today's market with varying behavior across studies presents a challenge for companies and suppliers of goods or services in coordinating the green consumption. The study aims to investigate the factors that influence purchase intention and purchase behavior towards green products based on the Theory of Planned Behavior (TPB).

Research Methodology: The study used a quantitative method by collecting data from 272 skincare users in Indonesia via an online questionnaire. The conceptual model and hypotheses were analyzed using PLS-SEM.

Results: The results indicate that green purchase attitude and environmental knowledge significantly influence green purchase intention and green purchase behavior, and green purchase intention mediates the indirect effects on purchase behavior. However, the relationship involving subjective norms and green trust was founded unsupported.

Conclusions: The customer decision making regarding green products purchase were driven by attitude and environmental knowledge, while subjective norms and green trust does not able to influence an action regarding product purchase.

Limitations: The majority of respondents are Gen Z, and Millennials are relatively rare. Therefore, the results are more biased towards research on Generation Z itself than on Gen Z and Millennials.

Contributions: Theoretically, this study result utilizing Theory of Planned Behavior (TPB) by using green trust and environmental knowledge into the framework to provides a guidance for skincare company in how to market their products by focusing on factors that could drive consumer purchase action while also maintaining the environmental aspect.

Keywords: *Environmental Knowledge, Green Purchase Behavior, Green Purchase Intention, PLS-SEM, Theory of Planned Behavior*

How to Cite: Cuandra, F., Angelina, A., Rashid, U. K., Purwianti, L., & Susilawaty, L. (2026). The Role of Eco-Friendly Labels in Shaping Consumer Behavior among The MZ Generation. *Studi Ilmu Manajemen dan Organisasi*, 7(3), 651-669.

1. Introduction

Currently, the concept of eco-friendly marketing is rapidly evolving, driving increased demand for green products, particularly in the beauty industry, such as skincare. This is driven by changes in habits and public awareness of environmental issues, particularly among MZ Generation, the largest consumer group, who demonstrate a strong preference for high-quality and sustainable products (Li, Rasiah, Zheng, & Yuan, 2023). Demand for beauty products labeled halal, vegan, cruelty-free, and those with recycled packaging has increased. This indicates a shift in focus from functionality to environmental value. A study by Miremadi, Musso, and Weihe (2012) found that over 70% of young consumers were willing to pay more for green products. This suggests a high consumer willingness to buy, particularly for green products.

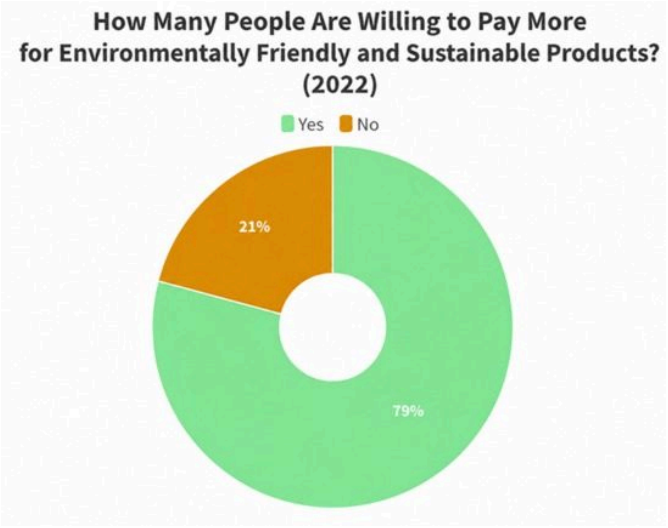


Figure 1. Public willingness to buy green products

Based on the Figure 1 which showed 2022 survey by Good Stats found that 79% of respondents expressed that they are willing to pay more for green products, a finding consistent with that of Miremadi et al. (2012). This means there is a high demand from the consumers regarding sustainable products.

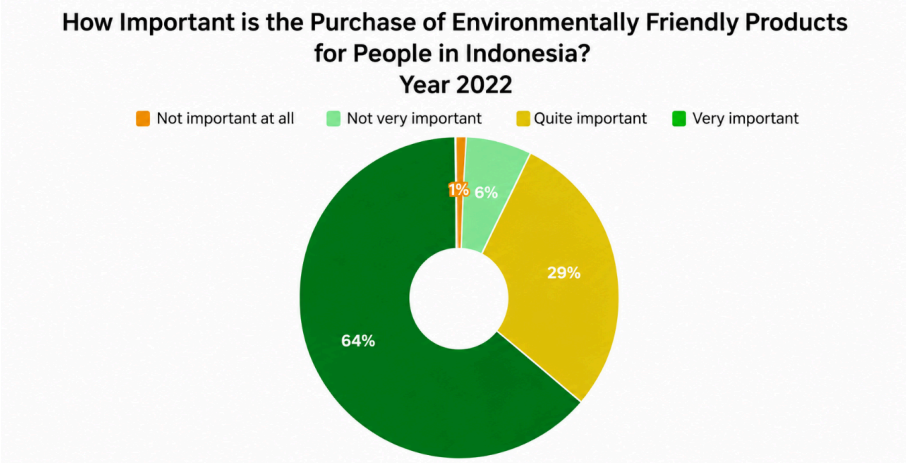


Figure 2. Indonesian public awareness regarding the purchase of green products

The same survey which shown in Figure 2 also found that the majority of respondents considered purchasing green products important. However, data collected by Kata Data in 2020 failed to reflect the consumers individual decision-making regarding the intention-behavioral gap towards green products.

