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Do Environmental-Related Factors Stimulate Consumers' Green Cosmetic Purchase Intention?

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ABSTRACT

Purchasing green products has become one of the initiatives in addressing environmental issues, and more and more consumers have shifted toward green products. This study investigated the role of environmental-related factors on consumers' attitudes toward and purchase intention for green cosmetic products. A novel research framework has been developed by adopting the stimulus-organism-response framework by including four environmental-related constructs as stimuli. The results from 204 valid responses showed that environmental concern and green self-identity significantly influenced attitude and purchase intention. However, perceived green value only significantly affects consumers' attitudes, and environmental responsibility significantly influences consumers' purchase intentions. The study's result further found that environmental concern, green self-identity, and perceived green value indirectly significantly affect consumers' purchase intention through attitude. The study's findings offer several important theoretical and practical implications, which have been discussed.

1. INTRODUCTION

Sustainable consumption has become an important topic worldwide as more and more individuals realise the consequences of conventional products on the environment and society. This aligns with Sustainable Development Goal 12 (SDG12) which emphasises responsible consumption and production. With that, stakeholders like governments have created policies to require industries and businesses to address these issues through sustainable production patterns. To overcome these problems, some companies are inspired to produce products using environmentally friendly materials and processes [1]. However, the overwhelming consequences caused by unsustainable products are not the sole responsibility of governments and marketers, as consumers should also play their role [2]. Green purchase behaviour must be practised instead of conventional purchase behaviour to ease the negative impacts of these traditional products [2]. Increasing environmental awareness and consciousness surges consumers' obligation and responsibility to behave pro-environmentally through purchasing eco-friendly products [1]. This behaviour aligns with Joshi and Rahman [3], who remarked that purchasing green products could be essential to environmental sustainability.

Many manufacturers have started inventing green products to meet the high demand from environmentally responsible consumers. The cosmetic industry has grown globally, with a total market size of $532 billion in 2017 [4], and it is expected to grow further. In line with sustainable consumption trends, many consumers preferred green cosmetics to conventional ones [5] and projected the market size of the organic or green cosmetic industry will further grow to $54.5 billion in the year 2027 [6]. This further signified the popularity of green cosmetics as they have become the priority choice among consumers. Green cosmetic is defined as cosmetics or personal care products produced with natural ingredients, chemical-free, and processed with environmentally friendly formulations and packaging [5, 7]. Therefore, consuming green cosmetics is expected to minimise the negative impacts of conventional cosmetics products. Even though the prices of these green products are slightly higher than their traditional counterparts [8, 9] further showed that many consumers tend to have a high willingness to pay more for green products in reflecting their desires and personalities, as it would further boost their confidence and self-performance. This indicate that environmentally responsible consumers will use green cosmetics to reduce adverse environmental effects and support SDG12 through sustainable consumption.

Empirically, the factors influencing consumers' buying cosmetics have been widely studied from different research contexts and perspectives. For example, this literature have widely explored halal cosmetic products [10, 11]. In contrast, Ngah et al. [9] studied Muslim university students' continuing intention to use non-halal cosmetics products. Besides, Jaini et

al. [4] and Jaini et al. [5] studied the factors that significantly affect consumers' cosmetics purchases. Recently, green cosmetics have gained much attention from researchers as more and more studies have focused on green products [12-14]. However, a few studies have used the stimulus-organism-response (S-O-R) framework to study consumers' decisions to buy green cosmetic products and present a research gap. As remarked by Limbu and Jalal Ahamed [7], most empirical studies used the planned behaviour (TPB) theory instead of the S-O-R framework. Compared to other theoretical frameworks, the S-O-R framework could explain consumer behaviour better as it consists of a sequential mechanism [15], and this mechanism can explain complicated human decision-making. Therefore, it would be ideal if the S-O-R framework could be used to understand consumers' purchase intention (PI) on green cosmetics.

