


## Article

# Predictors of Green Cosmetics Purchase Intentions among Young Female Consumers in Vietnam

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**Abstract:** Using the Information–Motivation–Behavioral Skills (IMB) model as a theoretical framework, we examine the direct effects of knowledge, attitude, and subjective norms on young women’s intention toward purchasing green cosmetics, and whether self-efficacy mediates these effects. Data were collected from 433 young female consumers and analyzed using the PROCESS macro for SPSS. Green-cosmetics-related knowledge and motivation (attitude and subjective norms) were positively related to green cosmetics purchase intention. Self-efficacy partially mediated the effects of knowledge, attitude, and subjective norms on purchase intention. The IMB model offers a useful framework for understanding the factors affecting young Vietnamese women’s intention toward purchasing green cosmetics. Marketers promoting green cosmetics should aim to increase consumers’ confidence in comprehending their products.

**Keywords:** green cosmetics knowledge; attitude toward green cosmetics purchase; subjective norms; green cosmetics purchase intention; self-efficacy



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## 1. Introduction

Green cosmetics, also called natural and organic cosmetics, consist of natural resources, such as fruit-based ingredients without chemicals, additives, or any nonnatural mixtures; they aim to preserve the environment and the welfare of animal species [1,2]. In other words, green cosmetics are produced without pesticides, synthetic chemicals, or animal testing [3]. Green cosmetics include a wide range of personal care products, including environmentally friendly creams, makeup, and beauty products. The demand for green cosmetics across the world is expanding at a fast pace. The global natural and organic cosmetics market was valued at approximately USD 34.5 billion in 2018 and is expected to reach USD 54.5 billion by 2027 at a compound annual growth rate of 5.2% from 2018 to 2027 [4].

As the use of personal care products is a part of everyday life, consumers are more aware of the detrimental effects of cosmetic products laden with inorganic material [5,6]. In particular, many young female consumers, especially educated working women, are motivated to purchase chemical-free cosmetic products as they help protect human skin with minimum or no harmful environmental effects [7]. Even nongreen consumers (those without prior experience using green beauty products) purchase green beauty products under certain circumstances [8].

Although the green cosmetics industry is still in its nascent stage, researchers paying increasing attention to this topic have uncovered a broad spectrum of variables influencing consumers’ intentions to buy natural and organic personal care products, including environmental value, product knowledge, convenience, quality, lifestyle, self-image, health and economic conditions, attitudes, subjective norms, and demographics such as age, education, and income [7,9–12]. However, few studies have examined the predictors of

green cosmetics purchase intention using theoretical frameworks [13–15], especially in the context of emerging markets.

Vietnam, an emerging country, has a relatively young population with a median age of 32 in 2020. Gen Zers and Millennials, which make up approximately 20% and 35% of the Vietnamese population, respectively, have become a driving force and a major target market for the cosmetics industry [16]. Vietnam experienced rapid economic growth and industrialization in the last few decades, which also resulted in environmental degradation. Vietnamese consumers have become more sensitive to the environmental impacts of their shopping decisions. Therefore, the understanding of young Vietnamese consumers' purchase intentions of green cosmetics is extremely crucial for marketers. The Vietnamese cosmetics industry, as one of the most promising markets for cosmetics manufacturers in the Asian Pacific region, has witnessed tremendous growth. Its cosmetics market was valued at USD 2.3 billion in 2021 and has been projected to grow 15–20 percent annually [17]. The demand for organic and natural cosmetics is increasing among young Vietnamese consumers. However, little is known about the role of product knowledge and motivational factors influencing green cosmetics purchase intentions of young Vietnamese consumers. There is a need for further research in this area [18].

The literature also calls for exploring factors influencing consumers' intention to buy green cosmetic products using various theoretical frameworks and diverse populations [8,19,20]. Therefore, the present study contributes to the existing literature by using the Information–Motivation–Behavioral Skills (IMB) model [21], a widely used social behavior theory, as the theoretical framework for exploring factors that influence green cosmetics purchase intention in Vietnam. The IMB framework proposes that information and motivation have a direct impact on a behavior. It also holds that behavioral skills mediate the influence of information and motivation on the behavior. Therefore, in line with the IMB model, we investigate how and when green cosmetics knowledge, attitude, and subjective norms influence consumers' willingness to purchase green cosmetics. More specifically, the main purposes of our study are: (1) to evaluate the applicability of the IMB model in predicting the green cosmetics purchase intentions of young Vietnamese female consumers; (2) to examine the indirect effect of consumer knowledge on green cosmetics purchase intention through mediating the effect of self-efficacy, which is a relatively understudied topic in the green consumption literature; (3) to examine the mediating effects of self-efficacy on the relationship between motivation (attitude toward purchasing green cosmetics and subjective norms) and green cosmetics purchase intention. The findings of this investigation provide valuable insights for green cosmetics marketers targeting young women consumers in Vietnam.