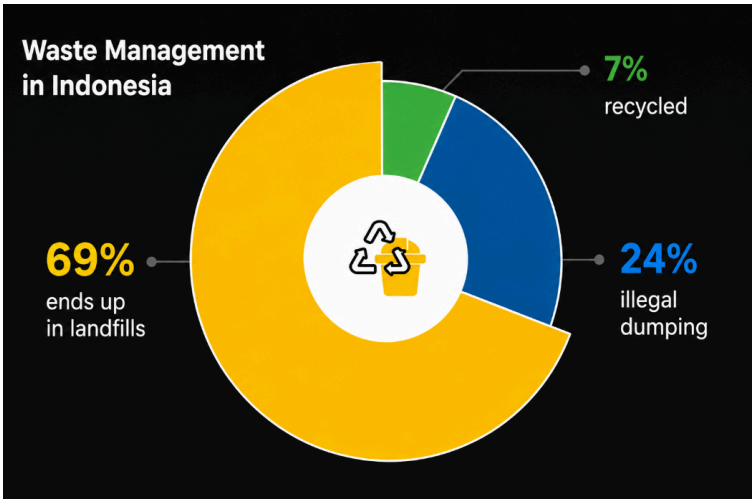


Figure 3. Waste management in Indonesia

Based on the data that were shown in Figure 3, only 7% of waste in Indonesia is recycled, while the rest ends up in landfills or illegal dumping sites. Data provided by Wibawa, Sundara, Limakrisna, and Susilo (2025) also stated while more than 70% of consumers showing willingness in buying environmentally-friendly products, only 25% of the consumers truly showing the action of purchasing green products, which showed the gap between intention and action of the consumers.

Previous study regarding green products also shows inconsistent result regarding the factors in resolving this intention-behavior gap. Within the Theory of Planned Behavior (TPB), researchers examine the direct and indirect effect of the key constructs. For instance, while Chan, Hsu, and Hsu (2025); Obaid and Rashid (2024) finds that green trust and subjective norms strongly drives purchase intention, other researcher also found that those two variable showing an insignificant effects on purchase behavior (Antonius, 2019; Devani & Basmantra, 2026).

This study will investigate the structural relationship among the variables, specifically on cognitive variable such as environmental knowledge and evaluative variable namely attitude and green trust in affecting purchase intention which act as the mediator between the variable and purchase behavior. The novelty of this research lies in re-evaluation of the condition or boundary on when the relationship is insignificant, focusing on an extended Theory of Planned Behavior model that were applied to the Indonesian skincare industry.

Therefore, the researchers chose the title "The Role of Eco-Friendly Labels in Shaping Consumer Behavior in the MZ Generation," which is expected to advance theories of consumer behavior and serve as a benchmark for the skincare industry in designing sustainable marketing strategies that effectively convert the consumers intention into actual green purchases. This study uses the variables green purchase attitude, subjective norms, green trust, environmental knowledge, green purchase intention, and green purchase behavior to measure the issues at the heart of this paper, drawing on the Theory of Planned Behavior by Li et al. (2023) as a foundation for the writing.

2. Literature Review and Hypotheses Development

Moazzam, Ahmad, Hussain, and Akram (2023) suggest that Green Purchase Behavior (GPB) reflects consumer awareness of the environmental impacts of everyday consumption. Purchase decision is a process where the customers making choices to obtain some particular products (Nurmalia, Zaman, & Anisa, 2026). Li, Rasiah, Zheng, and Yuan (2023) also suggest that attitudes toward green products (GPA) impact Green Purchase Intentions (GPI). This suggests that the more favorable the consumer's attitude toward green products, the higher their desire to purchase them.

Subjective Norms (SN) also play a significant role, particularly among younger generations, who are easily influenced by social perceptions and behaviors in their environment (FOMO). Furthermore,

trust in green products (GT), or belief in the credibility and honesty of green products, has served as a strong mediating influence on purchasing intentions and behavior (Moazzam et al., 2023). Furthermore, knowledge of green products (EK) also contributes to increased consumer awareness and responsibility for the impacts of product purchases. Environmental awareness and responsibility are discussed in research by Sreen, Chatterjee, Bhardwaj, and Chitnis (2023) and Cui, Li, and Wang (2024) in Scopus publications on green purchase behavior.

As environmental damage increases, green products are becoming increasingly crucial in everyday use because they can minimize environmental damage and carbon emissions (Kumar, 2024). Furthermore, the push for sustainable use is increasing consumption and demand for green products (Shang, Zhu, Liu, & Liu, 2024; Singh, Rawat, Chaubey, Mani, & Singh, 2025). Existing research shows that eco-marketing is one tactic that can change consumer behavior, GPA, and GPI toward green products (Margariti, Hatzithomas, & Boutsouki, 2024; Obaid, & Rashid, 2024). Furthermore, GPA, EK, GT, and SN can influence GPI and GPB.

The Theory of Planned Behavior (TPB) provides a valuable theoretical lens for examining the determinants of GPB (Ngo, Nguyen, & Phan, 2025). According to Nguyen and Nguyen (2025), the TPB holds that a person's intention to engage in a behavior is generally influenced by three elements: GPA, SN, and perceived behavioral control. These three elements can also be used to predict environmentally friendly actions or GPB, such as a preference for green products (Liu, Liu, & Mo, 2020). However, the products that were researched in this study is easy to access with affordable price, so the perceived behavioral control in this study is deemed as stable, hence the model were focused on the cognitive and evaluative factor that were more dynamic.

