

Exploring purchase intention of green skincare products using the theory of planned behavior: Testing the moderating effects of country of origin and price sensitivity



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ABSTRACT

Increased community awareness on various environmental problems has changed consumers' behaviors and induced purchasing decisions on green products. Applying the theory of planned behavior (TPB), this study aims to explain the effects (i.e., attitude, subjective norm, and perceived behavioral control) on purchase intention of green skincare products; it also aims to determine if country of origin (COO) and price sensitivity moderate the links between purchase intention and its antecedences. Data collected from 300 respondents in Taiwan are tested against the research model by using structural equation modelling. The results indicate that attitude, subjective norm, and perceived behavioral control have a significant impact on purchase intention of green skincare products, and that country of origin and price sensitivity can enhance the positive effects on the links between purchase intention and its antecedences. The findings of this study present important theoretical and practical implications for consumer green product purchase behaviors.

1. Introduction

The global community has become increasingly aware of environmental issues as a result of the damaging effects of pollution, a consequence of industrialization and urbanization (Chen, 2011). In particular, global warming has become a key source of environmental concerns; many firms now view environmental protection as their social responsibility (Dwyer, 2009), and are keen to use green opportunities (Haden, 2009). Thus, the establishment of pertinent green strategies has become a significant issue that could strengthen the sustainability of businesses in a dynamic world. However, not all companies have the foresight and competency to establish and implement green strategies. Hence, if firms wish to successfully embrace green opportunities, they should integrate the notion of green initiatives into all phases of their activities (Ottman, 1992).

In addition, green consumerism has significantly affected the conscious decisions of various businesses (Maniatis, 2016); for instance, several businesses have modified their manufacturing processes and operational procedures (D'Souza and Taghian, 2005). However, the greenness of products cannot assure that businesses sales are exceptional in the green era (Chen and Chang, 2012). Thus, marketers should endeavor to gain an insight into the factors affecting consumers' purchase intention toward green products (Paul et al., 2016). It is

important to understand customers' purchase intentions because they can usually be used to predict customers' behavior. Although numerous consumers have confirmed an increased positive attitude and perception toward companies sensitive to environmental matters (Han and Kim, 2010; Olsen et al., 2014), the majority of existing studies in the field of consumer behavior focus on impulsive or affective buying rather than cognitive evaluation (Beatty and Ferrell, 1998). Thus, this study utilizes the theoretical framework based on Ajzen's (1991) theory of planned behavior (TPB) model to investigate the associations between the experimental variables, and explain consumers' acceptance of, and engagement in, ecological behavior. TPB is an extension of the theory of reasoned action (TRA) (Ajzen, 1991). The main difference between these two models is that TPB includes an additional dimension of perceived behavioral control (PBC) as the determinant of behavioral intention. Ajzen (1991) argued that the modified TPB model, which embraces additional crucial constructs in a certain context, contributes to improve our understanding of the theoretical mechanism of the model and increases the prediction power for individuals' intention/behavior in that specific context. As stated by Perugini and Bagozzi (2001), the theory can be extended and deepened via such a process. Goh et al. (2017) used the extended TPB to recognize visitors' intentions. Jiang et al. (2016) applied an extension of TPB to predict users' intentions to microblog. Chen and Hung (2016)

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also applied an extension of TPB to understand the key factors that accept the green products.

Furthermore, there is growing empirical evidence that country of origin (COO) and price sensitivity are powerful predictors of product evaluations (e.g., [Insch and McBride, 2004](#); [Manrai et al., 1998](#)) and buying decisions ([Awada and Yiannaka, 2012](#); [Godey et al., 2012](#)). These studies stressed the significance of COO and price sensitivity in explaining customer purchase behaviors. Thus, the present study also tries to extend the TPB model by including constructs that are important in a green context, such as COO and price sensitivity, and by adding to the model to improve our ability to predict intention and understanding of the decisions of green skincare products customers. Therefore, this study proposes and explores a theoretical framework based on the TPB model to investigate the relationship between the variables and explain consumers' purchase intention of green skincare products.

In addition to including the three main elements of TPB, this study also includes COO and price sensitivity into the research framework in order to further examine whether these two factors moderate the links between the three elements of TPB and purchase intention of green skincare products.