## 2. Literature Review

Green cosmetics have received increased attention in recent years from researchers and practitioners. Previous studies have explored various factors influencing purchase intentions in different countries; for example, Ghazali et al. [13] found that product knowledge, attitude, perceived behavioral control, hedonic value, and environmental and safety values were significant predictors of repurchasing intentions for personal care products among Malaysian consumers. In a study by Lili et al. [22], it was found that attitudes and brand equity strongly impact Chinese consumers' willingness to purchase green cosmetics. Khan and Salim [7] found that income, education, and awareness about green cosmetics were significant predictors of purchase intention among Saudi women. Suphasomboon and Vassanadumrongdee [15] revealed that perceived functional value and ethical concerns significantly impact Thai consumers' purchase intentions toward green cosmetics.

Munerah et al. [8] surveyed Malaysian consumers without prior experience with green beauty products and found that awareness of consequences, efficacy, and social and personal norms were significant predictors of green cosmetics purchase intentions. Previous research has shown that perceived behavioral control is positively related to the purchase intention of organic skincare products [10,13]. Ali et al. [14] found that attitude, subjective

norms, and perceived behavioral control influence Pakistani consumers' intentions toward purchasing green cosmetics.

A study surveyed Canadian consumers and found that external (credibility and attitude toward marketing claims) and internal psychological variables (subjective norms and altruistic concerns toward animal welfare) are associated with intentions of purchasing cruelty-free cosmetics not tested on animals [23].

The aforementioned discussion indicates that the extant literature primarily focused on exploring the influence of attitude, subjective norms, and perceived behavioral control on purchase intention [24]. However, explorations on the relationship between green cosmetics knowledge and purchase intention remain limited. These studies have primarily focused on linear relationships or direct effects. Moreover, little is known about the underlying mechanisms, such as mediators or moderators, by which the antecedent factors affect consumers' willingness to purchase green cosmetics. For example, to the best of the authors' knowledge, there are no studies in the literature assessing the mediating role of self-efficacy on the impacts of green cosmetics knowledge, attitude toward green cosmetics purchase, and subjective norms on green cosmetics purchase intention. We aim to fill this gap in the literature.

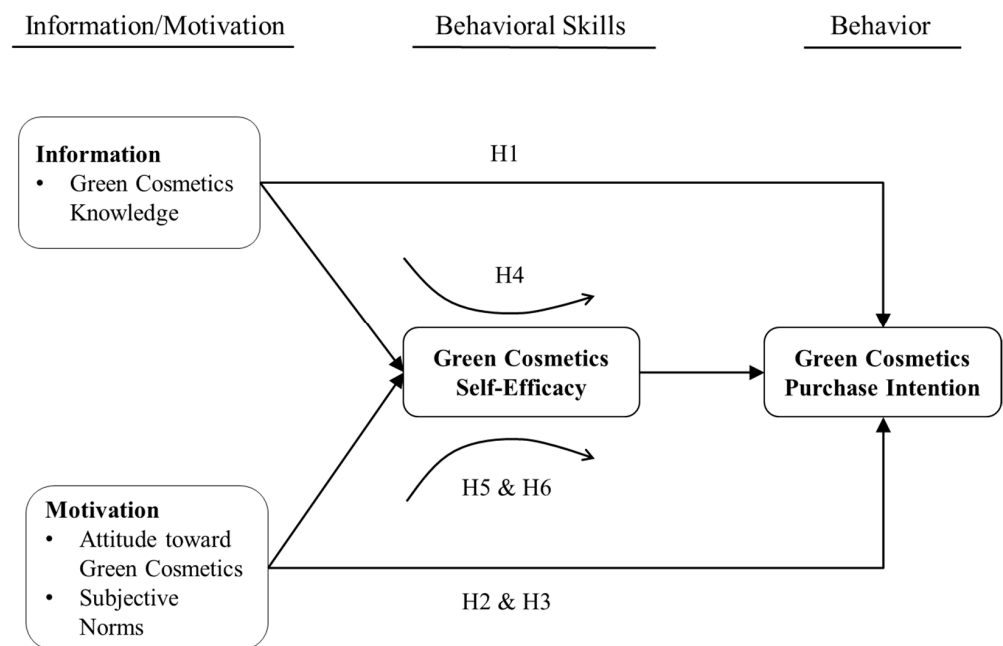
Several studies have attempted to adopt theoretical models and frameworks to better interpret green cosmetics purchase intention. These studies primarily applied the Theory of Planned Behavior (TPB) [2,10,13,14,25]. The theory considers attitude, subjective norms, and perceived behavioral control in explaining green cosmetics purchase intention. Although the TPB framework shows explanatory power, these studies primarily focused on linear relationships between the three TPB factors and purchase intentions that limit its functional flexibility. Other theoretical models applied to understand consumers' purchase intentions toward green cosmetics include the Theory of Reasoned Action (TRA) [26] and Pro-environmental Reasoned Action [11], an extended TRA, in which perceived authority support and perceived environmental concern are included as the antecedent factors [27]. To date, no study has applied the Information–Motivation–Behavioral Skills model to examine the mediating effects of self-efficacy on the relationships between IMB constructs and green cosmetics purchase intention. Therefore, the main purpose of our study is to investigate this gap.