2.1 The Effect of GPA on GPI

Attitude is a psychological tendency presented through evaluations, and it also plays a significant role in GPI as GPA are recognized as an important predictor of GPI (Purboyo & Firdaus, 2024; Purwianti, Winston, Ariyanto, & Putra, 2026). Based on research done by Moazzam et al. (2023) and Tan, Sadiq, Bashir, Mahmood, and Rasool (2022), GPA is an important indicator influencing GPI as it directly influencing purchase intention through positive evaluations. In this study, GPA was used to indicate consumers' overall judgement regarding their purchasing intention for green products (Shang et al., 2024).

H_1: GPA has a positive effect on GPI

2.2 The Effect of SN on GPI

Research by Shang et al. (2024) indicates that SN are a significant factor in GPI as they feel social pressure from important groups. These consumers, especially younger generation that were more sensitive towards societal expectation can feel pressure from social media, which can influence their desire for green products (Abeysekera, Manalang, David, & Grace Guiao, 2022; Sun & Xing, 2022). Therefore, SN are a crucial factor driving GPI (Kamalanon, Chen, & Le, 2022; Obaid & Rashid, 2024).

H_2: SN have a positive effect on GPI

2.3 The Effect of GT on GPI

GT is a substantial predictor in green product purchasing decisions because it relates to consumers' beliefs and expectations about green product features or options (Chan et al., 2025; Witek & Kuźniar, 2023). Companies with high environmental credibility will gain greater consumer trust, which, in turn, will affect consumers' GPI (Chauhan & Goyal, 2024). When skincare consumers believe the company's commitment in environmental health, the trust they have on the company will strengthen their intention in purchasing the goods (Amoako, Dzogbenuku, & Abubakari, 2020).

H_3: GT has a positive effect on GPI

2.4 The Effect of EK on GPI

EK is a significant indicator of GPI, as it reflects a person's knowledge and understanding of ecological concerns and regulations, and the capability to apply this knowledge to responsible decision-making (Permana & Susilowati, 2024; Tan et al., 2022). Consumers with EK tend to be aware of the benefits of environmentally friendly products and have stronger GPI (Purboyo & Firdaus, 2024). Knowledge regarding the environmental situation will help consumers in understanding the benefits of green products, which will create a strong purchase intention in desire to contribute to the environment (Cui et al., 2024; Zhang, Zhang, Li, & Zhou, 2024).

H_4: EK has a positive effect on GPI

2.5 The Effect of GPA on GPB

The Theory of Planned Behavior (TPB) states that GPA is considered a variable in GPB (Riskos, Dekoulou, Mylonas, & Tsourvakas, 2021; Rūtelionė & Bhutto, 2024). However, in pre-environmental consumption stage, while some consumers have affirmative attitudes toward environmentally friendly products and a high probability of purchasing them, they do not engage in environmentally friendly purchasing behavior (Duong, 2024). This contrasts with research by Margariti et al. (2024), which found that consumers with positive attitudes or strong environmental values tend to have a desire to contribute to the environment by doing an actual eco-friendly buying decision.

H_5: GPA has a positive effect on GPB

2.6 The Effect of SN on GPB

SN are perceived pressures from the social environment on individuals to take specific actions (Singh et al., 2025). Consumers are more prone to make purchases when they receive support or advocacy from friends, family, or colleagues to get their approval (Awan & Khan, 2025; Subagio, Satoto, Eko, & Nurrohim Kp, 2025). When consumers perceive the group's value on environmental wellbeing, they experience pressure that drive actual purchase decision. Therefore, TPB states that SN or the surrounding environment influence GPB (Ngo et al., 2025; Obaid & Rashid, 2024).

H_6: SN has a positive effect on GPB

2.7 The Effect of GT on GPB

Trust is a major determinant of GPB, as it affects consumers' desire to buy green products (Cai, Liu, Aduldecha, & Junaidi, 2025). When consumers have high expectations of a seller's intentions and behavior, they perceive the product as trustworthy, which, in turn, helps them make a purchase (Amoako, Dzogbenuku, & Abubakari, 2020; Chauhan, & Goyal, 2024). Sh, Rosli, and Quoquab (2022) also consider GT to be an influential driver of GPB as the consumers' trust on the product will push them to make direct green products purchase.

H_7: GT has a positive effect on GPB

2.8 The Effect of EK on GPB

EK is a knowledge of facts, theories, and relationships related to the environment and its surrounding ecology, which serves as a foundation for purchasing products based on the ecological conditions of the environment (Li et al., 2023; Zhang et al., 2024). Consumers that were well-informed regarding green purchase displaying a higher ecological responsibility, which will impact the action of purchasing the goods (Zhang et al., 2024). Other studies also acknowledge that EK plays a major role in GPI and GPB, as well as their impact on the environment (Duong, 2024).

H_8: EK has a positive effect on GPB

2.9 The Effect of GPI on GPB

GPI is a leading predictor of GPB, as purchase intention is often the key driver of actual purchase behavior (Laheri, Lim, Arya, & Kumar, 2024; Moazzam et al., 2023). Customers with strong GPI are more inclined to implement these intentions in future purchasing behavior as it reflected the willingness to buy the product in the future (Kumar, 2024; Pangestu & Tantra, 2026). Therefore, GPI acts as both a primary predictor and a mediating variable between various factors influencing and

showing positive effect on GPB (Kamalanon et al., 2022; Rahnama Haratbar, Saeedikiya, & Seif, 2024).

