

Green Cosmetics And Generation Z In Indonesia: The Role Of The IMB Model In Predicting Purchase Intention

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Abstract

The development of green cosmetics is considered a transformative step that supports sustainability issues and environmental protection. Furthermore, Generation Z, which is the largest population segment in Indonesia, shows a positive response and concern for sustainability issues. However, a deeper understanding is needed to identify Generation Z's interests in green cosmetics. This is important considering that Generation Z is often seen as a reactionary digital society and is susceptible to being influenced by viral trends in society or on social media, as revealed in several previous studies. This research uses a theoretical framework from the Information-Motivation-Behavioral Skills (IMB) model. Through questionnaires on online survey, data from 264 Generation Z respondents in Indonesia are collected. This data was then analyzed using Descriptive Statistics and Structural Equation Modeling (SEM). The results of the analysis show that product knowledge significantly influences Generation Z's purchase intention. Self-efficacy acts as a mediator between knowledge and purchase intention. In addition, attitudes towards green cosmetics do not directly influence purchase intentions; self-efficacy becomes the bridge connecting attitudes and purchase intentions. The relationship between subjective norms and purchase intention is proven significant, with self-efficacy as the mediator. Meanwhile, although environmental awareness influences purchase intentions, self-efficacy does not mediate this relationship. The IMB model provides a deep understanding of what motivates Generation Z in Indonesia to choose green cosmetics. These findings have significant implications for marketers in promoting green cosmetics to strengthen the self-efficacy of Generation Z consumers in understanding their products.

Keywords: Green cosmetics, Generation Z, IMB model, Purchase intention, Self-efficacy.

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Introduction

The green cosmetics trend, propelled by the beauty industry, has garnered significant attention since these eco-friendly products align with the environmental protection and sustainability agenda (Limbu et al., 2022; Shimul et al., 2022). This commitment is

evident in the shift of cosmetic formulations, moving away from synthetic chemicals towards environmentally benign natural ingredients (Dini & Laneri, 2021). This shift was underpinned by a 2021 report, which estimated the global green cosmetics market at approximately 35 billion USD and projects the market to grow

to 59 billion USD by 2031 (Petruzzi, 2022), anticipating a compound annual growth rate (CAGR) of 5.3% from 2022 to 2031 (Allied Market Research, 2022). This data underscores consumer awareness of the adverse effects associated with synthetic chemicals in cosmetics.

In Indonesia, the potential for the green cosmetics market has received a significant boost from a unique demographic bonus, wherein the median age of the population is estimated to reach 29.9 years by 2023 (Worldometer, 2023). This factor directly impacts consumer dynamics, with Generation Z (Gen-Z) emerging as the dominant segment, as reflected in Figure 1 (Jayani, 2021). Recent research indicates a tendency among highly educated consumers — particularly men (Ali et al., 2023) and young women (Limbu et al., 2022), to choose chemical-free cosmetic products. Their motivation is primarily driven by two factors: the desire to care for their skin responsibly and the tendency to reduce negative environmental impacts while avoiding potential side effects (S. Khan & Salim, 2021). However, a paradox emerges in the behavior of Gen-Z

consumers. Although they appear to be more aware of sustainability, their preferences are often shaped by narratives presented through social media rather than by pure environmental awareness (Confetto et al., 2023). Research by Andika et al. (2023) reinforces this view, showing that men are more influenced by social media when looking to purchase green cosmetics, while women exhibit greater independence in their decisions. This situation raises important questions about how authentic interest in environmentally friendly products is developed and maintained among Gen-Z. In this context, it is crucial to explore and understand the psychology of Gen-Z consumers concerning their preferences for green cosmetics. A study by Ameen et al. (2023) revealed that, psychologically, Gen-Z shows significant interest and concern for green products. This research highlights the importance of understanding Gen-Z motivations, attitudes, and interests in the context of the green cosmetics market, which in turn can inform more effective and sustainable marketing and product development strategies.