### 3. Theoretical Framework and Hypotheses

We adopted the Information–Motivation–Behavioral Skills model [21] to examine how and when green cosmetics knowledge, attitude toward green cosmetics purchase, and subjective norms influence young Vietnamese women's willingness to buy green cosmetics. Our model comprised three factors influencing a behavior: (1) information and knowledge about the behavior; (2) the individual's motivation to perform the behavior, such as attitude (personal motivation) and subjective norms (social motivation); (3) behavioral skills, such as abilities and self-efficacy, necessary to performing the behavior [28]. If an individual is knowledgeable about the behavior, is motivated to execute the behavior, and has the essential aptitudes and confidence to perform so across various situations, then this individual is more likely to demonstrate the behavior [29].

The IMB model is widely used as a theoretical framework to explain a range of health behaviors, such as sexual risk reduction, HIV medication adherence [29,30], COVID-19 vaccine hesitancy [31], contraceptive uptake [32], condom use [33], diet and physical activity [34,35], dietary supplement usage [36], fruits and vegetables intake [35,37], food label use [38], sweetened beverage consumption in children [39], smokeless tobacco use [40], and breast self-examination [41]. Other researchers applied this model to understand nonhealth behaviors such as credit card misuse [42] and voting behavior [43]. This model has also been used to predict pro-environmental behavior [44].

Using the IMB framework (see Figure 1), we examined the direct effects of green cosmetics knowledge, attitudes toward green cosmetics purchase, and subjective norms on green cosmetics purchase intention, and indirect effects through self-efficacy.



**Figure 1.** Conceptual Model.

### 3.1. Relationship between Green Cosmetics Knowledge and Purchase Intention

Several studies have shown that product knowledge positively correlates with purchase intention in various contexts; for example, consumers' knowledge of organic food has a positive influence on their purchase intentions [45,46]. Regarding green products, product and brand knowledge is a major source of green product purchase intention [47,48]. Research has shown that social media as an information source for green cosmetics and consumers' awareness of green cosmetics have an important role in enhancing consumers' willingness to purchase products [49,50]. A study indicated that consumers with a strong awareness of the negative consequences of nongreen beauty products have a greater interest in purchasing green beauty products [8]. From a theoretical perspective, the IMB model holds that an individual's intention to perform health behaviors is driven by the information and knowledge about the behavior. Hence, we propose the following hypothesis.

**H1:** Knowledge positively influences consumers' purchase intention toward green cosmetics.

### 3.2. Relationship between Attitude and Purchase Intention

The extant literature has established a strong connection between attitude and green behavior. For example, in the context of Vietnam, attitude toward the importance of recycling has been found to be positively associated with the recycling behavior [18]. In the organic food setting, attitudes account for a large part of the variance in pro-environmental behavior [51–53] and purchase intention [54]. Kim and Chung [25] revealed a positive relationship between consumers' attitudes and purchase intention toward buying organic personal care products, which is supported by several studies [10,11,13]. Research has also shown that attitude strongly predicts consumers' willingness to purchase paraben-free cosmetics [26]. According to the IMB model, consumers' motivations, such as attitudes toward performing a specific behavior, affect their behavioral intentions. Therefore, we advance the following hypothesis:

**H2:** Attitude positively influences consumers' purchase intention toward green cosmetics.

### 3.3. Relationship between Subjective Norms and Purchase Intention

Prior studies have demonstrated the attitude–intention association across diverse settings. For example, Nguyen et al. [18] surveyed Vietnamese people and found subjective

norms as a significant determinant of recycling behavior. In the context of green cosmetics, subjective norms refer to the perceived social pressure from significant others that encourages one to purchase green cosmetics. Several studies have shown that subjective norms are positively associated with the intention and actual purchase of green products or services [55–58]. Regarding personal care products, the positive impact of subjective norms on the intention to buy green products has also been demonstrated [2,10,11,25]. Subjective norms have also been found to influence nongreen consumers' willingness to purchase green personal care products [8]. Furthermore, the IMB model suggests that social motivations such as subjective norms have an important role in guiding human behavior. From a cultural perspective, subjective norms should serve as a strong determinant of behavioral intention in a non-Western collectivistic country such as Vietnam [59–61]. Hence, we hypothesized the following:

**H3:** *Subjective norms positively influence consumers' purchase intention toward green cosmetics.*

### 3.4. Mediation Effect of Self-Efficacy

Previous inquiries have shown that knowledge, attitude, and subjective norms are positively related to behavioral skills, which ultimately influence behavioral intentions in various fields. For example, Osborn et al. [34] found that information and motivation positively affect behavioral skills, which ultimately influence diet and exercise behaviors. A study by Fleary et al. [37] indicated that behavioral skills mediate the impacts of information and personal motivation on fruits and vegetable consumption. Limbu et al. [38] found that knowledge about nutrition and attitude toward food label use influence food label use through self-efficacy. Self-efficacy also mediates the effects of knowledge and motivation on dietary supplement usage [36]. The literature has also established the mediating effect of behavioral skills on pro-environmental behaviors. For example, Seacat and Northrup [44] indicated that the associations between recycling information and recycling motivation with curbside recycling behavior are partially mediated by individuals' levels of recycling behavioral skills.