The impact of COO on consumers' perceptions and purchasing intentions is a general issue in marketing research as proposed by [Bloemer et al. \(2009\)](#). Previous studies have found that the products' COO does influence consumers' product evaluations ([Costa et al., 2016](#); [Josiassen, 2010](#); [Koubaa et al., 2015](#); [Lee et al., 2013](#); [Prentice and Handsjuk, 2016](#)) and purchase decisions ([Awada and Yiannaka, 2012](#); [Dobrenova et al., 2015](#); [Godey et al., 2012](#)). Consumers can normally differentiate between products from different countries ([Orth and Firbasova, 2003](#)); moreover, a product's country image may affect how consumers perceive products sourced from that specific country. [Orth and Firbasova \(2003\)](#) believe that a negative country image can limit the success of products and services in the marketplace; thus, marketers who develop product strategies should understand factors related to the product's COO that might affect consumers' evaluations. Consumers are inclined to use COO as an extrinsic cue to make decisions concerning the quality of products ([Lee et al., 2013](#)). Based on this information, this study aims to understand the reasons that moderate the purchase intention toward green skincare products, and the importance of COO in relation to other extrinsic product cues, such as price, in the decision-making process.

Price expression is one of the keys to profitability for most small and medium enterprises. Nevertheless, this process can be very challenging for businesses. [Tung et al. \(1997\)](#) indicated that one key difficulty derives from the inherent complexities in predicting customer price sensitivity. Problems are especially common in physical distribution channels, where competition is fierce and where customers efficiently seek information on price and make quick comparisons across suppliers. In this sense, retailers have actively pursued various ways of weakening consumers' price sensitivity ([Low et al., 2013](#)), thereby moderating price competition. If retailers can segment their customers in terms of their willingness to pay, a price discrimination strategy may be feasible. Hence, insights on the drivers of price sensitivity can be of great value.

To summarize, this present study mainly explores two key issues. One is to investigate the significant antecedences of purchase intention of green skincare products using TPB. The other one is to identify the moderating effects of COO and price sensitivity on the links between purchase intention and its antecedences. This study seeks to make a significant contribution to the field, given it is the first study to test the interacting influences of COO and price sensitivity using a survey. This paper is structured as follows. The study begins with a literature review and a presentation of the hypotheses. The research methodology is then described, followed by a discussion on the research findings and implications.

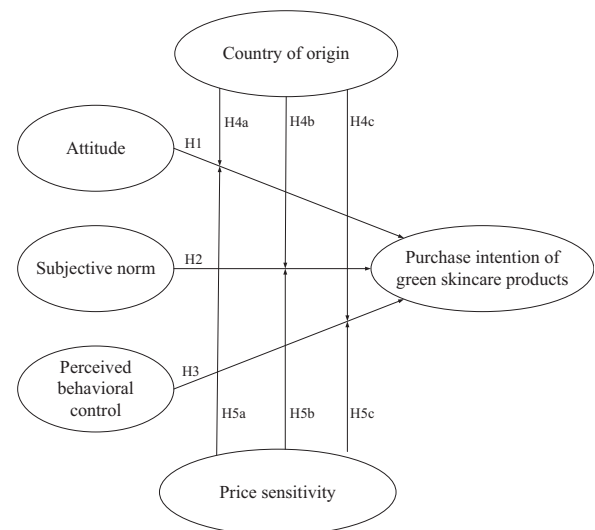


Fig. 1. The research model.

2. Literature review and research model

Fig. 1 shows the proposed research model. This figure includes variables such as attitude, subjective norm, perceived behavioral control, COO, price sensitivity, and purchase intention of green skincare products.

2.1. Green skincare products

The term *green* refers to terms such as “eco-friendly,” “environmentally friendly,” “environmentally responsible activities,” or “sustainable” (e.g., [Han et al., 2009, 2011](#); [Laroche et al., 2001](#); [Pizam, 2009](#); [Roberts, 1996](#)). [Ottman \(1998, p. 89\)](#) indicated that “*green products are typically durable, non toxic, made from recycled materials, or minimally packaged.*” [Peattie \(1995, p. 181\)](#) defined green products as “*when its environmental and societal performance, in production, use, and disposal is significantly improved and improving in comparison to conventional or competitive products offerings.*” [Dangelico and Pontrandolfo \(2010\)](#) argued that this definition highlights how the different life cycle phases of a product can display its environmentally friendly characteristics. Additionally, [Tomasin et al. \(2013, p. 74\)](#) stated that “*green products are designed to prevent, limit, reduce, and/or correct harmful environmental impacts on water, air, and soil.*” [Reinhardt \(1998, p. 46\)](#) explained that environmental product differentiation entails a “*business creat[ing] products that provide greater environmental benefits, or that impose smaller environmental costs than similar products.*” [Dangelico and Pontrandolfo \(2010\)](#) indicated that this definition illustrates how green products are able to generate a lower environmental impact and provide higher environmental benefits compared to conventional products. [Berchicci and Bodewes \(2005\)](#) also argued that green products are developed to decrease the environmental impact of the development, manufacture, use, and disposal of products and services. Thus, the effective development of green products is important to create successful environmental strategies, and to ensure companies and economies become environmentally sustainable ([Pujari et al., 2003](#)).