H₉: GPI has a positive effect on GPB

2.10 The Mediating Role of GPI between GPA and GPB

According to Duong (2024), green consumption can be viewed as an analytical process underlying GPB, occurring at the primary stage of the purchasing process. Attitude reflects each consumers evaluation on the specific intention and behavior regarding the goods purchase (Shang et al., 2024). This is evident in the TPB, which states that GPA can influence purchasing actions, which then forms an attitude-intention-behavior relationship and proves the statement that GPA in the initial stage will influence GPI, which then drives increased actual GPB (Margariti et al., 2024; Rūtelionė & Bhutto, 2024).

H₁₀: GPI positively mediates the relationship between GPA and GPB

2.11 The Mediating Role of GPI between SN and GPB

Kaur and Bhardwaj (2021) suggest that SN significantly influence GPI, which, in turn, drives GPB. This is in line with research by Moazzam et al. (2023), which finds that consumers with the confidence to live an environmentally friendly lifestyle are more likely to develop GPI that then leads to GPB. Other research also found that SN influence the motivation to purchase environmentally friendly products, which is then realized (Mekić, Residovic, Palalić, & Rodriguez de Prado, 2025). Consumers who are aware of the value or outlook regarding green products will be more sensitive to the pressure, thereby elevating their intention and drives GPB to seek approval (Obaid & Rashid, 2024).

H₁₁: GPI positively mediates the relationship between SN and GPB

2.12 The Mediating Role of GPI between GT and GPB

According to Arundati and Roostika (2024), GT is an important factor in consumers' GPI, which, in turn, influences GPB. Based on analyses of studies by other experts, Li et al. (2023) concluded that GPB driven by GT is typically mediated by GPI. High green trust mitigates greenwashing skepticism, thus directly strengthen the intention of purchase and drives GPB (Chauhan & Goyal, 2024).

H₁₃: GPI positively mediates the relationship between GT and GPB

2.13 The Mediating Role of GPI between EK and GPB

According to Li et al. (2023), in TPB, GPB driven by EK is typically mediated by GPI to encourage green practices. Consumers who possess higher environmental knowledge develop a strong willingness in choosing sustainable alternatives, which leads to actual GPB. While general environmental behavior has been explored, empirical validation to support this specific mediation chain, particularly in the context of green purchases of environmentally-friendly skincare industry in Indonesia remains limited.

H₁₃: GPI positively mediates the relationship between EK and GPB

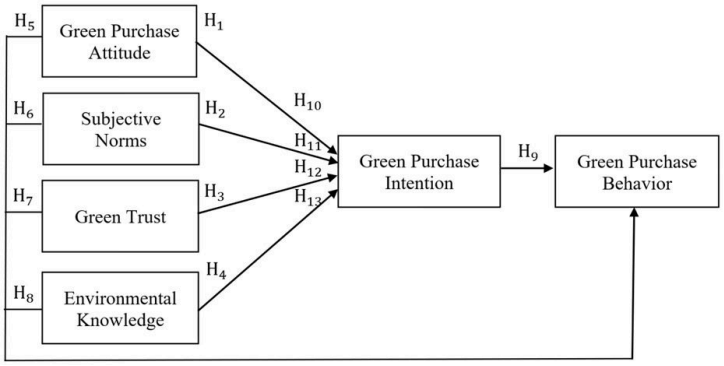


Figure 4. Conceptual framework

Figure 4 above shows the conceptual framework which stated the variables and the connection between those variables.

3. Research Methodology

Research is a method used to understand, identify causes, and find solutions to problems, based on expert opinions (Hasan & Elviana, 2022). Data were collected using quantitative methods via a Google Form questionnaire distributed across digital social media channels between November 2025 and March 2026 to determine the effect of eco-friendly labels on the consumer behavior of Generation MZ. The respondents were selected by purposive sampling based on the criteria that have been set (Lady, Shevia, Melsen, Purwianti, & Liu, 2025). Participants were filtered based on a few screening conditions, including have used or having knowledge regarding eco-friendly skincare products, being aged 18-44, and residing in Indonesia. Prior to data collection, the participant has been informed regarding research objectives and the usage of the data in this research.

The sample size was determined using the Hair and Alamer (2022) method, which calculates the minimum sample size using the 1:10 rule: each statement is represented by at least 10 respondents, which means the minimum sample needed is 220 responses. Sample size was further verified using GPower 3.1, with minimum sample of 146 respondents for a power og 0.8. The sample gathered totaled 272 valid responses which then used for statistical estimation. The statements were compiled in the Table 1 below, which shows research variables: the independent variables GPA, SN, GT, and EK, which are then mediated by GPI, and the dependent variable GPB.