From a theoretical perspective, the IMB model indicates that behavioral skills are a prerequisite for engaging in the desired behavior [29]. In other words, higher levels of behavioral skills among individuals may lead to a greater likelihood that these individuals will engage in the behavior. The IMB model posits that performing a behavior demonstrates the extent to which someone is informed about the behavior, motivated to perform the behavior, and has the necessary skills and confidence in their skills to perform the behavior across various situations [34].

The literature discussed above and the IMB model suggest that the influence of knowledge and motivation on green cosmetics purchase intention can be mediated by self-efficacy, an individual's confidence in his or her ability to purchase green cosmetics effectively. Hence, we advance the following hypotheses:

**H4:** *Self-efficacy mediates the relationship between green cosmetics knowledge and green cosmetics purchase intention.*

**H5:** *Self-efficacy mediates the relationship between attitude toward green cosmetics purchase and green cosmetics purchase intention.*

**H6:** *Self-efficacy mediates the relationship between subjective norms and green cosmetics purchase intention.*

## 4. Method

### 4.1. Sample and Data Collection Procedures

Data were collected from young Vietnamese female consumers (Gen Zers and millennials). The rationale for recruiting young female consumers is that this population

represents a major target market for the cosmetics industry, tends to be more aware and sensitive to environmental degradation, and shows a greater preference for purchasing sustainable products [16,62], including green cosmetics [7]. All respondents have had experience in purchasing cosmetic products. Data were collected through self-administered online and offline surveys. For the onsite survey, questionnaires were mainly distributed in-person in public places such as shopping malls, offices, cafeterias, and sports centers. For the online survey, data collection was conducted through a web-based questionnaire using Google Docs with the link shared in young people's Facebook groups or through personal contacts of the researchers. Multiple personalized reminder messages were sent to all non-respondents.

We estimated sample size using the Raosoft Sample Size Calculator [63], a widely used online sample calculator, which is recommended to determine the sample size taking into consideration the population size [64]. Based on a population size of approximately 53 million Vietnamese Gen Zers and Millennials [16], a confidence interval of 95%, and a margin of error of 5%, a sample size of at least 385 respondents was required.

Prior to the main survey, a pilot test was conducted to assess the presentation, clarity, comprehensiveness, and relevance of the questionnaire with 50 young Vietnamese women who had purchased or intended to purchase green cosmetics. Some minor modifications to the wording of some questions were made at this stage.

Questionnaires were distributed to 500 individuals. A total of 456 responses were received, with a high response rate of 91.2%. The majority of them (65%) participated online. After removing the incomplete and unusable surveys, the remaining 433 samples were used for further analysis.

Table 1 presents the demographic characteristics of the respondents. Over three-quarters of the participants (76.9%) were aged 18–30. Concerning the participants' educational background, most participants (51.6%) held a Bachelor's degree. The vast majority (87.5%) of the respondents used the internet daily. Regarding online green cosmetics shopping frequency, the highest percentage (39.3%) was for those who had the experience of online shopping once every three months.

**Table 1.** Demographic profile of the respondents (n = 433).

Demographics		Frequency	Percent
Age	18–25 years old	142	32.7
	26–30 years old	191	44.2
	31–35 years old	100	23.1
Occupation	Student	105	24.3
	Self-employed	65	15.1
	Officer	184	42.5
	Housewife	42	9.6
	Others	37	8.5
Education	High school or below	20	4.7
	Currently attending university	98	22.6
	Bachelor's degree	223	51.6
	Master's degree and PhD	91	21.1
Monthly income	Less than 5 million dong	114	26.3
	Higher than 5–10 million dong	81	18.6
	Higher than 10–15 million dong	109	25.2
	Higher than 15–20 million dong	103	23.8
	Over 20 million dong	26	6.1
Internet usage frequency	Once a day	379	87.5
	Once a week	34	7.9
	Once a month	14	3.3
	Not even once a month	6	1.3

**Table 1.** *Cont.*

Demographics	Frequency	Percent	
Online green cosmetics shopping frequency	Less than once in six months	31	7.2
	Once every six months	100	23.1
	Once every three months	170	39.3
	Once a month	94	21.8
	Once a week	37	8.6

#### 4.2. Measures

We adapted all measures used in our study from previous studies, with minor modifications to reflect the green cosmetics context of our study. The measurement items used in our study are presented in Appendix A. To assess the psychometric properties of the measures used in this study, factor loadings and Cronbach's alpha ( $\alpha$ ) were computed using SPSS 27. The minimum acceptable levels of factor loading and Cronbach's alpha were assumed as 0.6 [65] and 0.7 [66], respectively.

We adopted three items from previous studies to assess respondents' knowledge about green cosmetics [67–69]. These items were: "I know what green cosmetics are", "I am familiar with the term "green cosmetics", and "I can easily distinguish green cosmetics from other cosmetics". Asif et al. [70] and Wang et al. [69] used similar items ("Do you know what an organic food is?" and "Are you familiar with the term organic food") in the organic food context. The answer options ranged from 1 (strongly disagree) to 7 (strongly agree). Factor loadings ranged from 0.86 to 0.89, and the scale had good reliability ( $\alpha = 0.84$ ).