Green skincare products refer to products that “*care [for] the skin using naturally derived ingredients (such as herbs, roots, essential oils, and flowers) [that are] combined with naturally occurring carrier agents, preservatives, surfactants, humectants, and emulsifiers (Wiki, 2014).*” Such products use botanically sourced ingredients and do not contain synthetic chemicals; moreover, they are manufactured in such a way to preserve the integrity of the ingredients. This study attempts to use green skincare products as the subject to further

examine the factors affecting consumers' purchase intention toward such products. Importantly, it will also identify the moderating effects of COO and price sensitivity on the relationship between purchase intention and its antecedences.

2.2. TPB

Rivis et al. (2009, p. 2985) proposed that *"the TPB is perhaps the most influential theory in the prediction of social and health behaviors."* The TPB has been successfully applied to a field of ecological behavior (Chen, 2016; Han et al., 2010; Kim et al., 2013; Yadav and Pathak, 2016). Within the TPB model, Ajzen (1985) argued that the subjective norm, perceived behavioral control, and attitude affect intention, which in turn affects real behavior. Furthermore, as defined by Ajzen (1991, p. 188), attitude toward the behavior refers to *"the degree to which a person has a favorable or unfavorable evaluation or appraisal of the behavior in question"*; subjective norm means *"the perceived social pressure to perform or not to perform the behavior"*; and the perceived behavioral control means *"the perceived ease or difficulty of performing the behavior."* Numerous previous studies have adopted the TPB model to explore consumers' behavioral intentions (Casidy et al., 2016; Chen, 2016; Chin et al., 2016; Paul et al., 2016, 2015). For example, Han et al. (2010) used the TPB model to describe the formation of hotel customers' intentions to visit a green hotel. Furthermore, previous studies (e.g., Kim et al., 2013; Moser, 2016; Nguyen et al., 2016; Paul et al., 2016) adopted the TPB model to examine the relationship between the constructs and consumers' acceptance of, and engagement in, ecological behavior. In addition, Chen and Tung (2014) applied an extended model of TPB, covering environmental concerns and perceived moral obligations, to investigate consumers' intentions to visit green hotels. Han et al. (2010) demonstrated that the TPB model is better able to predict purchase intention than the theory of a reasoned action model (TRA). Accordingly, this study also uses the TPB model to measure consumers' purchase intention of green skincare products. Based on the stated above, the following hypotheses have been developed:

H1. Attitude has a positive effect on purchase intention.

H2. Subjective norm has a positive effect on purchase intention.

H3. Perceived behavioral control has a positive effect on purchase intention.

2.3. Moderating variables: COO and price sensitivity

Previous studies have noted that the potentially influential factors of COO and price sensitivity to consumers' perceptions have been addressed in consumer behavior research (e.g., Dzever and Quester, 1999; Veale and Quester, 2009). This study attempts to take the two significant factors (COO and price sensitivity) as the moderating variables to further explore consumers' perceptions of how these two factors moderate the links between purchase intention and its antecedences. The details of COO and price sensitivity are described as follows.

2.3.1. COO

Nagashima (1970) defined COO as related to the image, stereotype, and reputation that manufacturers and consumers attach to products of a specific country according to these variables as national traits, political circumstances and economic, history, and traditions. Roth and Romeo (1992) also proposed that this definition has broadly accepted in the subsequent literature. Consumers' perceptions on stereotype images about countries are referred as the COO effect (Lotz and Hu, 2001). Bilkey and Nes (1982) argued that such images act as an extrinsic marketing cue in influencing the evaluation of products from different origins. Additionally, numerous previous studies have con-

firmed that the COO of a product affects customers' evaluations and purchase decisions (Awada and Yiannaka, 2012; Insch and McBride, 2004; Josiassen, 2010; Lee et al., 2013; Manrai et al., 1998; Veale and Quester, 2009). Veale and Quester (2009) suggested that COO may generate concrete contributions, for example, it can increase the attractiveness of a product. Moreover, Askegaard and Ger (1998) proposed that COO is likely to link a product to yield product-country imagery, with affective, sensory, and ritual connotations. Fournier (1998) revealed that COO transmits the national identity of a product, which can produce a strong emotional connection to certain brands and products. Botschen and Hemettsberger (1998) indicated that consumers connect COO not only to product quality, but also to feelings of national pride and memories of past vacations. Besides, Dobrenova et al. (2015) confirmed that consumers with more positive COO have significant effects on product perception and purchase intention. Thus, based on the stated above, the following hypotheses have been developed:

H4. With more positive COO,

(a) the positive relationship between attitude and purchase intention will be strengthened;

(b) the positive relationship between subjective norm and purchase intention will be strengthened;

(c) the positive relationship between perceived behavioral control and purchase intention will be strengthened.