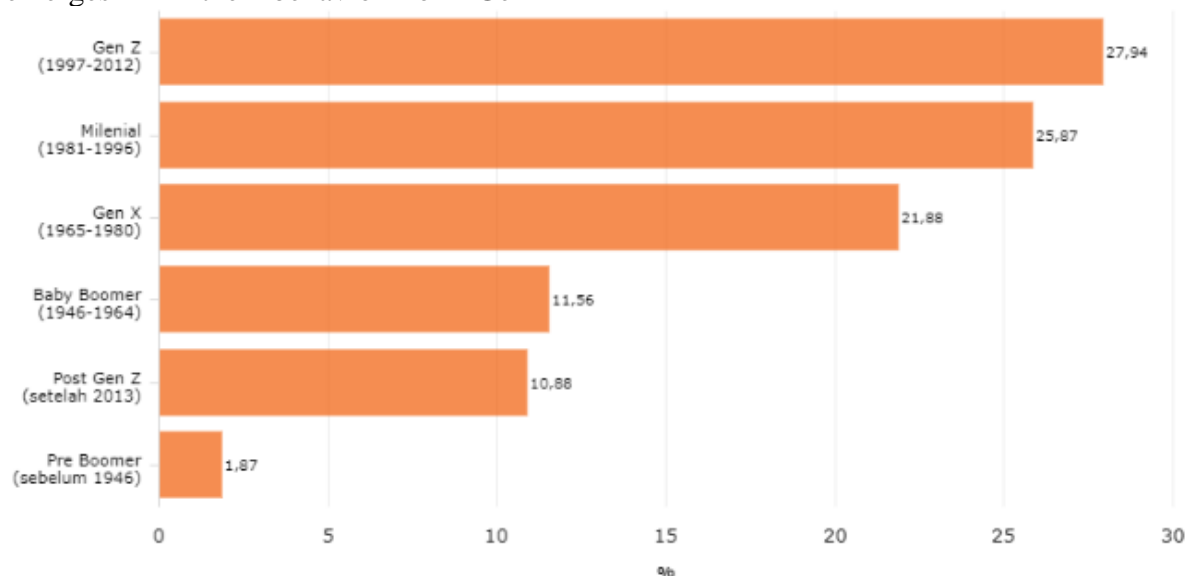


Figure 1. The proportion of Generation Z is Largest in Indonesia

Previous studies have extensively explored the various factors that influence buyer preferences in the context of green cosmetics. The variables identified include ecology, product understanding, ease of use, product superiority, lifestyle, individual perception, health, financial condition, personal beliefs, social expectations, and sense of control over behavior (S. Khan & Salim, 2021; Ma et al., 2018; Pudaruth et al., 2015; Shimul et al., 2022; Susanty et al., 2021; Wilson & Edelyn, 2022b; Zollo et al., 2021). However, there is a lack of literature that focuses on purchase intention using a specific theoretical framework, especially in the Indonesian context, where the majority of the market is composed of Generation Z, who are highly concerned with sustainability (Nurhayati-Wolff, 2023; Rama & Furinto, 2022; Wijaya & Kokchang, 2023; Wilson & Edelyn, 2022b). This study aims to fill the gap by applying relevant theoretical frameworks, hoping to provide deeper insights into the purchase preferences of green cosmetics among Generation Z.

Our research applies the Information-Motivation-Behavioral Skills (IMB) paradigm as a foundational framework for studying factors influencing Generation Z's interest in purchasing green cosmetic products. The IMB model, developed by Fisher & Fisher (1992), consists of three main components: 'information,' relating to consumers' knowledge about green cosmetics; 'motivation,' which includes attitudes, subjective norms, and environmental awareness; and 'behavioral skills,' referring to an individual's ability to translate information and motivation into purchasing actions. According to the IMB model, information and motivation directly influence behavior, with behavioral skills functioning as a mediator. We adopt the IMB model for its ability to categorize and systematically analyze factors influencing consumer choices. With this approach, we examine the influence of information and

motivation on purchasing intent, emphasizing the role of self-efficacy as a link between information and motivation in the intent to consume green cosmetics. The role of self-efficacy is vital, considering existing literature often overlooks its critical role in sustainable consumption (Limbu et al., 2022). We expect the results of this study to provide significant contributions to the understanding of the green cosmetics sector and support the development of more effective marketing strategies.

This research presents a substantial contribution to the consumer interest literature, particularly in green cosmetics, across three key dimensions. First, the study primarily focuses on the purchasing interest patterns of Gen-Z in Indonesia, highlighting their significance in the green cosmetics market. Second, the study will examine the broader interests of Gen-Z (both male and female) in green cosmetics, implying that it is not limited to women only, as opposed to the classic stereotype that cosmetics are only used by women, which we believe is no longer relevant today. Third, the study provides detailed insights into the purchasing interests of Gen-Z consumers and guides the green cosmetics industry in adjusting their product formulations and marketing strategies more effectively. The IMB model will assist in determining the variables that shape consumer purchase intentions, grouping them into domains such as information, motivation, and behavioral skills. Additionally, the uniqueness of this research lies in considering self-efficacy as a mediator variable often overlooked in previous studies, which is an essential determinant in consumer purchase intention. This research will meticulously outline how each component directs Gen-Z's intentions in the context of green cosmetics, forming a solid basis for subsequent research and offering practical implications for the development of corporate strategies.

Literature Review

Recently, green cosmetics have gained significant traction among academics and industry experts. Various studies have investigated the elements that drive purchase decisions across global demographics. For example, in Malaysia, Ghazali et al. (2017) identified factors such as product awareness, attitude, perceived action, pleasure value, health, and environmental value as highly important in repurchase decisions regarding personal care products. Lili et al. (2022) highlighted that brand perception and attitude are critical to purchasing green cosmetic products in China. Factors such as financial status, educational background, and understanding of green cosmetics play an essential role in Saudi women's purchasing decisions, as found by Khan & Salim (2021). A study on the Thai market by Suphasomboon and Vassanadumrongdee (2022) underlined the role of perceived utility and moral considerations. In a study conducted in Indonesia, Askadilla and Krisjanti (2017) identified that attitudes, social norms, and perceived behavioral control influence the desire to purchase environmentally friendly cosmetics. This study also confirmed a strong correlation between purchase intention and perceived behavioral control on the purchase behavior of green cosmetics.

When Munerah et al. (2021) engaged with Malaysian users unfamiliar with green beauty products, they learned that knowledge of the potential impact, effectiveness, and community and individual standards played an essential role in their purchasing decisions. Several other studies underlined the direct correlation between perceived behavioral influence and intention to purchase organic skincare products (Ghazali et al., 2017; Hsu et al., 2017). According to Ali et al. (2023), consumers are influenced by attitudes, societal expectations, and perceived control when considering the purchase of green

cosmetics. Another study examining Canadian consumer behavior found that external factors such as credibility, marketing perspective, and internal psychological elements such as societal expectations and compassion for animals play a role in their intention to purchase cosmetics not tested on animals (Grappe et al., 2021). Meanwhile, Pop & Zsuzsa's (2020) study conducted in Romania emphasized the influence of social media in shaping consumer perceptions, social expectations, and altruistic and self-interested motivations, which collectively influence the propensity to purchase green cosmetics.

Previous research predominantly focuses on exploring the influence of attitudes, societal norms, and perceived behavioral impacts on buying intentions (Jaini et al., 2020). However, the link between awareness of eco-friendly cosmetics and the intent to purchase them needs to be better investigated. These studies primarily concentrate on straightforward cause-and-effect dynamics. Consequently, there needs to be more comprehension of the foundational frameworks, such as mediating or moderating elements, which shape the likelihood of consumers buying eco-friendly cosmetics. Specifically, there is a scant amount of research investigating the mediating role of self-efficacy in how knowledge about green cosmetics, attitudes, and societal norms affect the intention to purchase (Limbu et al., 2022).