A five-item scale was used to assess respondents' general attitudes toward purchasing green cosmetics on a seven-point Likert scale (ranging from 1 = strongly disagree to 7 = strongly agree), which was adapted from previous studies [70,71]. Sample items included were: "For me, buying green cosmetics is a smart decision", "I like the idea of purchasing green products", and "I feel proud to buy green cosmetics". Factor loadings ranged from 0.83 to 0.88, and the scale had good reliability ( $\alpha = 0.91$ ).

To measure subjective norms, a five-item measurement was adapted from previous studies [54,70], such as "Most people important to me would prefer that I use green cosmetics", "My family members think that I should use green cosmetics", and "My friends think that I should use green cosmetics". Answer options ranged from 1 (strongly disagree) to 7 (strongly agree). Factor loadings ranged from 0.78 to 0.85, and the scale had good reliability ( $\alpha = 0.88$ ).

Self-efficacy was measured using a three-item measurement on a seven-point scale (1 being strongly disagree and 7 being strongly agree) adapted from previous studies [54,72]. This measurement assessed respondents' confidence in their ability to buy green cosmetics. The items were: "I can decide whether to purchase green cosmetic products or not by myself", "I can make the decision to purchase green cosmetic products", and "I believe that I have the resources and ability to buy green cosmetics". Factor loadings ranged from 0.83 to 0.88, and the scale had good reliability ( $\alpha = 0.82$ ).

Respondents' purchase intentions for green cosmetics were assessed with four items adapted from Kim and Chung [25] and Prakash et al. [71]. The sample items were: "I would like to consider purchasing green cosmetics first" and "I would like to buy green cosmetics as soon as I run out of cosmetic products I am currently using". Answer options ranged from 1 (strongly disagree) to 7 (strongly agree). Factor loadings ranged from 0.84 to 0.88, and the scale had good reliability ( $\alpha = 0.89$ ).

## 5. Results

### 5.1. Preliminary Analyses

Table 2 presents the descriptive statistics and correlation matrix. Green cosmetics knowledge, attitude toward green cosmetics purchase, and subjective norms significantly and positively correlated with self-efficacy and purchase intention ( $p < 0.01$ ).

**Table 2.** Means, standard deviations, and correlations between study variables.

Constructs	Mean	SD	1	2	3	4	5
Knowledge [1]	5.33	1.28	1				
Attitude [2]	5.54	1.17	0.711 **	1			
Subjective norms [3]	5.32	1.19	0.769 **	0.762 **	1		
Self-efficacy [4]	5.19	1.40	0.680 **	0.716 **	0.722 **	1	
Purchase intention [5]	5.44	1.21	0.657 **	0.736 **	0.690 **	0.820 **	1

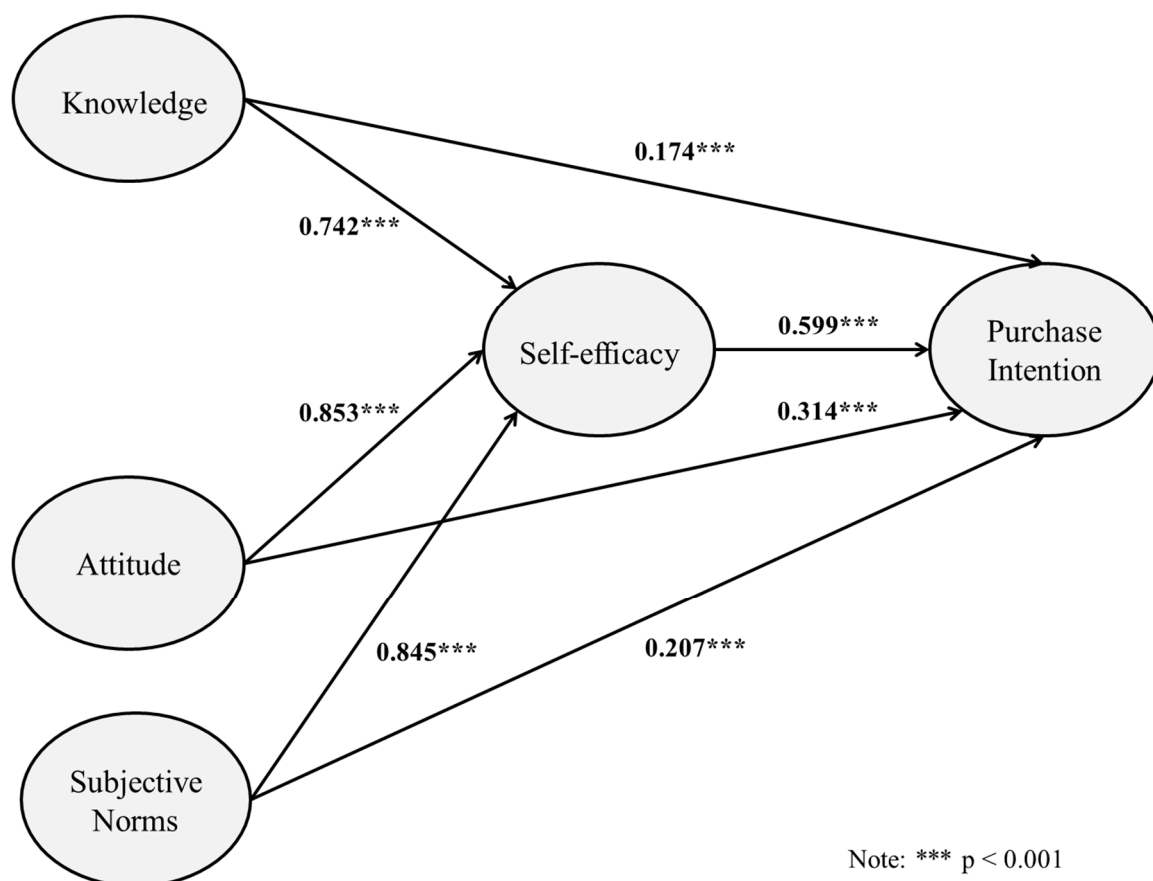
Note: SD = standard deviation; \*\*  $p < 0.01$  (two-tailed).