2.3.2. Price sensitivity

Price has demonstrated its significant impact on consumers' evaluation of product alternatives and their final buying decision (de Medeiros et al., 2016; Li et al., 2016; Moser, 2016). Price plays two different roles in consumers' assessments of product alternatives, namely, as a measure of sacrifice and an informational cue; the former refers to the amount of money consumers need to spend and the latter refers to the quality and status inferred by ownership of the product (Völckner, 2008). Price may also cause an evaluation of the price image of the item (e.g., prestige goods) and the store (e.g., low price supermarkets) (Dickson and Sawyer, 1990). Moreover, the factor of price has a significant influence on consumers with regards to undertaking price judgments concerning the brand and competing brands, choosing among brands and formats (Niedrich et al., 2009), evaluating the attractiveness of advertised promotions (e.g., in flyers, advertisements, and stores), and improving or reducing price search and comparison behaviors (Srivastava and Lurie, 2001). Understanding price sensitivity is crucial not only for academics interested in identifying the sources of influence for price sensitivity, but also to retail managers whose pricing strategies may rely on the level of consumers' price sensitivity.

Price sensitivity is defined as the extent of consciousness and reaction displayed by consumers when finding differences in prices of products or services (Monroe, 1973). Anderson (1996) also stated that price sensitivity is the extent to which a customer accepts price growths for a specific product in terms of economic and psychological gains. Based on the significant theoretical paradigm of equity theory, price sensitivity considers the proportion of the consumer's outcome/input to that of the supplier's outcome/input, and thus offers an effective method of interpreting price sensitivity (Oliver and DeSarbo, 1988). Customers tolerate reasonable price changes if they recognize that the proportion of their outcome to input is comparable to the ratio of outcome to input experienced by the company (Oliver and DeSarbo, 1988). As indicated by Bolton and Lemon (1999), the theory suggests that customers appraise what is "fair," "right," or "deserved" for the perceived cost of the offering. Perceived costs consist of monetary payments and other sacrifices, such as time consumption and stress experienced (Setiawan and Budhi Haryanto, 2014). The consequences in equity theory are compared with sacrifices and rewards obtained by the other party to an exchange. Customers often evaluate a company ratio of outcome to input by comparing this index to competitors' ratios

(Oliver and DeSarbo, 1988). A price surplus, which customers are likely to pay, is dependent on a comparison of the ratio of costs and benefits derived from the present provider contrasted to that of its competitors. Besides, Anderson (1996) also proposed that customers with high greater sensitivity for products generating greater satisfaction. Based on the stated above, the following hypotheses have been developed:

H5. With greater price sensitivity,

(a) the positive relationship between attitude and purchase intention will be strengthened;

(b) the positive relationship between subjective norm and purchase intention will be strengthened;

(c) the positive relationship between perceived behavioral control and purchase intention will be strengthened.

3. Methodology

3.1. Participants and sampling design

The sampling population comprised of university students aged between 18 and 24 years; they studied at a large university in northern Taiwan during 2014. Kim et al. (2013) argued that targeting this population is beneficial for two reasons. One is that this age group constitutes the consumers of the future, and they are able to make a difference over the next few decades. The other is that individuals with higher levels of education are expected to have some knowledge concerning the concept of sustainability. Vermeir and Verbeke (2008) also posited that if individuals possess some basic awareness of sustainability, responses on issues such as subjective norm, perceived behavioral control, attitude, COO, price sensitivity, and behavioral intention toward sustainable products would be very imaginary, and the findings highly hypothetical.

This study used a paper-based questionnaire with convenience sampling approach to collect data. A total of 305 respondents joined in this study by responding the questionnaires. After the elimination of incomplete and duplicate responses, 300 usable responses were counted in the sample for analysis. The demographic information showed that all respondents are female and educated to the college level and above. With regard to age, the majority of the respondents were 20 years old (47.3%), followed by 19 years old (21.3%) and 21 years old (20.0%). Besides, the largest number of respondents had an income less than NTD5,000 per month (55.7%), followed by NTD5,000 - NTD10,000 (32.7%).