From a theoretical perspective, various studies have applied multiple models and theories to explain the purchase intention of green cosmetics, with most of these studies focusing on the Theory of Planned Behavior (TPB) (Ali et al., 2023; Askadilla & Krisjanti, 2017; Hsu et al., 2017; Pop & Zsuzsa, 2020; Susanty et al., 2021; Tengli & Srinivasan, 2022). The theoretical framework combines perspectives on attitudes, social norms, and perceived control over behavior. However, while the

Theory of Planned Behavior (TPB) offers significant explanatory capabilities, it restricts itself by concentrating solely on the direct correlation between its elements and the intention to purchase, thereby narrowing its range of application. Several other theoretical frameworks are also considered, such as the Theory of Reasoned Action (TRA) (Hansen et al., 2012; Yen et al., 2016) and its extended adaptation, Pro-environmental Reasoned Action (J. Chin et al., 2018; Wilson & Edelyn, 2022a). This expanded model incorporates additional factors like perceived support from authorities and environmental awareness (Nadlifatin et al., 2016).

A significant gap exists because minimal studies use the IMB model. In addition, although there are researchers who have tried to include the IMB model in their research, such as Limbu et al. (2022), they still need to integrate environmental awareness as a driving variable that affects purchase intention. This is surprising, given the increasing global emphasis on sustainability and environmental consciousness (Shen & Wang, 2022). Recognizing a significant void, our research aims to bridge the general knowledge gap and understand the unique role of environmental awareness as a motivational variable within the IMB model concerning the purchase intention of green cosmetics.

Theoretical Framework

We use the IMB framework (Fisher & Fisher, 1992) to explore the mechanisms of when and how knowledge about green cosmetics, environmental consciousness, attitudes towards green cosmetics, and prevailing social norms impact Generation Z's purchase intentions for green cosmetic products in Indonesia. Our framework highlights three key determinants that shape behavioral intentions: (1) In the green cosmetics category, this relates to consumers' understanding of the benefits,

advantages, and differences of green cosmetics compared to conventional cosmetics; (2) The innate drive to exhibit a behavior, which includes personal motivation (such as attitude and environmental consciousness), and external motivation (such as subjective norms), and (3) The capacity to behave depends on consumers' ability to act on their knowledge and motivation, including competence and self-efficacy, which are essential for demonstrating behavior (Rongkavilit et al., 2010). If an individual understands a behavior, has the drive to implement it, and has the skills and confidence to act in various conditions. The individual will likely actualize the behavior (Fisher et al., 2006).

As a theoretical basis, the IMB model is often used to examine a variety of health behaviors, including sexual risk reduction (John et al., 2017), adherence to HIV medication (Asadi et al., 2022; Movahed et al., 2019), uncertainty in obtaining a COVID-19 vaccine (Kaiser et al., 2023; Kim et al., 2022), contraceptive use (Shattuck et al., 2011; Zarbaf et al., 2022), condom use (Knox et al., 2023), diet and physical exercise (Kelly et al., 2012; You et al., 2023), supplement consumption (Limbu et al., 2021), fruit, and vegetable intake (Fleary et al., 2020), understanding organic food label (Limbu et al., et al., 2023), drinking sugary drinks in children (Beck et al., 2017), use of non-smoked tobacco products (Shell et al., 2011), Self-management for epilepsy patients (Xu & Wang, 2023), and prevention of respiratory infections for the elderly (Lee & Park, 2021). In addition, researchers have also used the IMB model to understand behaviors outside of health, such as financial data security (Iqbal et al., 2023), credit card usage (Limbu, 2017), and interaction in social media (Wang et al., 2023).

The IMB model is also explored in the context of environmentally supportive

behaviors. These include the adoption of GCT by farmers in Henan, China (Chen et al., 2022), the desire and act of recycling (Liu & Yang, 2022), the use of environmentally friendly disinfectants (Tong et al., 2023), the consumption of organic food (Limbu et al., et al., 2023), water conservation efforts at home (Ehret et al., 2021), and reckless disposal of waste in national park areas (Esfandiar et al., 2020). However, the application of the IMB model in the purchase behavior of green cosmetics still needs to be explored. Based on our review, only one study by Shimul et al.

(2022) explored this. With inspiration from the study by Shimul et al. (2022), we adopted the IMB model with some modifications: (1) we target Generation Z in Indonesia; (2) we include environmental awareness as a potential driver of behavioral intention. In the context of the IMB framework, we examined the direct influence of green cosmetics knowledge, environmental awareness, attitudes, and subjective norms on the intention to purchase green cosmetics. This analysis also incorporated self-efficacy as a mediating factor, as illustrated in Figure 2.

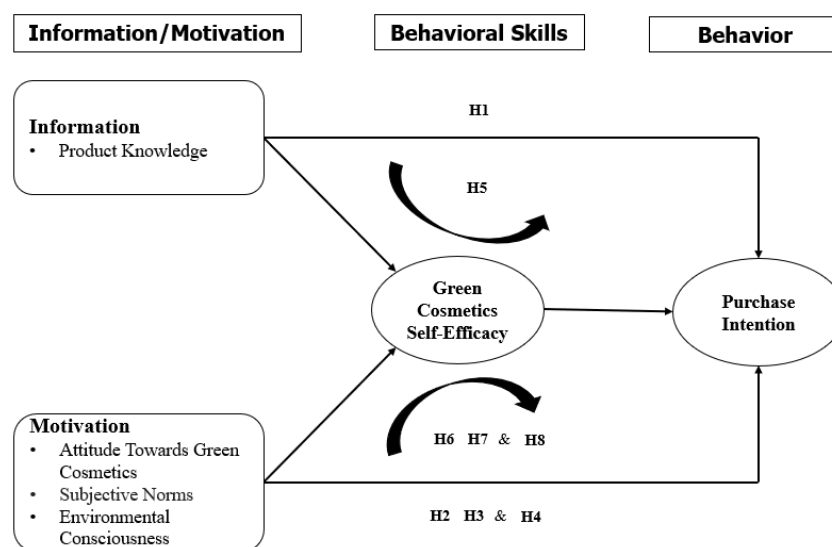


Figure 2. Conceptual Framework

Hypotheses development

Product Knowledge and Purchase Intention

In the age of digitalization, consumers have increased access to product information (Reinartz et al., 2019). Such accessibility has triggered significant consumer behavior changes, especially in purchasing decisions (Andika et al., 2023). Prior research has established a direct correlation between consumers' product awareness and their purchase intention. For example, consumers who deeply understand organic food products are more likely to purchase them (Hsu et al., 2017; Singh & Verma, 2017). In the context of green products,