## 5.2. Hypothesis Testing

Data were analyzed using Hayes' [73] PROCESS macro for SPSS. The procedure provides bootstrapped confidence intervals for conditional effects. Bootstrapping is an appropriate technique for testing mediation effects [74,75]. We, therefore, tested the mediation effects using PROCESS macro with Model 4.

### 5.2.1. Direct Effects

Table 3 presents the results of hypothesis testing. Hypothesis 1 predicted that consumers' knowledge about green cosmetics would positively influence their green cosmetics purchase intentions. As shown in Figure 2, the results support our hypothesis ( $\beta = 0.174$ , S.E. = 0.034,  $t = 5.045$ ,  $p < 0.001$ ), suggesting that higher levels of green cosmetics knowledge are directly associated with higher levels of purchase intention.

**Figure 2.** Direct effects.

As predicted in Hypothesis 2, consumers' attitudes toward green cosmetics purchase was strongly related to purchase intentions toward green cosmetics ( $\beta = 0.314$ , S.E. = 0.038,  $t = 8.319$ ,  $p < 0.001$ ). Similarly, subjective norms significantly predicted purchase intention ( $\beta = 0.207$ , S.E. = 0.039,  $t = 5.305$ ,  $p < 0.001$ ), suggesting that young female consumers'



perceptions of social pressure from others to use green cosmetics influence their purchase intention toward green cosmetics.

### 5.2.2. Indirect Effects

Hypothesis 4 predicted that self-efficacy would serve as a mediator of the relationship between green cosmetics knowledge and purchase intention. The results revealed that knowledge about green cosmetics was significantly and positively associated with self-efficacy ( $\beta = 0.742$ ,  $t = 19.270$ ,  $p < 0.001$ ), and self-efficacy significantly and positively predicted green cosmetics purchase intention ( $\beta = 0.599$ ,  $t = 19.003$ ,  $p < 0.001$ ). Table 3 shows that the indirect effect of knowledge on purchase intention via self-efficacy was estimated as 0.445, with the 95% bias-corrected confidence interval as 0.37 and 0.53. We, therefore, conclude that the indirect effect is statistically significant as the bias-corrected confidence interval did not include zero [75]. Therefore, Hypothesis 4 was supported, suggesting that knowledge about sustainable personal care products influences consumers' beliefs on buying green cosmetics, which positively impacts their willingness to buy green cosmetics. In other words, the more knowledge about green cosmetics a young female consumer possesses, the higher her control in purchasing green cosmetics. Higher behavioral skill levels regarding green cosmetics purchases are likely to enhance green cosmetics purchase intention. Given that knowledge remained a significant determinant of purchase intention, the results only reflect partial mediation. However, the indirect effect was stronger than the direct effect.

**Table 3.** Direct and indirect effects.

	Self-Efficacy (M)		Green Cosmetics Purchase Intention (Y)	
	$\beta$	95% CI [BLLCI, BULCI]	$\beta$	95% CI [BLLCI, BULCI]
<b>Model 1</b>				
Knowledge (X)	0.742 *** (0.039)	[0.67, 0.82]	0.174 *** (0.034)	[0.11, 0.24]
Self-efficacy (M)	-	-	0.599 *** (0.032)	[0.54, 0.66]
Knowledge → self-efficacy → purchase intention	-	-	0.445 *** (0.041)	[0.37, 0.53]
<b>Model 2</b>				
Attitude (X)	0.853 *** (0.040)	[0.77, 0.93]	0.314 *** (0.038)	[0.24, 0.39]
Self-efficacy (M)	-	-	0.520 *** (0.032)	[0.46, 0.58]
Attitude → self-efficacy → purchase intention	-	-	0.444 *** (0.044)	[0.36, 0.53]
<b>Model 3</b>				
Subjective norms (X)	0.845 *** (0.039)	[0.76, 0.92]	0.207 *** (0.039)	[0.13, 0.28]
Self-efficacy (M)	-	-	0.580 *** (0.033)	[0.52, 0.65]
Subjective norms → self-efficacy → purchase intention	-	-	0.490 *** (0.045)	[0.41, 0.58]

Note: \*\*\*  $p < 0.001$ ; the coefficients are standardized ( $\beta$ ) values; numbers in parentheses are standard errors; BLLCI = Boot lower level confidence interval; BULCI = Boot upper level confidence interval.