3.2. Measures of the constructs

For the purpose of testing the hypotheses, the study uses the following six major constructs: attitude, subjective norm, perceived behavioral control, price sensitivity, COO, and purchase intention of green skincare products. The development of the measurement items has been guided by the goal of adequately representing the research constructs. All of the items were previously tested by other scholars, and have been employed in this study in an existing or slightly modified manner. Attitude was evaluated using scale items adapted from Bruner (2010), namely, dislike/like, bad/good, unsatisfactory/satisfactory, and annoying/pleasing. Subjective norm was evaluated using scale items adapted from Trafimow (2000), namely, “most others who are important to me think I should use green skincare products” and “most people whose opinions I care about think I should use green skincare products.” Perceived behavioral control was evaluated using scale items adapted from Han et al. (2010), namely, “selecting a green skincare product is completely up to me,” “I am confident that if I want to buy a skincare product,” “I have enough money to select a green skincare product,” and “I have enough time to select a green skincare product.” COO was evaluated using scale items adapted from Glass et al. (1981), namely, “I think that green skincare products made in developed

countries are more reliable than those made in developing countries,” “I think the quality of green skincare products made in developed countries is better than those made in developing countries,” “I think that green skincare products made in developed countries have a better reputation than those made in developing countries,” “I think that using green skincare products made in developed countries is more valuable than using those made in developing countries,” “I think that green skincare products made in developed countries look better than those made in developing countries” (i.e., they have superior packaging) and “I like green skincare products made in developed countries more than those made in developing countries.” Price sensitivity was evaluated using scale items adapted from Laroche et al. (2001), namely, “It is acceptable to pay 10% more for green skincare products than for non-green skincare products,” “I am willing to pay 10% more for green skincare products than for non-green skincare products,” and “I am willing to spend an extra 300 NTD per month in order to buy green skincare products.” Purchase intention was evaluated using scale items from Ajzen and Fishbein (1980) and Trafimow (1994), namely, “I am likely to buy green skincare products,” “I will buy green skincare products as soon as I run out of the skincare products I am currently using,” “I will recommend the products to my friends,” and “I will consider purchasing green skincare products.” Each item was measured on a five-point Likert scale (i.e., 1=strongly disagree; 5=strongly agree).

4. Data analysis and results

4.1. Reliability and validity analysis

This study used Cronbach's α to evaluate the internal consistency of the constructs measured. The results found that the Cronbach's α of each construct was greater than 0.70 (0.77–0.89), which shows a high reliability for our survey instrument (Nunnally, 1978). Furthermore, as shown in Table 1, our results revealed that the factor loadings of all the constructs exceeded 0.5 and thus conformed to the test of item reliability (Hair et al., 1995). In addition, our results also showed that the composite reliabilities of all constructs exceeded the 0.7 (0.81–0.89) cut-off value as recommended by Fornell and Larcker (1981). Additionally, it was found that the average variance extracted from each construct exceeded 0.5, demonstrating convergent validity (Fornell and Larcker, 1981). In short, the test of convergent validity demonstrated that the proposed constructs of the research model were adequate.

In addition, this study used discriminant validity to measure the extent to which the constructs differed. Specifically, if the items in a construct were more strongly associated with each other than with items measuring other constructs, the measure was regarded as having discriminant validity. As displayed in Table 2, we found that the shared variance among the variables did not exceed the square root of the average variance explained. Consequently, discriminant validity is confirmed to exist in this study.

The subsequent structural equation states the structure of the full model.

$$P = \beta_1 A + \beta_2 SN + \beta_3 PBC + \beta_4 A \times COO + \beta_5 SN \times COO + \beta_6 PBC \times COO + \beta_7 COO + \varepsilon \quad (1)$$

$$P = \beta_1 A + \beta_2 SN + \beta_3 PBC + \beta_4 A \times PS + \beta_5 SN \times PS + \beta_6 PBC \times PS + \beta_7 PS + \varepsilon \quad (2)$$

P: Purchase intention; A: Attitude; SN: Subjective norm; PBC: Perceived behavioral control; COO: Country of origin; PS: Price sensitivity.

Eqs. (1) and (2) are built on Fig. 1, with the suggestion that attitude, subjective norm, and perceived behavioral control are predictors of purchase intention. Furthermore, the relationships between attitude

Table 1
Constructs and indicators.

Constructs and indicators	Factor loadings	Average extracted variance (AVE)	Composite reliability
Attitude toward green skincare products		0.67	0.89
ATT1	0.74		
ATT2	0.81		
ATT3	0.87		
ATT4	0.85		
Subjective norm		0.72	0.84
SN1	0.89		
SN2	0.81		
Perceived behavioral control		0.53	0.81
PBC1	0.62		
PBC2	0.61		
PBC3	0.79		
PBC4	0.85		
COO		0.62	0.89
COO1	0.83		
COO2	0.84		
COO3	0.79		
COO4	0.56		
COO5	0.77		
COO6	0.75		
Price sensitivity		0.69	0.87
PS1	0.79		
PS2	0.90		
PS3	0.80		
Purchase intention		0.58	0.85
PI1	0.77		
PI2	0.72		
PI3	0.79		
PI4	0.77		

Note: All factor loadings are significant at $p < 0.0001$.

Table 2
Construct means, standard deviations, correlations, and AVE.