consumers' depth of understanding of the product and associated brand is critical in influencing their purchase choices (Sun & Wang, 2020). When consumers have comprehensive information and knowledge, distinguishing the advantages of green products over conventional products becomes more accessible (Wang et al., 2019). Advances in technology and the widespread presence of social media have made it easier for consumers to get information about various products, including eco-friendly cosmetics. In this scenario, social media emerges as a critical information channel, raising consumer awareness about sustainability in the cosmetics sector (Pop & Zsuzsa, 2020). This increased awareness drives

consumers, who are increasingly conscious about the environmental impact of their product choices, towards eco-friendly options (Munerah et al., 2021). Thus, adequate knowledge about green cosmetics drives sustainable consumption intentions (Sun & Wang, 2020). Referring to the IMB model, individuals' information and understanding about a particular behavior, in this context, the purchase of green cosmetics, may influence their intentions. Drawing on previous analysis and research, we put forth the subsequent hypotheses:

H1: Higher levels of product knowledge have a significant impact on consumers' intention to purchase green cosmetics

Attitude and Purchase Intention

An attitude refers to how an individual evaluates and decides about behaviors they might engage in. This evaluation considers whether the individual views the behavior as positive or negative (Abdelwahed and Soomro, 2023; Zorlu et al., 2023). If the consumption of green products is perceived to benefit themselves and others, the individual will likely adopt the behavior (Chaudhuri et al., 2023; Duong, 2022). However, if it is perceived as unfavorable, they may avoid it. Numerous investigations have demonstrated a strong correlation between pro-environmental attitudes and corresponding supportive behaviors. For example, research in Vietnam showed a correlation between positive attitudes toward recycling and recycling actions taken (Nguyen et al., 2017). In organic food, consumer attitudes have been identified as a significant factor influencing purchase intentions (Gundala & Singh, 2021; Rana & Paul, 2017). A study by Islam & Hani (2021) and Zollo et al. (2021) discovered that consumers' positive attitudes toward organic personal care products correlate with their inclination to buy these products.

Similarly, consumer attitudes significantly affected willingness to purchase paraben-

free cosmetics (Hansen et al., 2012). However, some studies, such as the one conducted by Wijaya et al. (2019) and Xu et al. (2020), found different results, where consumer attitudes did not significantly affect purchase intentions. This variance in findings underscores the necessity for further research. Drawing on the IMB model, consumers' motivations, which include their attitudes towards a particular behavior (in this case, environmentally friendly cosmetics), can exert an influence on purchase intention. Therefore, we formulate the following hypothesis:

H2: Consumers' attitudes positively influence their intention to purchase green cosmetics

Subjective Norms and Purchase Intention

Subjective norm is defined as the social pressure felt by a person to act based on influence from peers, colleagues, or other members of society (Alimoradi et al., 2022; Jose K & Sia, 2022; Sajid et al., 2022; Wang et al., 2022). Several studies have shown how subjective norms influence individual decisions, particularly regarding purchase intention. To illustrate, Park & Lin (2020) found that subjective norms positively and significantly impact the purchase intention of recycled products. Similarly, Jung et al. (2021) revealed that social norms influence Chinese consumers' choosing sustainable clothing products. Even in developing countries, there is evidence of a link between subjective norms and purchase intentions (Saricam & Okur, 2019; Yadav & Pathak, 2016). In personal care, subjective norms have also positively impacted purchase intention for green products (Chua et al., 2020; Drake, 2022; Quoquab et al., 2020).

Furthermore, these norms influence the willingness of consumers who do not usually choose green products to purchase environmentally friendly personal care products (Munerah et al., 2021). However,

Kumar et al. (2017) and Rausch and Kopplin (2021) reported inconclusive findings regarding the relationship between subjective norms and the intention to purchase green products. Given the varying outcomes of prior investigations, there is a pressing need for additional research in this area. In the IMB model, social motivators, including subjective norms, play an essential role in shaping individual behavior. From a cultural standpoint, in non-Western collectivistic countries such as Indonesia, subjective norms are found to have considerable influence in shaping individual intentions (Irawan et al., 2022; Lee & Green, 1991). Building upon this premise, we formulate the following hypothesis:

H3: Subjective norms have a significant impact on consumers' purchase intention towards green cosmetics

Environmental Consciousness and Purchase Intention

People's understanding of environmental degradation has increased their consciousness of the importance of nature conservation. This consciousness has led to attitude changes and an increased appreciation of ecological values (Paola et al., 2020). Dunlap et al. (2000) define environmental consciousness as the extent to which a person recognizes environmental problems and desires to participate in recovery efforts. Individual emotions and feelings, such as anxiety, dissatisfaction, uncertainty, and empathy, shape this consciousness (O'Connor & Assaker, 2021; Verma et al., 2019). Numerous studies have established a positive correlation between intention to consume green products and environmental consciousness (McDonald et al., 2015; Mohd Suki, 2016; Mostafa, 2009). People who possess a solid environmental consciousness tend to actively engage in efforts to mitigate environmental impacts and take protective measures (McDonald et al., 2015). Mostafa (2009) identified

environmental consciousness as a critical factor influencing green consumption behavior. His research found significant differences in environmental consciousness between sustainable and non-sustainable consumers.