Table 1. Measurement items

Variables	Label	Statements	Sources
Green Purchase Attitude (GPA)	GPA1	Buying green skincare products helps to reduce pollution and protect the environment.	Sousa, Correia, Viseu, and Larguinho (2022)
	GPA2	Buying green skincare products helps to reduce the waste of natural resources.	
	GPA3	Buying green skincare products contribute to the conservation of the natural environment.	
Subjective Norms (SN)	SN1	I think green and energy-efficient skincare products are more in line with social development.	Sun and Xing (2022)
	SN2	I think green and energy-efficient skincare products are more in line with my family's wishes.	
	SN3	I think green and energy-efficient skincare products are more in line with national policy.	
Green Trust (GT)	GT1	Green skincare products comply with applicable environmental standards and regulations.	Chan et al. (2025)
	GT2	The manufacturers' commitments and guarantees regarding green skincare products are trustworthy.	
	GT3	Green skincare products can meet individual environmental performance expectations.	
	GT4	Green skincare products fulfill their commitments and responsibilities to environmental protection.	
Environmental Knowledge (EK)	EK1	I am very knowledgeable about environmental issues.	Kamalanon et al. (2022)

Variables	Label	Statements	Sources
Environmental Knowledge (EK)	EK2	I know more about recycling than the average person.	Kamalanon et al. (2022)
	EK3	I know how to select products and packages that reduce the amount of landfill waste.	
	EK4	I know that I buy skincare products and packages that are environmentally safe.	
Green Purchase Intention (GPI)	GPI1	I am willing to buy an environmentally friendly skincare product.	Kamalanon et al. (2022)
	GPI2	If prices are not different from others, I may purchase environmentally friendly skincare products.	
	GPI3	If qualities are not different from others, I may purchase environmentally friendly skincare products.	
	GPI4	I would consider switching to other skincare products for ecological reasons.	
Green Purchase Behavior (GPB)	GPB1	I look at the skincare products ingredients label to see if it contains things that harm the environment.	Akandere and Gümrah (2025)
	GPB2	I prefer green skincare products to non-green products when product qualities are similar.	
	GPB3	I prefer to buy environmentally friendly skincare products.	
	GPB4	Even if the green version of a skincare product is more expensive than the non-green version, I buy the green version.	

This study uses SmartPLS 4.0 with a non-parametric complete bootstrapping procedure of 5.000 subsamples to estimate the model and test the hypotheses. PLS-SEM does not require multivariate normality, making it well suited for investigating data that violate traditional SEM distribution assumptions (Bilal, Ali, Shakil, Mukarram, & Haider, 2024). Descriptive analysis is then conducted by providing a description using words or numbers of the issues and behaviors of the respondents being studied (Haq et al., 2025). To ensure data validity against potential Common Method Bias (CMB) inherent in self-reported online surveys, a full collinearity test was conducted and it has been confirmed that all latent VIF values were below 3.3, proving CMB is not a threat.

The measurement model in PLS-SEM, also known as the outer model, explains how variables are represented through observed indicators (Setiawaty, Hartoyo, Nurmalina, & Yuliati, 2025). The outer model examines the relationship between latent variables and their measurement indicators through questionnaire-based measurement indicators. Therefore, when determining indicator (item) reliability, the outer loading value is analyzed (Dündar, Silik, & Yayla, 2025). Validity testing in this study was used to determine which measurement instruments were valid (Zarkasi & Sriyono, 2024). Convergent validity is generally assessed using the Average Variance Extracted (AVE), which assess the shared variance between the assessed and latent variables. Value greater than 0.5 for AVE is considered an acceptable criterion of convergent validity (Qin et al., 2025).

Reliability testing is a data analysis process in which measurement instruments, such as questionnaires, used in the study maintain consistency in measuring the indicators of the variables (Zarkasi & Sriyono, 2024). A variable can be regarded as reliable if the Cronbach's alpha above 0.6 (Zarkasi & Sriyono, 2024). Furthermore, in PLS-SEM, the structural model explains the proposed connection between latent constructs (Setiawaty et al., 2025). In evaluating the R2 value, values of 0.75, 0.50, and 0.25 are interpreted as strong, moderate, and weak, respectively (Qin et al., 2025).

Based on Dong et al. (2025), the direct effect reflects the impact of factors within the structural model. Generally, paths with p value below the benchmark (for example, 0.05 or 0.01) are indicated as significant. Thus, research can determine which connection between latent variables supported by the observed data (Qin et al., 2025). An indirect effect is a relationship between latent variables that does not occur directly. In contrast to the direct effect, the indirect effect reflects the effect of factors from other variables on a particular variable (Dong et al., 2025).

According to Zarkasi and Sriyono (2024), the coefficient of determination suggests the scope to which differences in a dependent variable can be interpreted by the independent variables. Goodness of Fit (GOF) is used to assess the extent to which observed event frequencies in a sample match the expected frequencies under the proposed distribution (Al-Jalili, Zwain, & Hayder, 2025). GOF values range from 0 to 1, where 0.1 means small, 0.25 means medium, and 0.36 means large (Rahadi, 2023).

4. Results and Discussions

In PLS-SEM, the measurement model, or outer model, typically explains the way variables were measured through observed indicators (Setiawaty, Hartoyo, Nurmalina, & Yuliati, 2025). An AVE value atop of 0.5 can be deemed as a good benchmark of convergent validity (Qin, Wang, Wang, Liu, Zhou, & Fu, 2025), and a variable can be regarded as robust if the Cronbach's alpha and composite reliability shows a figure above 0.7 (Hair, Hult, Ringle, & Sarstedt, 2021). Convergent validity refers to the extent to which multiple indicators are affecting each other and consistent in representing the concept (Cuandra, Susanto, Susilawaty, & Septiany, 2026).