Constructs	M	S.D.	Basic model				
			1	2	3	4	5
1. Attitude toward green skincare products	3.53	0.74	0.67				
2. Subjective norm	3.01	0.60	0.31	0.72			
3. Perceived behavioral control	3.12	0.60	0.37	0.40	0.53		
4. COO	3.38	0.60	0.08	0.23	0.34	0.62	
5. Price sensitivity	3.02	0.67	0.31	0.33	0.40	0.25	0.69
6. Purchase intention toward green skincare products	3.33	0.61	0.47	0.45	0.49	0.39	0.31

Note: All correlations are significant at $p < 0.01$. M:Mean; S.D.:Standard deviation. The diagonals represent the square root of the AVE.

and purchase intention, subjective norm and purchase intention, and perceived behavioral control and purchase intention are functions of COO and price sensitivity. This means that COO and price sensitivity individually interact with attitude, subjective norm, and perceived behavioral control to modify the three relationships mentioned above. Although COO and price sensitivity are proposed as pure moderators, it is conventional to control their direct effect in the moderated regression model as indicated by Aguinis (1995). Hence, COO is included as a predictor in Eq. (1), and price sensitivity is included as a predictor in Eq. (2). In Eqs. (1) and (2), the significance of the coefficients of β_1 , β_2 , β_3 , and β_7 indicates the direct effects of attitude, subjective norm, and perceived behavioral control and COO and price sensitivity on purchase intention. This study also assessed the moderating effects of COO and price sensitivity on the relationships between purchase intention and its antecedences (i.e., attitude/subjective norm/perceived behavioral con-

Table 3
Testing the theoretical model by hierarchical moderated regression.

(Moderator: COO)				
Variables/hypotheses/results (supported)	Basic model		Moderation model	
	Std. β	t-value	Std. β	t-value
Direct effects				
A	0.31 [*]	6.50	0.42 [*]	8.78
SN	0.21 [*]	4.26	0.24 [*]	5.01
PBC	0.20 [*]	3.89	0.26 [*]	5.64
Moderator effects				
A $\times$ COO	–		0.35 [*]	7.32
SN $\times$ COO	–		0.40 [*]	8.40
PBC $\times$ COO	–		0.29 [*]	6.03
Controlled effect				
COO	0.25 [*]	5.37	0.28 [*]	5.89
R ² purchase intention (%)	43.0		48.2	
Δ R ² purchase intention (%)	–		5.2	
Effect size (ES)	–		15.1	
Chi-square (df), Sig.	56.1(45), $p=0.000$		206.4 $p=0.000$	
GFI	0.92		0.91	
CFI	0.96		0.94	
RMSEA	0.063		0.075	

Note: P:Purchase intention; A:Attitude; SN:Subjective norm; PBC:Perceived behavioral control; COO:Country of origin.

^{ns} Not significant.

^{*} $p < 0.001$.

trol) by individually considering the significance of the coefficients of β_4 , β_5 , and β_6 , in Eqs. (1) and (2).

As advised by Kenny and Judd (1984), a moderated hierarchical regression analysis applying structural equation modelling was employed to estimate the effects of the variables and their interactions on purchase intention of green skincare products. The independent variables and interactions were entered in two blocks; hence, two nested models were generated. The basic model estimated the effects of attitude, subjective norm, and perceived behavioral control and the controlled effect of COO on purchase intention of green skincare products. The moderation model included three additional moderator effects. The results indicated acceptable fits for both estimated models GFI = 0.91–0.92; CFI = 0.94–0.96; RMSEA = 0.063–0.075) (Browne and Cudeck, 1992). Table 3 displays the standardized beta weights for the predictor variables, and the R² of purchase intention of green skincare products at each step. Table 3 also shows the standardized (b) estimates, *t*-statistics, and fit statistics of the structural equation model. As shown in Table 4, the basic model estimated the effects of attitude, subjective norm, perceived behavioral control, and the controlled effect of price sensitivity on purchase intention of green skincare products. The moderation model was broadened to include three moderator effects. The results also indicated acceptable fits for both estimated models: GFI = 0.93–0.95; CFI = 0.96–0.98; and RMSEA = 0.058–0.071) (Browne and Cudeck, 1992). Table 4 displays the standardized beta weights for the predictor variables, and the R² of consumption at each step.

4.2. Testing effects

As can be seen in Tables 3 and 4, the results of estimating the basic model revealed that attitude toward green skincare products, subjective norm, and perceived behavioral control have a significant positive direct effect on purchase intention of green skincare products. These results are necessary for testing the moderating effects of COO and price sensitivity on the links between purchase intention and its antecedences. Based on the basic models shown in Tables 3 and 4, the explained variance of purchase intention was 43% and 38%, respectively.