Mohd Suki (2016), on the other hand, demonstrated that individuals with solid environmental concerns exhibit a preference for green products and make more frequent purchases of them. A survey with respondents from China found that those with high environmental consciousness acted in favor of conservation more often. They are also more willing to pay a higher price for green products (Xu et al., 2020). Nonetheless, recent research by Kim and Lee (2023) presents an alternative viewpoint, stating that purchase intention is not significantly influenced by environmental awareness. This discrepancy in results suggests the need for further research. Based on the IMB model, environmental consciousness as a form of consumer motivation, particularly in the context of sustainable products such as green cosmetics, is expected to influence purchase intention. As a result, we posit the subsequent hypothesis:

H4: Consumer environmental consciousness has a significant impact on the intention to purchase green cosmetics

The Mediating Role of Self-Efficacy

Previous research has consistently demonstrated a positive relationship between individuals' knowledge levels, environmental consciousness, attitudes, and subjective norms, which collectively impact their behavioral competence. These interconnections are pivotal in shaping one's willingness to engage in various activities. To illustrate, Ameri et al. (2020) conducted a study highlighting the substantial influence of information and motivation on behavioral skills, subsequently affecting medication adherence, dietary compliance, and

physical activity among HIV/AIDS patients. Similarly, Iqbal et al. (2023) identified that self-efficacy mediates information acquisition and personal motivation in financial information security behavior. Additionally, Niu et al. (2021) explored health information-seeking intentions and motivations within the realm of health-related social media use among Chinese users. Their research uncovered that self-efficacy acts as a mediating factor in the link between health literacy and participation in health-related social media activities, influencing behavioral intentions on these platforms. Moreover, another study found an inverse relationship between knowledge about credit cards and social motivations and the misuse of credit cards, with self-efficacy regarding credit card use serving as a mediating factor (Limbu, 2017). In addition, environmental consciousness was shown to influence self-efficacy significantly and ultimately influence purchase intentions (Farliana et al., 2023; Li et al., 2018).

In the study of green behavior, there is evidence in the literature that suggests the role of behavioral skills as a mediator. For example, research conducted by Liu & Yang (2022) showed that a person's recycling behavior skills act as a partial mediator between recycling information and motivation and their recycling actions. According to the IMB Model, behavioral skills are necessary for an individual to perform certain behaviors (Fisher et al., 2006). This means that individuals with better behavioral skills tend to have a greater propensity to carry out certain behaviors. The IMB Model also suggests that people's actions reflect their information, motivation, belief, and confidence in their skills to act in diverse situations (Osborn et al., 2010)

Drawing upon established research and the IMB model, this study proposes that self-efficacy, conceptualized as a person's belief in their capabilities, may act as a

mediator in the nexus between diverse elements and the inclination to purchase green cosmetics. Consequently, the following hypotheses are advanced:

H5: Self-efficacy acts as a mediator in the connection between one's knowledge of green cosmetics and their purchasing intentions.

H6: Self-efficacy acts as a mediator in the connection between one's attitudes toward green cosmetics and purchase intentions

H7: Self-efficacy acts as a mediator in the connection between social norms and the desire to buy green cosmetics

H8: Self-efficacy acts as a mediator in the connection between one's environmental consciousness and green cosmetic purchase intention

Research Methods

Research Design, Sample Method, and Analysis

This study adopted a quantitative methodology with a survey design for data collection. Sample size determination followed the guidelines proposed by Chin (1998) through the often-referred "power analysis" method. Using G*Power, Faul et al. (2007) facilitated the calculation of the required sample size based on power analysis. The results further warranted a minimum of 76 samples per group to achieve a power above 0.80 (Quoquab et al., 2020). This research implemented the Consecutive Sampling method, where participants were selected based on criteria determined by the current age of Gen-Z in 2023, with an age range of 17-26 years, or those born from 1997 to 2006. Although the official birth years of Gen-Z start from 1997 to 2012, according to the official data of the Central Statistics Agency (BPS), we limited it only to those born until 2006 or 17 years old in 2023. This is because, at the age of 17, one begins the journey into adulthood in decision-making and becomes more rational (Diekema, 2020). Furthermore, as this study discusses

cosmetics often associated with women, we did not limit it to women only, meaning men were also involved in this research. This is because many studies no longer dichotomize between men and women in discussions on cosmetics (Ali et al., 2023; Andika et al., 2023; Khan et al., 2017; Limbu et al., 2022), especially in the context of discussing green cosmetics, which we believe everyone should be involved in, particularly Gen-Z in Indonesia to support sustainability agendas. The research was conducted from May to August 2023, using Google Forms as a survey instrument. The forms were distributed through WhatsApp and Instagram, yielding 264 responses. Of these, there were 98 male respondents and 166 female respondents, exceeding the minimum recommended sample size. The collected data were tested using Partial Least Squares (PLS) within the framework of the Structural Equation Model (SEM). Testing involved evaluation of the

measurement model (Outer Model), examination of the structural model (Inner Model), and inspection of path coefficients in accordance with the criteria outlined by Hair et al. (2017).

Measurement and Data Collection

This study integrates the Information-Motivation-Behavioral (IMB) model with existing literature on product knowledge, environmental awareness, attitudes, subjective norms, self-efficacy, and intention to purchase green cosmetics. Data were collected from respondents via a 5-point Likert scale, with a score of five representing 'strongly agree' and a score of one representing 'strongly disagree.' Table 1 presents the measurement instruments for each variable, carefully selected to maintain the content validity of the assessment questions.

Table 1. Research Instrument

Variable Names	Item Code	Indicator	Outer Loading
Product Knowledge (Ghazali et al., 2017)	PK	1. I possess substantial knowledge of green cosmetic products	0.861
		2. My experience with purchasing green cosmetic products has been positive	0.879
		3. I understand the benefits of green cosmetics.	0.858
		4. I have a superior understanding of green cosmetic products compared to individuals within my acquaintance.	0.814
Consumer Attitudes Toward Green Cosmetics (Limbu et al., 2022; Shimul et al., 2022)	CA	1. I feel proud when I want to buy green cosmetics.	0.857
		2. I always prioritize using green cosmetics.	0.853
		3. I intend to recommend green cosmetic products to others.	0.867
		4. The effectiveness of green cosmetic products surpasses that of conventional cosmetic products.	0.844
Subjective Norms (Promotosh et al., 2011)	SN	1. I prefer to buy green cosmetics when a family member recommends it.	0.866
		2. I prefer to buy green cosmetic products when a friend recommends them.	0.894