Table 2. Validity and reliability result

Validity	Reliability						
Variables	Indicator	Outer Loading	AVE	Result	Cronbach Alpha	Composite Reliability	Result
Green Purchase Attitude	GPA1	0.854	0.741	Valid	0.825	0.895	Valid
	GPA2	0.875	0.741	Valid	0.825	0.895	Valid
	GPA3	0.853	0.741	Valid	0.825	0.895	Valid
Subjective Norms Subjective	SN1	0.882	0.779	Valid	0.859	0.914	Valid
	SN2	0.885	0.779	Valid	0.859	0.914	Valid
	SN3	0.882	0.779	Valid	0.859	0.914	Valid
Green Trust	GT1	0.905	0.819	Valid	0.926	0.948	Valid
	GT2	0.898	0.819	Valid	0.926	0.948	Valid
	GT3	0.898	0.819	Valid	0.926	0.948	Valid
	GT4	0.920	0.819	Valid	0.926	0.948	Valid
Environmental Knowledge	EK1	0.916	0.827	Valid	0.931	0.950	Valid
	EK2	0.895	0.827	Valid	0.931	0.950	Valid
	EK3	0.905	0.827	Valid	0.931	0.950	Valid
	EK4	0.923	0.827	Valid	0.931	0.950	Valid
Green Purchase Intention	GPI1	0.889	0.799	Valid	0.916	0.941	Valid
	GPI2	0.878	0.799	Valid	0.916	0.941	Valid
	GPI3	0.908	0.799	Valid	0.916	0.941	Valid
	GPI4	0.900	0.799	Valid	0.916	0.941	Valid
Green Purchase Behavior	GPB1	0.893	0.824	Valid	0.929	0.949	Valid
	GPB2	0.909	0.824	Valid	0.929	0.949	Valid
	GPB3	0.919	0.824	Valid	0.929	0.949	Valid
	GPB4	0.909	0.824	Valid	0.929	0.949	Valid

The results shown in Table 2 indicate values over the minimum requirement, so it can be concluded that the collected data is reliable and can be used.

Table 3 presents the cross-loadings, which are the coefficients of the question statements on other latent variables (Amora, 2021). Based on the collected respondent data, the cross-loading results are as follows.

Table 3. Cross loadings result

	EK	GPA	GPB	GPI	GT	SN
EK1	0.916	0.544	0.430	0.424	0.494	0.474
EK2	0.895	0.487	0.439	0.453	0.472	0.449
EK3	0.905	0.550	0.488	0.461	0.532	0.457
EK4	0.923	0.579	0.476	0.498	0.515	0.470
GPA1	0.535	0.854	0.568	0.548	0.557	0.574
GPA2	0.507	0.875	0.489	0.562	0.530	0.631
GPA3	0.492	0.853	0.490	0.547	0.559	0.552
GPB1	0.441	0.521	0.893	0.404	0.377	0.417
GPB2	0.450	0.544	0.909	0.416	0.382	0.409
GPB3	0.495	0.583	0.919	0.465	0.420	0.468
GPB4	0.443	0.522	0.909	0.419	0.398	0.412
GPI1	0.478	0.601	0.463	0.889	0.462	0.498
GPI2	0.447	0.568	0.411	0.878	0.421	0.449
GPI3	0.414	0.565	0.397	0.908	0.394	0.433
GPI4	0.467	0.557	0.407	0.900	0.422	0.456
GT1	0.476	0.573	0.383	0.419	0.905	0.399
GT2	0.489	0.546	0.396	0.393	0.898	0.376
GT3	0.522	0.623	0.416	0.467	0.898	0.465
GT4	0.513	0.559	0.380	0.438	0.920	0.393
SN1	0.446	0.599	0.399	0.473	0.358	0.882
SN2	0.448	0.572	0.432	0.418	0.449	0.885
SN3	0.452	0.630	0.418	0.467	0.399	0.882

Based on the test data, each indicator value shows a higher loading on the measured variable than on other variables. Therefore, each indicator adequately represents its variable, thereby meeting the criterion of discriminant validity.

Table 4 presents the HTMT result, a measurement method or estimation tool for assessing the correlation or relationship between two latent variables (Roemer, Schuberth, & Henseler, 2021). According to (Rasoolimanesh, 2022), HTMT result must be lessen than 0.85 or 0.9 to pass the criterion for discriminant validity.

Table 4. HTMT results

	EK	GPA	GPB	GPI	GT	SN
EK						
GPA	0.678					
GPB	0.541	0.683				
GPI	0.545	0.737	0.507			
GT	0.595	0.728	0.486	0.513		
SN	0.569	0.807	0.527	0.577	0.508	

The HTMT result were conducted by re-screening and removal of anomalous and repetitive data and re-estimated the data that were filtered. Following the previously filtered data, the results indicate that the discriminant validity meets the criteria.

Table 5 shows the result of Fornell-Larcker test, which determines discriminant validity using the Fornell-Larcker criteria: the root of each AVE must be greater than correlation with another variable in the research framework (Rasoolimanesh, 2022).

Table 5. Fornell-Larcker results

	EK	GPA	GPB	GPI	GT	SN
EK	0.910					
GPA	0.594	0.861				
GPB	0.505	0.599	0.908			

	EK	GPA	GPB	GPI	GT	SN
GPI	0.506	0.642	0.471	0.894		
GT	0.554	0.638	0.435	0.476	0.905	
SN	0.508	0.681	0.471	0.515	0.453	0.883

As reported by the results, the Fornell-Larcker analysis meets the criteria for discriminant validity.