Furthermore, there is a relatively rare study in the literature on the effects of the four proposed environmental-related factors, namely environmental concern (EC), green self-identity (GSI), perceived green value (PGV), and environmental responsibility (ER) as external stimuli on green cosmetics PI. Several studies have individually studied some of these proposed environmental-related factors. However, the influence of these four stimuli on attitude (ATT) and PI, together with the indirect role of PI through ATT, is deficient, and further study is required. Empirically, the effect of these environmental-related factors has been explored in different green products, and the crucial role in determining consumers' buying behaviour on these sustainable products has been shown, especially in the direct influence on PI. With that, utilising the sequential framework of the S-O-R, the effect of these four factors on the consumers' ATT and PI toward green cosmetic products would be better understood. Therefore, the study's research objectives are as follows:

(1) to examine the direct influence of the four proposed environmental-related factors on the consumers' ATT and PI toward green cosmetics.

(2) to investigate the indirect effect of these four proposed environmental-related factors on the consumers' PI toward green cosmetics via ATT.

The study's findings are anticipated to contribute to the literature and benefit stakeholders by further enhancing consumers' PI of green cosmetics. First, the findings could further supplement the literature on sustainable consumption behaviour, especially in green cosmetic products, as new evidence is provided using the S-O-R framework. Moreover, the study also investigated the direct and indirect influence of the four environmental-related factors on the consumers' ATT and PI on green cosmetics theoretically and practically. It provided evidence of the significant relationships between the proposed factors and further signified the vital role of these environmental-related factors. It also enriched the literature regarding their influence on consumers' PI on green cosmetics. Additionally, the mediating role of ATT has once again been proven in this study, as it further supports [16]. In contrast, the organism in the S-O-R framework could mediate the relationships between stimulus and response. Moreover, the study's findings could be beneficial for several stakeholders, particularly the governments, cosmetics manufacturers and retailers, and consumers, to formulate strategies to improve the consumers' ATT and PI toward green cosmetic products and ultimately leading to more sustainable communities.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

2.1 Stimulus-organism-responses (SOR) model

The S-O-R model proposed by Mehrabian and Russell [17] explains the individual's responses (R) and postulates that the individual's responses are affected by their organism (O) while the organism is stimulated by some other external stimulus (S). Thus, S-O-R hypothesises that some external constructs labelled as stimulus (S) would influence their internal organisms (O) [18] and further impact their responses (R). Cakici and Tekeli [16] remarked that purchasing behaviour involves a series of efforts to solve a problem related to purchase decisions. Therefore, the S-O-R model's sequential mechanism makes it appropriate to be used in predicting complex human behaviour, which typically involves decision-making processes [15]. With that, several studies have used the S-O-R framework to investigate the determinant factors that affect human behaviour in different study contexts. For example, Quoquab et al. [19] adopted the S-O-R model to examine the influence of the halal logo on customer loyalty. Similarly, Cakici and Tekeli [16] also employed the S-O-R model to predict the effect of price sensitivity on consumers' PI. Furthermore, Irimia-Dieguez et al. [20] also utilised the S-O-R model to study the success factors of adopting the peer-to-peer mobile payment system. The S-O-R is considered the most appropriate theoretical lens for the present study as the study aims to investigate the influence of environmental-related constructs (EC, GSI, PGV, and ER) on ATT (organism) and, eventually, the PI on green cosmetics (response).

2.2 Environmental concern on attitude and purchase intention

EC refers to the individuals' understanding and awareness of environmental issues and problems [21]. Individuals tend to engage in activities that improve the consequences if they are aware and conscious of environmental degradation issues [22]. Liao et al. [23] also noted that individuals are likely to behave pro-environmentally if they are concerned with ecological issues. As remarked by Lavuri et al. [24], individuals would reflect on their efforts to mitigate environmental degradation if they were concerned with the environmental problem. This study postulates that great concern for environmental problems will tend to form a favourable ATT toward green cosmetic products, as previous studies have found EC significantly affects consumers' ATT [25, 26]. For instance, Lavuri et al. [24] revealed that EC significantly predicts green ATT. Similarly, Moshood et al. [21] also found the significant role of EC on consumers' ATT. Besides, EC significantly affects consumers' behavioural intentions [25, 27]. Yue et al. [28] found that EC predicts green consumption intention significantly. Sun et al. [29] also found the positive effect of EC on green PI. However, the effect of the EC on the ATT and PI on green cosmetics is lacking, and further study is needed. Therefore, the hypotheses below are proposed.

H1: EC positively effect on ATT.

H2: EC positively affects PI in green cosmetics.