		3. I learned from my parents how to differentiate between green and conventional cosmetics.	0.808
		4. My friends taught me how to differentiate between green and conventional cosmetics.	0.849
		5. Social media has the potential to impact my inclination to buy green cosmetic items.	0.643
Environmental Consciousness (Kapoor et al., 2019)	EC	1. I prefer Green Cosmetics due to its potential to mitigate environmental issues.	0.88
		2. I opt for green cosmetics due to their environmentally friendly properties	0.93
		3. My preference leans towards green cosmetics due to their composition of natural ingredients	0.885
		4. I choose Green Cosmetics because of my desire to contribute positively to the health of the environment.	0.847
Self-efficacy (Limbu et al., 2022)	SE	1. The choice to buy green cosmetic products is entirely in my hands.	0.733
		2. I possess the autonomy to select green cosmetic items	0.888
		3. I have confidence in my ability to afford and choose green cosmetics.	0.818
Purchase Intention (Chin et al., 2018)	PI	1. I tend to purchase green cosmetic products.	0.828
		2. I plan to purchase an environmentally friendly cosmetic product once my current one is depleted.	0.876
		3. I suggest the use of environmentally friendly cosmetic products to others.	0.855

Result and Discussion

Respondent Characteristics

Characteristics of the respondents reveal the distribution in terms of gender, age, educational attainment, income bracket, and purchase frequency. As per Table 2, most respondents were female, constituting 63%. All respondents fell within the age

bracket of 17 to 26 years. Additionally, 65% had an educational background up to DI-III/S1, while 51% had an income of less than 1 million. 73% reported buying cosmetic products monthly. This respondent distribution provides a reasonably representative insight into green cosmetic usage patterns in Indonesia.

Table 2. Respondent Characteristics

Category	Subcategory	Frequency	%
Gender	Men	98	37%
	Female	166	63%
Age	17-26	264	100%
Education Level	<High School	10	4%
	High School	70	27%

	Diploma I/II/III/Bachelor's Degree	172	65%
	Master's/Doctoral Degree	12	4%
Income Level	<1 million	136	51%
	1-2 million	66	25%
	3-5 million	45	17%
	6-8 million	10	4%
	>8 million	7	3%
Frequency of Purchase	Once a month	194	73%
	Every two months	41	16%
	Three times a month	15	6%
	Others.	14	5%

Measurement Model Testing

The research methodology employs an external model analysis, also known as a measurement model, to assess the model's validity and reliability according to predefined criteria. The standards assessed include convergent validity, seen through factor loading; discriminant validity, measured based on Average Variance Extracted (AVE); and composite reliability, measured using Composite Reliability. Further details are presented in Tables 1 and 3.

From the convergent validity test results listed in Table 1, it can be seen that each

indicator has a factor loading that exceeds 0.6, indicating validity following the established standards (> 0.6) (Hair et al., 2017). On the other hand, from the evaluation in Table 3, all indicators of each variable meet the validity criteria, with AVE values of more than 0.50 each (Hair et al., 2017).

In addition, from the Composite Reliability analysis, the composite reliability for all constructs is more than 0.70, indicating consistency and stability (Hair et al., 2017). Thus, this measuring instrument is proven reliable and valid to measure the variables that are the focus of the study.

Table 3. Discriminant validity and composite reliability test results

		Composite Reliability	Average Variance Extracted (AVE)	
PK	>0.70	0.915	>0.50	0.728
CA		0.916		0.731
SN		0.908		0.667
EC		0.936		0.785
SE		0.856		0.665
PI		0.889		0.728

Structural Model Evaluating

This study utilizes the Partial Least Squares (PLS) technique, which is a variance-based approach within the Structural Equation Modeling (SEM) framework. The main

objective of PLS is to validate conceptual models, with particular emphasis on their predictive potential. As part of the validation process, we introduce several evaluation metrics to ensure the suitability of the proposed model. Among the metrics

used are R square, Q square, SRMR, and PLS Predict, according to the guidelines proposed by Hair et al. (2019).

Our analysis found that the variables of product knowledge, environmental consciousness, attitude, and subjective norms have minimal influence on self-efficacy, with an R Square of 0.491. However, when considering purchase intention, the picture is different. The variables exerted a moderating influence with an R Square of 0.647, in line with the standard suggested by Hair et al. (2011). Furthermore, based on the standards set by Hair et al. (2019), we find that the Q square value for the purchase intention variable is 0.459, which signifies moderate predictive precision. The same applies to the self-efficacy variable, which has a Q square of 0.308, indicating moderate accuracy in the context of this study.

In the PLS-SEM context, SRMR is an essential metric for evaluating model fit. According to the guidelines of Henseler et al. (2014), a value below 0.10 indicates a good fit. The estimates from this study yielded an SRMR value of 0.06, indicating adequate model fit. With this data, we can

better understand the interaction between variables in the model.

Finally, it is essential to emphasize the power of PLS in the context of prediction, particularly when compared to linear regression (LM) models. An approach to assess the predictive performance of Partial Least Squares (PLS) is by contrasting the Root Mean Squared Error (RMSE) or Mean Absolute Error (MAE) metrics of PLS against those of linear regression models (Hair et al., 2019). This analysis shows that most components in PLS have lower RMSE and MAE than LM. This finding indicates that the proposed PLS model has moderate predictive potential.

Results of Hypothesis Testing

In this study, eight cause-and-effect relationships were proposed. Statistical analysis confirmed 6 of them and rejected two others. Hypothesis testing was based on T-statistic values and P-Values, utilizing the SmartPLS 3.3 software through the Bootstrapping method. The criteria applied were that the T-statistic should be greater than 1.96 with a P-value less than 0.05 (5%) and possess a positive beta coefficient. Details of the hypothesis tests can be seen in Table 4.

Table 4. Hypothesis Test Results

			Original Sample	T Statistics	P Values	Conclusion
Direct	H1	PK -> PI	0.174	3.129	0.002	Accepted
	H2	CA -> PI	0.022	0.3	0.765	Rejected
	H3	SN -> PI	0.266	3.684	0.000	Accepted
	H4	EC -> PI	0.311	4.443	0.000	Accepted
Indirect	H5	PK -> SE -> PI	0.059	2.485	0.013	Accepted
	H6	CA -> SE -> PI	0.073	2.673	0.008	Accepted
	H7	SN -> SE -> PI	0.042	1.99	0.047	Accepted
	H8	EC -> SE -> PI	0.011	0.631	0.528	Rejected

Based on the data in Table 4, we draw several conclusions:

H1: Impact of Product Knowledge on Purchase Intention

Our analysis reveals that the path analysis value is positive, with significance below 0.05 and t-statistics above 1.96. This indicates that product knowledge related to green cosmetics significantly impacts

Generation Z's purchase intention. Thus, Hypothesis 1 is accepted.