Data testing on the inner model was held to check the relationships among the study's variables. First, a multicollinearity analysis was conducted using the Variance Inflation Factor (VIF) as recommended by Cuandra, Stefhani, Hesniati, and Candy (2024), which stated that VIF value lessen than 3.0 indicate that multicollinearity is not an issue. Thereafter, in evaluating the R2 value, values of 0.75, 0.50, and 0.25 were interpreted as strong, moderate, and weak (Qin et al., 2025).

Table 6. Inner VIF results

	VIF	Result
EK → GPI	1.732	No Multicollinearity
GPA → GPI	2.642	No Multicollinearity
GPI → GPB	1.000	No Multicollinearity
GT → GPI	1.831	No Multicollinearity
SN → GPI	1.926	No Multicollinearity

Based on the results that were shown in Table 6, all inner VIF values has not exceeded the standard, confirming the absence of collinearity issue.

Table 7. R Square results

	R-square	R-square adjusted
GPB	0.222	0.219
GPI	0.445	0.436

Results of the R-squared test shown in Table 7 found that GPI was moderately influenced by 43.6% by the independent variables in the research model, while the other 56.4% was influenced by other factors. This study also found that the independent variables explained 21.9% of GPB, with the other 78.1% influenced by variables outside the research model.

Lastly, Table 8 shows the results of data testing to determine direct and indirect relationships between variables, which is performed to identify inter-variable relationships. Statistically, when p-value is less than a predetermined significance level (e.g., 0.05 or 0.01), the path is stated as significant.

Table 8. Results of direct and indirect effect testing

	Sample mean (M)	P values	Result
GPA → GPI	0.432	0.000	Significant
SN → GPI	0.112	0.088	Not Significant
GT → GPI	0.063	0.346	Not Significant
EK → GPI	0.156	0.009	Significant
GPA → GPB	0.203	0.000	Significant
SN → GPB	0.053	0.094	Not Significant
GT → GPB	0.030	0.354	Not Significant
EK → GPB	0.074	0.016	Significant
GPI → GPB	0.471	0.000	Significant
GPA → GPI → GPB	0.208	0.000	Significant
SN → GPI → GPB	0.051	0.094	Not Significant

	Sample mean (M)	P values	Result
GT → GPI → GPB	0.028	0.354	Not Significant
EK → GPI → GPB	0.074	0.016	Significant

The analysis table shows the relationships among variables, indicating that H_2, H_3, H_6, H_7, H_{11} and H_{12} are not significant, whereas the remaining hypotheses are significant.

The analysis of the collected data concluded that GPA has a direct effect on GPI. This is evident in the sample mean and p-values, which were 0.432 and 0.000, respectively. The results indicate a positive relationship between GPA and GPI, which aligns with H_1 from the research by Sousa, Correia, Viseu, and Larguinho (2022), Permana and Susilowati (2024), along with Duong (2024). Therefore, it can be inferred that customers GPI is because of GPA.

Subsequently, the SN variable for GPI, with a sample mean of 0.112 and a p-value of 0.088, which means that SN does not influence GPI. This means that customers with greater environmental sensitivity, or who are sufficiently aware of others' opinions on green products, are more likely to not be influenced to purchase them. This conclusion aligns with research by Han and Utama (2024), Devani and Basmantra (2026), and Riyanto and Pangaribuan (2025).

Furthermore, the GT variable for GPI also showed an insignificant effect, with a sample mean of 0.063 and a p-value of 0.346. This indicates that GT does not affect GPI, as reported by Antonius (2019), Ghassani, Rahman, Geraldine, and Murwani (2022), and Widi and Ramli (2024). This suggests that customers who have high trust in companies or brands with an environmentally friendly image may be not inclined to purchase green products despite their belief in company.

The fourth variable, EK on GPI, showed a sample mean of 0.156 and a p-value of 0.009, indicating that EK have a positive effect on GPI. This study's results indicate that the inter-variable relationship is consistent with H_4. This also suggests that customers with ecological or EK does feel the encourage to purchase environmentally friendly products, in line with research by Sholihah and Harsoyo (2023), Liu, Lyu, and Suwandej (2026), and Choi and Johnson (2019).

Based on research findings related to the effect of GPA on GPB, which showed a sample mean of 0.203 and a p-value of 0.000, it can be seen that GPA has a positive effect on GPB, in line with Duong (2024) and Li, Rasiah, Zheng, and Yuan (2023). These results indicate that customers who have GPA are more likely to purchase them.

Additionally, data on the relationship between SN and GPB show a sample mean of 0.053 and a p-value of 0.094, indicating that the relationship does not supports H6, which posits that SN have a significant effect on GPB. The result shows that customers with SN does not mean they will engage in GPB. These results in line with research conducted by Cuandra, Putri, and Fasha (2026), along with Lim and Lady (2023) while it contradicts previous study by Subagio, Satoto, Eko, and Nurrohim (2025) which suggest that SN directly influencing GPB.

Next, research on the variables GT and GPB showed a sample mean of 0.030 and a p-value of 0.354, resulting inconsistency with H_7 which connects GT and GPB. This result is in line with research by Vironika and Maulida (2025), suggesting that GT does not have significant effect towards GPB. This means that customers with GT towards the product or the company's commitment towards green products does not mean that it will influence GPB. The result contradicts with Li et al. (2023) and Laela, Asdar, Rahman, and Dian (2022), which showing a positive result on relationship between GT and GPB.