Table 4
Testing the theoretical model by hierarchical moderated regression.

(Moderator: price sensitivity)				
Variables/hypotheses/results (supported)	Basic model		Moderation model	
	Std. β	t-value	Std. β	t-value
Direct effects				
A	0.29 [*]	5.64	0.34 [*]	7.16
SN	0.24 [*]	4.53	0.26 [*]	5.58
PBC	0.27 [*]	5.07	0.29 [*]	6.04
Moderator effects				
A $\times$ PS	–		0.26 [*]	4.83
SN $\times$ PS	–		0.31 [*]	6.57
PBC $\times$ PS	–		0.28 [*]	5.88
Controlled effect				
PS	0.26 [*]	4.69	0.30 [*]	6.24
R ² consumption (%)	38.0		42.7	
Δ R ² consumption (%)	–		4.7	
Effect size (ES)	–		13.8	
Chi-square (df), Sig.	49.6(45), $p=0.000$		194.2 $p=0.000$	
GFI	0.95		0.93	
CFI	0.98		0.96	
RMSEA	0.058		0.071	

Note: P:Purchase intention; A:Attitude; SN:Subjective norm; PBC:Perceived behavioral control; PS:Price sensitivity.

^{ns} Not significant.

^{*} $p < 0.001$.

4.3. Moderating effects

As shown in Table 3, this study focused on investigating the moderating effect of COO and price sensitivity on the relationship between purchase intention and its antecedences. The interaction effects between attitude, subjective norm, and perceived behavioral control and COO on purchase intention of green skincare products were significantly positive ($\beta_1=0.35$, $p < 0.001$; $\beta_2=0.40$, $p < 0.001$; and $\beta_3=0.29$, $p < 0.001$, respectively), indicating that the relationship between attitude, subjective norm, and perceived behavioral control and purchase intention of green skincare products is significantly stronger when COO is high in comparison to when it is low. The controlled direct effect of COO on purchase intention of green skincare products was significant ($\beta_7=0.28$, $p < 0.001$ in the moderation model). This result supported COO as a moderator in the model. The three additional hypothesized interaction terms significantly increased the explained variance of purchase intention of green skincare products ($R^2=48.2\%$, effect size [ES]=15.1).

As shown in Table 4, the interaction effects between attitude, subjective norm, and perceived behavioral control and price sensitivity on purchase intention of green skincare products were significantly positive ($\beta_1=0.26$, $p < 0.001$; $\beta_2=0.31$, $p < 0.001$; and $\beta_3=0.28$, $p < 0.001$, respectively), indicating that the relationship between attitude, subjective norm, and perceived behavioral control and purchase intention of green skincare products is significantly stronger when price sensitivity is high in comparison to when it is low. The controlled direct effect of price sensitivity on purchase intention of green skincare products was also significant ($\beta_7=0.30$, $p < 0.001$ in the moderation model). This result supports price sensitivity as a moderator in the model. The three additional hypothesized interaction terms significantly increased the explained variance of consumption ($R^2=42.7\%$, effect size [ES]=13.8).

5. Discussion and implications

In addition to examining the impacts of attitude, subjective norm, and perceived behavioral control on purchase intention of green skincare products, this study also investigated the moderating effects

of COO and price sensitivity on the links between purchase intention of green skincare products and its antecedences. Specifically, in the basic model, our study found that attitude toward green skincare products, subjective norm, and perceived behavioral control have a significant and positive relationship with purchase intention of green skincare products. Following Honkanen et al. (2012), in order to explore whether COO and price sensitivity impacts these relationships, a moderated regression analysis applying structural equation modelling was conducted. The effect of attitude toward green skincare products on purchase intention is stronger when COO and price sensitivity are stronger; this demonstrates a positive interaction effect between attitude and COO and price sensitivity on purchase intention. As expected, this interaction effect is significantly positive. Secondly, our model suggests that the effect of subjective norm on purchase intention of green skincare products is stronger when COO and price sensitivity are stronger. This would then emerge as the positive interaction coefficients between subjective norm and COO and price sensitivity regarding purchase intention. The results support this hypothesis, thus suggesting that the relationship between subjective norm and purchase intention of green skincare products is stronger for consumers with higher levels of COO and price sensitivity. Thirdly, our model also suggests that the effect of perceived behavioral control on purchase intention of green skincare products is stronger when COO and price sensitivity are stronger. This would then emerge as a positive interaction coefficient between perceived behavioral control and COO and price sensitivity regarding purchase intention of green skincare products. The results support this hypothesis, thus suggesting that the relationship between perceived behavioral control and purchase intention of green skincare products is stronger for consumers with higher levels of COO and price sensitivity. Also, the three additional hypothesized interaction terms significantly increase the explained variance of purchase intention when compared to the basic model.