Hypothesis 5 predicted that self-efficacy would act as a mediator of the relationship between attitude toward purchasing green cosmetics and purchase intention. The results showed that attitude was significantly and positively related to self-efficacy,  $\beta = 0.853$  and  $t = 21.265$ ;  $p < 0.001$ . In addition, self-efficacy had a strong direct effect on purchase

intention,  $\beta = 0.520$  and  $t = 16.435$ ;  $p < 0.001$ . The indirect effect of attitude through self-efficacy on purchase intention was significant,  $\beta = 0.444$  and 95% CI [0.36, 0.53]. Therefore, Hypothesis 4 was supported, suggesting that attitude toward purchasing green cosmetics positively predicts self-efficacy, which, in turn, positively predicts green cosmetics purchase intention. The effect of attitude on purchase intention remained significant, suggesting that partial mediation was present. The results also show that the indirect effect had a greater impact than the direct effect.

Hypothesis 6 predicted that self-efficacy would mediate the association between subjective norms and green cosmetics purchase intention. The results showed that subjective norms were significantly and positively related to self-efficacy,  $\beta = 0.845$  and  $t = 21.652$ ;  $p < 0.001$ . Additionally, self-efficacy was significantly and positively related to green cosmetics purchase intention,  $\beta = 0.580$  and  $t = 17.419$ ;  $p < 0.001$ . As shown in Table 3, the indirect effect of subjective norms on purchase intention through self-efficacy was significant,  $\beta = 0.490$  and 95% CI [0.41, 0.58], suggesting that subjective norms positively predict self-efficacy, which, in turn, positively predicts green cosmetics purchase intention. Thus, Hypothesis 6 is supported. As the subjective norms remained a significant predictor of purchase intention, the results only reflect partial mediation. However, the indirect effect had a greater influence than the direct effect.

## 6. Discussion

### 6.1. Theoretical Contributions

Our study makes several contributions to the literature. First, in response to some studies [8,16–18] that called for future research examining factors influencing consumers' intention to buy green cosmetic products using various theoretical frameworks and diverse populations, our study is the first to use the Information–Motivation–Behavioral Skills model as the theoretical framework for exploring factors influencing green cosmetics purchase intention. The findings are consistent with the IMB model [21], supporting the model's utility in explaining green cosmetics consumption behavior. More specifically, our study contributes to the literature by validating the utility of the IMB model in predicting and explaining young women's green cosmetics purchases in the context of Vietnam, an emerging market, and providing a theoretical ground for future research.

Secondly, our study contributes to the literature explaining the role of product or brand knowledge on consumers' willingness to buy green cosmetics, which is a relatively understudied topic in the green behavior literature. This result aligns with the previous studies on green product purchase [47,48], which found that consumers' knowledge of green products or brands is the main driver of green product purchase intention. Our results revealed a significant direct relationship between attitude and green cosmetics purchase intention. This finding is consistent with previous studies, which showed the attitude–purchase intention association in the context of green skin care products or organic personal care products [10,11,13]. Similarly, a significant direct effect of subjective norms on green cosmetics purchase intention was evident. This aligns with the IMB model and previous studies reporting the positive role of subjective norms in influencing consumers' willingness to purchase organic and natural personal care products [2,11,25]. Our results, however, contradict the findings of Ghazali et al. [13] who revealed a statistically insignificant impact of subjective norms on purchase intention of organic and natural personal care products. Similarly, Tarkiainen and Sundqvist [76] and Yazdanpanah and Forouzani [54] found a lack of predictive power for subjective norms in the case of organic food. Our findings also contradict the findings of Seacat and Northrup [44] that found no significant direct effects of recycling motivation on curbside recycling behavior. A possible explanation for our finding is that group influence and social pressure from others (i.e., subjective norms) should have a larger impact on behavioral intention in a collectivistic society such as Vietnam [59]. This hypothesis has also been confirmed by other studies that found a stronger impact of subjective norms on behavioral intention in a non-Western context [60,61]. Thirdly, the extant literature offers little insight into the underlying mech-

anisms by which antecedent factors affect consumers' purchase intention toward green cosmetics. To the best of our knowledge, ours was the first work examining the mediating effects of self-efficacy on green cosmetics knowledge, attitude toward green cosmetics purchase, and subjective norms toward green cosmetics purchase intention. Corresponding to the main thesis of the IMB model, our results suggest that knowledge (information), attitude (personal motivation), and subjective norms (social motivation) indirectly influence customers' willingness to purchase green cosmetics through self-efficacy. This notion is corroborated by previous research, which showed a mediating effect of self-efficacy on the impacts of IMB predictors on food label use [38], dietary supplement consumption [36], and curbside recycling behavior [44].