H2: Impact of Gen Z Attitudes on Purchase Intentions

Our analysis reveals that although the path coefficient is positive, the significance level exceeds 0.05, and the t-statistic is below 1.96. This suggests that Generation Z's attitude towards green cosmetics does not significantly influence their purchase intentions. Therefore, Hypothesis 2 is rejected.

H3: Impact of Subjective Norms on Purchase Intention

Our analysis indicates that the path coefficient is positive, with a significance level below 0.05 and a t-statistic above 1.96. This suggests that subjective norms significantly influence Generation Z's purchase intentions regarding green cosmetics. Therefore, Hypothesis 3 is accepted.

H4: Impact of Environmental Consciousness on Purchase Intention Our analysis reveals that the path coefficient is positive, with a significance level below 0.05 and a t-statistic exceeding 1.96. These results indicate that Generation Z's environmental consciousness significantly influences their intention to purchase green cosmetics. Therefore, Hypothesis 4 is accepted.

H5: The mediating role of efficacy in the relationship between product knowledge and purchase intention.

Our analysis shows that the path analysis value is positive, with a significance value below 0.05 and a t-statistic above 1.96. This indicates that self-efficacy acts as a significant mediator in linking product knowledge to Gen Z's purchase intention for green cosmetics. Thus, Hypothesis 5 is accepted.

H6: The Mediating Role of Efficacy in the Relationship Between Gen Z Attitude and Purchase Intention.

Our analysis shows that the path analysis value is positive, with a significance value below 0.05 and a t-statistic above 1.96. This indicates that self-efficacy plays a significant mediating role in linking Gen Z's attitude to the purchase intention of green cosmetics. Thus, Hypothesis 6 is accepted.

H7: The mediating role of self-efficacy in the relationship between subjective norms and Gen Z Purchase Intention.

Our analysis shows that the path analysis value is positive, with a significance value below 0.05 and a t-statistic above 1.96. This indicates that self-efficacy acts as a significant mediator in linking subjective norms to Gen Z's purchase intention for green cosmetics. Thus, Hypothesis 7 is accepted.

H8: The mediating role of self-efficacy in the relationship between Gen Z's environmental consciousness and Purchase Intention.

Our analysis shows that the path analysis value is positive, but it has a significance value above 0.05 and a t-statistic below 1.96. This indicates that self-efficacy is unable to act as a mediator in linking environmental consciousness to Gen Z's purchase intention for green cosmetics. Thus, Hypothesis 8 is rejected.

Discussion

Produk Knowledge on Purchase intention and mediation of self-efficacy

The analysis indicates that Generation Z's knowledge about green cosmetics in Indonesia significantly influences their purchasing intentions. This result aligns with previous research conducted by Sun and Wang (2020); and Lestari and Roostika (2022), which shows that adequate knowledge about green cosmetics encourages sustainable consumption intentions and is consistent with the global literature on Generation Z consumer behavior (Duc et al., 2023). In today's digital era, where access to information is

effortless, Generation Z in Indonesia, who are well-informed, tend to have a deeper appreciation of the benefits of sustainable products, including health, environmental, and ethical aspects. As a result, they are more inclined to choose green cosmetics (Oktariani et al., 2020).

Upon conducting a more thorough analysis, it was discovered that self-efficacy acts as a mediator between product knowledge and purchase intention. This aligns with the findings of Ding and Jiang (2023), who underline that Generation Z needs to be self-efficacy in applying their knowledge during decision-making. The ability to discern and use such information wisely is crucial in the current context, where data is abundant. In response, marketers should focus on information dissemination and ensure that Generation Z feels competent in utilizing such information effectively (Dwivedi et al., 2021).

The practical implications of these findings highlight the need for a specialized approach for marketers targeting Generation Z in Indonesia. While educating about green cosmetic products remains vital, a more holistic approach that encompasses enhancing the self-efficacy of consumers, particularly Generation Z, becomes a priority. Strategies such as training, product demonstrations, or marketing campaigns explicitly tailored for Generation Z can boost their confidence in choosing sustainable products.

Attitude on Purchase intention and mediation of self-efficacy

The analysis results reveal that Generation Z's attitude towards green cosmetics does not directly impact their purchase intention. This is quite a contrast, given the increasing trend of environmental consciousness among the younger generation. Previous literature, such as Gundala and Singh (2021), Islam and Hani (2021), and Zollo et al. (2021), have indicated that positive attitudes towards green products correlate

with stronger purchase intentions. However, Generation Z and Green Cosmetics have different dynamics. Most likely, this is due to other factors that are more dominant in influencing Generation Z's purchase decision. For example, considerations such as product effectiveness, availability, price, and recommendations from influencers may hold more weight in determining their purchase intention than their attitude toward product sustainability (Basumbul, 2016; Najib et al., 2022).

Nonetheless, other findings suggest that self-efficacy mediates between attitude and purchase intention. This shows the importance of an individual's belief in their ability to make a positive impact. Although Generation Z may be pro-green cosmetics, it has not had a significant effect on influencing purchase decisions. Therefore, belief in their self-efficacy can be a crucial motivation for purchase. The discovery is in accordance with the outcomes of a study carried out by Limbu et al. (2022), which emphasized the significance of self-efficacy in connecting attitudes and the intention to purchase environmentally friendly cosmetics among the youth of Vietnam.

Hence, to enhance the efficacy of marketing eco-friendly cosmetics, manufacturers must focus on educational and awareness initiatives. These efforts should emphasize the environmental benefits of their products, thereby enabling consumers to make informed choices with every purchase. From a marketing perspective, it is beneficial to develop campaigns that underscore the positive impact of choosing green cosmetics, as this can bolster consumer self-efficacy. Additionally, collaborating with influencers who share similar values can be an effective tactic in targeting Generation Z, ultimately influencing their purchasing decisions.