The results suggest that attitude, subjective norm, and perceived behavioral control have a positive association with the purchase intention of green skincare products, while the relationships between these variables and purchase intention are moderated by COO and price sensitivity. When COO and price sensitivity are strong, the likelihood of green skincare products relies on the individuals' degree of attitude, subjective norm, and perceived behavioral control. In contrast, when COO and price sensitivity is weak, attitude, subjective norm, and perceived behavioral control guide purchase intention. These suggest that high COO and price sensitivity individuals with either a positive attitude toward green skincare products, high subjective norm, or high perceived behavioral control are the ones that will most likely purchase green skincare products. In contrast, low COO and price sensitivity individuals with either a negative attitude toward green skincare products, low subjective norm, or low perceived behavioral control are less likely to purchase green skincare products.

The present study provides several suggestions for marketers. Firstly, this study finds that attitude toward green skincare products, subjective norm, and perceived behavioral control have a significant and positive impact on purchase intention of green skincare products. Thus, to increase consumers' purchase intention toward green skincare products, marketers can use marketing communication via various channels, such as television, broadcasting, magazines, leaflets or the Internet to transmit product messages and further evoke their positive attitude toward the green skincare products. In numerous past studies, researchers have confirmed that consumers' attitude significantly and positively affect their purchase intention. Furthermore, marketers also can also recruit spokespeople, such as opinion leaders or respected public figures, to discuss the benefits of green skincare products, both for one's skin and the environment. This strategy will ensure that relevant information reaches consumers who are unfamiliar with green skincare products, and in turn, successfully facilitate their purchase intention toward green skincare products. Additionally, it will also be a possible effective way to enhance consumers' purchase intention to

green skincare products, that is, marketers can also increase consumer confidence by offering relevant certification of green skincare products such as eco-labels. Moreover, green skincare products should be reasonably priced; any pricing difference between green skincare products and non-green skincare products ought to be clearly explained in order to increase consumer confidence. On the other hand, marketers may also randomly offer pricing promotion activities to evoke consumers' purchase intention.

This study provides a theoretical framework for understanding consumer purchase intention of green skincare products. Specifically, this study contributes to our understanding of how COO and price sensitivity moderates the links between purchase intention and its antecedences. It was found that consumers' attitude toward green skincare products, subjective norm, and perceived behavioral control primarily affects purchase intention of green skincare products while their COO perceptions primarily moderate the links and then make them become stronger or weaker. Manrai et al. (1998) suggested that marketers ought to use marketing communication to clearly transmit COO information to further decrease consumers' perceived product failure risk. Roth and Romeo (1992) suggested that establishing strategic alliances with favorable match partners would improve the image of goods, and in turn, strengthen the links between purchase intention and its antecedences.

Furthermore, in order for customers to tolerate price increases for a specific product, marketers ought to clearly present product information, including the confirmed material differences between non-green skincare products and green skincare products. Additionally, employees should be trained to handle inquiries, questions, and complaints from consumers, as this will cultivate a positive attitude, increase satisfaction and perceived value, and eventually decrease price sensitivity among consumers (Zeng et al., 2011). Low et al. (2013) also have confirmed that satisfaction is negatively related to price sensitivity. Marketers can segment their consumers according to their preference for various skincare products. Price discrimination, based on such segmentations, helps marketers to achieve better profits while maintaining good relationships with consumers. In addition, Zeng et al. (2011) argued that if properly used, switching costs has the potential to reduce consumers' price sensitivity. More precisely, marketers can apply tactics such as membership programs, frequent-purchaser programs, accumulative discount rewards, and other loyalty programs to encourage existing customers to purchase additional green skincare products.

6. Limitations and directions for future research

This study has several limitations. It focuses on commodities sold on the green skincare market, which are mainly trusted goods. Future studies ought to investigate green products that sell both experience and goods, to analyze how various green product types moderate the link between purchase intention and its antecedences.

The hypotheses were assessed within the context of green skincare products, which represent only one portion of the entire range of green products. Replicated and expanded studies applied to other green products may further contribute to increasing our understanding of key determinants of purchase intention. While the focus of this study was on students, future studies could examine whether the approach used in this inquiry may be applied to potential customers.

This study uses COO and price sensitivity as moderating variables, and examines how they moderate the relationship between purchase intention and its antecedences. Petty et al. (1983) proposed that consumers process information through either central or peripheral routes, with route choice relying on the degree of involvement. Thus, future studies ought to view consumers' degree of involvement as a moderator, and explore how it moderates the relationship between purchase intention and its antecedences.

Finally, as this study was conducted during a specific time frame, it

cannot identify how factors impact individual purchase intention, and whether purchase intention changes over time.

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