Finally, previous studies offered a holistic understanding of green consumption behavior by exploring green products in general. By focusing on green cosmetics, our study contributes to the existing body of literature in the field of green products. Among the three IMB predictors, attitudes had the most dominant and direct effect on purchase intention. It is also worth noting that both direct and indirect effects were statistically significant; however, the indirect effects were more significant than direct effects for all three IMB exogenous constructs, clarifying the important role that self-efficacy plays in influencing young Vietnamese women's purchase intentions toward green cosmetics.

### 6.2. Managerial Implications

As Vietnam represents a promising market for the green cosmetics industry, and the demand for organic and natural cosmetics continues to grow among young Vietnamese consumers, understanding their intentions toward purchasing green cosmetics is extremely crucial for marketers. Our study's findings offer important implications for green cosmetics marketers/retailers, social marketers, and other stakeholders as they provide valuable insights into understanding the determinants of consumers' green cosmetics purchase intention among young Vietnamese female consumers. Our results support the practicability of applying the IMB model to predict green cosmetics purchase intentions, indicating that the IMB model can be used as a framework for developing educational interventions promoting green personal care products among young female consumers.

We found that self-efficacy is a significant mediator in all three IMB predictors of purchase intention, which demonstrates the important role that self-efficacy plays in shaping consumers purchase intention toward green cosmetics. Our results highlighted that knowledge, attitude, and subjective norms increase young female consumers' beliefs in their ability to purchase green cosmetics, which determines their willingness to purchase them. Thus, marketing and advertising campaigns should focus on providing information about green cosmetics and enhancing consumers' personal and social motivations to use green cosmetics. Marketers promoting green cosmetics should aim to increase consumers' self-efficacy or confidence in comprehending their products.

To enhance young Vietnamese consumers' (Gen Zers and millennials) general attitudes toward purchasing green cosmetics, marketers should consider recruiting spokespeople, such as opinion leaders who have expertise in green cosmetics [10]. Lili et al. [22] suggested that a celebrity endorsement strategy may be effective in influencing consumers' attitudes and purchase intentions toward green cosmetics; however, such a strategy should focus on the celebrity's expertise, trustworthiness, and cause-fit.

Moreover, to increase awareness about natural and organic cosmetics among young women, green cosmetics retailers and social marketers should consider engaging with young consumers via social media, which is popular among the age group. Social media as an information source can be used to increase consumers' motivations and purchase intentions toward green cosmetics [49]. Green cosmetics marketers should consider implementing some green initiatives and communication strategies, such as emphasizing the green attributes of the company and the products that support environmental sustainability [11]. Marketing campaigns for green beauty products can emphasize ecological beauty,

product safety, positive impacts of green cosmetics on the environment, and the purchase of green cosmetic products as an acceptable social norm [8].

### 6.3. Limitations and Future Research

Our study has some limitations that need to be addressed by future research. First, our study explored the impact of IMB constructs on purchase intention and did not report actual behavior. Therefore, future research can explore actual green cosmetics purchase behavior. Secondly, in this study, we collected data using a quantitative approach. Thus, future studies may use a qualitative or a mixed method to gain deeper insights into the topic. Thirdly, as discussed above, some of our findings contradict the findings of the previous studies that found no significant relationship between subjective norms and behavior [13,44,76], which warrants further investigation and confirmation in the future studies. Fourthly, the literature suggests that demographic factors influence consumers' purchase intentions of green personal care products [7]. Thus, we recommend that future studies consider integrating demographic variables (e.g., age, education, and income) into the IMB model as potential moderators to better understand when and under what conditions IMB factors are associated with purchase intention. Fifthly, there are presently no well-established instruments in the literature to measure the variables used in this study. All measures used in our study were adapted from previous studies. Future research, therefore, should consider developing these instruments in the green cosmetics context. Finally, we tested the IMB model in a sample of young Vietnamese female consumers, and our results explained the green cosmetics behavior from the perspective of young women from an emerging country. Thus, our results may not apply to the general population. Therefore, we recommend that future research consider using different age groups and male consumers from developed nations.

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**Data Availability Statement:** Data supporting the study are available upon reasonable request from the corresponding author.

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### Appendix A. Constructs and Items

Constructs	Items
Knowledge	I know what green cosmetics are.
	I am familiar with the term “green cosmetics”.
	I can easily distinguish green cosmetics from other cosmetics.
	For me, buying green cosmetics is a smart decision.
Attitude	I like the idea of purchasing green products.
	I like green cosmetic products.
	I always give priority to using green cosmetics.
	I feel proud to buy green cosmetics.

Constructs	Items
Knowledge	I know what green cosmetics are. Most people important to me would prefer that I use green cosmetics. The media all give a lot of information about green cosmetics.
Subjective norms	My family members think that I should use green cosmetics. My friends think that I should use green cosmetics. Specialists recommend that consumers should use green cosmetics.
Self-efficacy	I can decide whether to purchase green cosmetic products or not by myself. I can make the decision to purchase green cosmetic products. I believe that I have the resources and ability to buy green cosmetics. I would like to consider purchasing green cosmetics first
Purchase intention	I would like to buy green cosmetics as soon as I run out of cosmetic products I am currently using. It is likely that I will purchase green cosmetics. If green cosmetics is available, I buy it.

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