Subjective norms on Purchase intention and mediation of self-efficacy

The results of the analysis show a significant impact of subjective norms on Generation Z's purchase intentions, which underscores the critical role of external perceptions in shaping their purchase decisions. For example, recommendations from friends or family can have a significant influence on Generation Z's purchasing choices. The present discovery aligns with earlier research outcomes as demonstrated by Chua, Quoquab, and Mohammad (2020); Drake (2022); and Quoquab, Jaini, and Mohammad (2020), highlighting the power of subjective norms in influencing purchase intentions in the personal care.

In addition, further analysis found that self-efficacy plays an essential role in mediating the relationship between subjective norms and purchase intention. Self-efficacy reflects an individual's beliefs about their ability to make purchase decisions in accordance with the views and opinions of the society they value (Xu et al., 2022). This means that if Generation Z consumers feel confident in choosing green cosmetic products and believe that the decision supports their subjective norms, then their desire to buy the product will increase. The discovery aligns with the outcomes of a study conducted by Limbu et al. (2023), who also highlighted the significant role of self-efficacy in mediating the effect of subjective norms on the purchase intention of organic food products.

These findings have significant strategic implications for stakeholders in the green cosmetics industry. To effectively appeal to Generation Z, marketing strategies should emphasize the alignment of their products with the subjective norms of the target demographic. Furthermore, companies can enhance their ability to reach and influence Generation Z by placing a strong emphasis on the concept of self-efficacy, particularly within the context of sustainable and environmentally friendly purchasing decisions,

Environmental consciousness on Purchase intention and mediation of self-efficacy

The analysis findings indicate a significant influence of environmental awareness on the inclination to purchase green cosmetics, which corroborates the prevailing global trend of consumers increasingly prioritizing the ecological footprint of their product choices (McDonald et al., 2015; Mohd Suki, 2016; Shimul et al., 2022). Generation Z, who grew up in the era of globalization and information, is more exposed to global environmental issues than previous generations (Wijaya & Kokchang, 2023). Therefore, they tend to be more aware of the importance of choosing environmentally friendly products. In green cosmetics, this choice may be based on several reasons. Green cosmetics usually do not contain harmful chemicals for humans and the environment (Dini & Laneri, 2021). In addition, green cosmetics production prioritizes sustainability, from raw material sourcing and production processes to distribution (Dube & Dube, 2023). Therefore, Generation Z's environmental consciousness encourages them to choose products that align with these values.

However, further analysis revealed a surprising finding that self-efficacy did not significantly serve as a mediator between environmental awareness and the intention to purchase products. Theoretically, a combination of high environmental consciousness and strong self-efficacy should prompt individuals to choose eco-friendly cosmetic products, thereby boosting their purchase intentions (Limbu & Ahamed, 2023). However, the reality reflects the opposite. Several factors might explain this phenomenon: First, Generation Z, which may already have a high environmental consciousness, renders self-efficacy less relevant in influencing their purchasing intentions. Second, Generation Z might perceive environmental issues as a collective responsibility, not just an individual one. As a result, even with high awareness, they might feel that individual

actions have limited significant impact. This research aligns with the findings of Farliana et al. (2023), which revealed that self-efficacy does not mediate the influence of environmental consciousness on eco-friendly consumption behavior. However, it is essential to highlight that there has yet to be another study focusing on the role of self-efficacy in linking environmental consciousness with purchase intention, especially in the context of green cosmetic products.

The results of this research offer valuable insights to the cosmetics sector regarding the development of marketing strategies tailored to meet the preferences of Generation Z. By knowing that environmental consciousness affects their purchase intention towards green cosmetics, brands can tailor their campaigns to highlight sustainability values. Meanwhile, the lack of effect of self-efficacy as a mediating factor implies that Generation Z's purchase choices may depend heavily on consumer education initiatives, pricing strategies, and distribution approaches. Therefore, gaining a comprehensive insight into the motives and barriers faced by Generation Z consumers is of considerable value in enhancing product market penetration.

Conclusion

This study uses the IMB model to explore the factors that influence Generation Z's intention to purchase green cosmetic products in Indonesia. The study's pivotal findings demonstrate that Generation Z's product knowledge significantly influences their purchasing intentions, with self-efficacy acting as a mediator between this knowledge and purchase intention. However, their attitude towards green cosmetics does not directly determine purchase choices, while self-efficacy mediates the link between attitude and buying decisions. The influence of subjective norms on purchasing decisions is strong, with self-efficacy bridging the

relationship between these norms and intention. Finally, although environmental consciousness significantly affects purchase intentions, self-efficacy does not mediate between these two. These insights have profound implications for marketers, emphasizing the need to foster environmental consciousness, align with societal norms, and bolster self-efficacy among Generation Z consumers in Indonesia.

Limitations and Future Research

This research encounters several significant limitations. First, the limited number of respondents restricts the ability to generalize the study's findings. Second, the focus of the research is limited to Generation Z consumers in Indonesia within the context of the eco-friendly cosmetics industry, which may only partially reflect consumer behavior in other markets or within other sustainable product contexts. Third, the study is centered on the IMB model without considering other theories that might also be relevant. Fourth, the cross-sectional approach used allows for the observation of phenomena at a single point in time only, thus failing to capture changes in consumer intentions or behavior over time. Fifth, while the study's focus on Gen-Z's purchasing interest based on the IMB model provides a good starting point, it needs to be followed up with research on their actual behavior towards green cosmetics. Given these limitations and findings, several recommendations for further research include: 1) Conducting research with a larger sample to improve the reliability and generalizability of findings, where a more diverse group of participants will provide a more comprehensive view of consumer intentions and behaviors; 2) Exploring additional factors that influence the intention to purchase eco-friendly cosmetics, such as cultural or socio-economic factors, beyond the IMB model; 3) Expanding the research to other Southeast Asian countries or adopting a cross-cultural approach for a more holistic

view; 4) Examining the role of self-efficacy in other contexts, such as organic food or sustainable clothing, to further understand the mediating role of self-efficacy in sustainable consumer interest; 5) Conducting longitudinal studies to observe how intentions and behavior change over time, which will provide a more dynamic understanding of the market and the factors influencing consumer decisions.

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