Regarding the next variable, the research data on EK and GPB showed a sample mean of 0.074 and a p-value of 0.016. These data indicate that EK has effect on GPB, aligning with H_8. Therefore, it can be concluded that customers or potential customers with high awareness of the natural environment does convince them to do GPB, in line with research by Cui, Li, and Wang (2024) and Cuandra et al.

(2026). This result contradicts from Vironika and Maulida (2025), which suggest that EK does not affect GPB.

Based on the research on the ninth variable, GPI and GPB, the analysis results showed a sample mean of 0.471 and a p-value of 0.000, indicating that these results align with H_9, which means that GPI has a significant effect on GPB. This conclusion implies that customers who has GPI will ultimately engage in GPB, in line with the research result of Sousa et al. (2022) and Duong (2024).

Thereafter, the relationship between GPA and GPB, mediated by GPI, showed a sample mean of 0.208 and a p-value of 0.000, indicated an indirect relationship between GPA and GPB, consistent with research by Duong (2024) and Moazzam, Ahmad, Hussain, and Akram (2023). The results of the sample mean and p-value indicate that GPA directly relates to GPB. From these results, it can be seen that GPA lead to GPI, and ultimately to GPB.

Then, an analysis of the relationship between SN and GPB, mediated by GPI, showed a sample mean of 0.051 and a p-value of 0.094, resulting an insignificant effect in the relationship. The results consistent with Cuandra et al. (2026), suggesting that customers who pay attention to others' opinions about environmentally friendly products may not develop a desire to purchase them, which should drives purchasing behavior. The result shows a contradicting conclusion from Ngo, Nguyen, and Phan (2025) which stated that pressure from social circles can drive GPI, resulting in GPB.

Furthermore, the relationship between GT and GPB, mediated by GPI, showed a sample mean of 0.028 and a p-value of 0.354, indicating an insignificant effect, consistent with Megatama, Widowati, and Handayani (2026). This means that customers who trust environmentally friendly companies will not engage in green product purchasing or developing a desire to buy them. Li et al. (2023) and Sh. Sh, Rosli, and Quoquab (2022) founded that customers with trust and believe in the company or product will engage in GPB after developing desire in buying the product.

Finally, the data analysis for EK and GPB, mediated by GPI, yielded a sample mean of 0.074 and a p-value of 0.016. These results align with H_8, indicating that customers with knowledge of the condition or state of their natural environment, the relationship does affect the desire to purchase green products. H_{13} was accepted, in line with Li et al. (2023).

5. Conclusions

5.1 Conclusion

This study investigates the relationship determining green purchase behavior among MZ Generation skincare users in Indonesia within an extended framework from TPB. Results of this study concludes that GPA and EK positively affect GPI and GPB. However, SN and GT were found to have an insignificant effect on GPI and GPB. Furthermore, GPI showing a strong and positive result on GPB. The mediating relationship involving GPA and EK showing that GPI managed to successfully mediates the impact on GPB, whereas the mediation paths involving SN and GT through GPI to GPB were founded insignificant. These result shows that among the respondents, GPA and EK drives sustainable consumption, while social pressure and brand trust still require stronger triggers to push GPB.

5.2 Research Limitations

This study has several limitations in its analysis, including a relatively uneven scope: majority of the respondents are Gen Z, and Millennials are relatively rare. Therefore, the results restrict the generalizability of the research to a broader demographic population in Indonesia. This study also employed a cross-sectional design, collecting data at a single point in time, making it cannot track how GPI evolve to GPB over extended periods. Moreover, the measurement instrument relied on self-reported survey data, which may introduce self-report bias as respondents might over report positive answers to align with socially acceptable ecological values rather than their true habits. Lastly, although the discriminant validity criteria were fulfilled, there may be potential construct overlap

among the antecedents, which require cautious interpretation regarding the direct effect of the variables on GPB.

5.3 Suggestions and Directions for Future Research

Regarding future studies, it is recommended to limit quota for the demographic of respondents to avoid generational sampling bias. Future research could also adopt a longitudinal research design as this study only capture associations at one point in time. Longitudinal research will enable researchers in tracking how long GPI will evolve to GPB. Next, researchers could also utilize purchasing measures namely POS data or transaction logs rather than relying solely on questionnaire responses. In future study, researchers could add another variable such as greenwashing skepticism to explain the insignificant impact of green trust or another variable that could provide insight regarding the GPI-GPB gap in skincare market.

Acknowledgement

Author expresses his deepest gratitude to Universitas Internasional Batam for all the support, financial and non-financial. The system and facility provided were significant in supporting the research, ensuring the smoothness and effectiveness in all research activities.

Author Contributions

FC contributed to conceptualization, data curation, formal analysis, investigation, project administration, resources, supervision, validation, visualization, writing original draft, and manuscript review and editing. A contributed to conceptualization, data curation, formal analysis, investigation, methodology, project administration, resources, software, visualization, writing original draft, and manuscript review and editing. UKR contributed to conceptualization, formal analysis, methodology, validation, writing original draft, and manuscript review and editing. LP contributed to conceptualization, investigation, methodology, resources, supervision, validation, visualization, writing original draft, and manuscript review and editing. LS contributed to conceptualization, investigation, validation, writing original draft, and manuscript review and editing.

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