2.3 Green self-identity on attitude and purchase intention

GSI is defined as an individual's self-perception regarding

the potential to behave in a specific pro-environmentally behaviour [30]. Individuals tend to act environmentally friendly if they believe they have a green identity to meet their own identity [29]. Similarly, Patel et al. [30] also remarked that green consumers would participate more in some environmentally friendly behaviour to fulfil their self-defined needs. Moreover, the consumers participating in some environmental behaviour, like purchasing green products, may demonstrate their environmental status, as their self-perception of the environmentally friendly would fit with their role in society [31]. Literature has documented the significant role of self-identification on ATT toward green products. For example, Patel et al. [30] and Valaei and Nikjashemi [32] found a substantial relationship between self-identity and consumers' ATT. Additionally, Shahrin et al. [33] remarked on the positive relationship between consumers' self-identity and green PI and behaviour. Sun et al. [29] reported a significant association between GSI and green PI. Abdo et al. [31] further revealed the significant effect of GSI on green purchase behaviour. Although the literature has proven the importance of GSI on consumers' ATT and PI, the evidence on green cosmetics is lacking. Thus, further study is required, and the hypotheses below are suggested.

H3: GSI positively effect on ATT.

H4: GSI positively affects PI in green cosmetics.

2.4 Perceived green value on attitude and purchase intention

PGV is defined as the individual's evaluation of the features of goods and services that are environmentally friendly [26]. Similarly, with the anticipated benefits of the behaviour environmentally, Hamzah and Tanwir [34] defined PGV as the personal conscience toward supporting pro-environmental behaviour that would benefit them. Green products usually provide more benefits and value than conventional products, especially for the environment and society, as they are produced with sustainable materials. If the individual believes that green products would provide more benefits and values, it tends to affect their ATT and behavioural intention toward green products. Literature has emphasised the significant effect of value-related constructs on consumers' ATT [21, 35]. For example, Qureshi et al. [26] revealed that green value positively relates to consumers' ATT. Similarly, Tano et al. [36] also found a significant effect of green values on consumers' ATT. Besides, consumers tend to have a high PI for green products if they offer more benefits and value [34]. Therefore, as the literature proves, this green value is projected to influence consumers' behavioural intention significantly. Ahmad and Zhang [37] and Sinha and Annamdevula [38] revealed that green perceived value significantly impacts green PI. Similarly, the positive influence of PGV on PI toward green products was also remarked on by Hamzah and Tanwir [34]. Due to the limited study on the influence of PGV on consumer's ATT and PI on green cosmetics, the following hypotheses were proposed to discover this association.

H5: PGV positively effect on ATT.

H6: PGV positively affects PI in green cosmetics.

2.5 Environmental responsibility on attitude and purchase intention

ER is the degree to which an individual behaves responsibly for the environment's well-being [34]. Individuals tend to engage responsibly if they acknowledge that they are responsible for environmental problems [39]. With that, the responsibility toward the environment is anticipated to affect consumers' ATT toward green cosmetics significantly. Patwary et al. [40] revealed that consumers perceived ER as significantly influenced by ecocentric and anthropocentric ATT. Besides, Duong et al. [41] also showed that perceived ER significantly affects consumers' ATT toward green products. The significant effect of ER on consumers' ATT in eco-friendly packaged products is also noted in Shimul and Cheah [39]. Moreover, as Mohmed@Wasli et al. [42] remarked, consumers tend to behave pro-environmentally if there are felt responsible toward the environment. This supposition is particularly true as it aligns with the literature [33, 34, 42]. For instance, Yue et al. [28] states that ER positively correlates with green consumption intention. Likewise, Shimul and Cheah [39] also found the positive influence of ER on the PI of eco-friendly packaged products. Unfortunately, the evidence of the ER on the consumers' ATT and PI on green cosmetics is relatively limited. Thus, this study proposed the following hypotheses.

H7: ER positively effect on ATT.

H8: ER positively affects PI in green cosmetics.

2.6 Attitude on purchase intention

Ajzen [43] defined ATT as the feelings of an individual about a particular behaviour, and this feeling could be favourable or unfavourable, depending on the individual personal feelings. Theoretically, after the external stimulus affects the consumers, a certain feeling or internal organism (ATT) will be established for that behaviour. A good and positive feeling tends to form favourable ATT and eventually foster their response, such as PI. This supposition has proposed a significant relationship between the ATT and the consumers' PI. For instance, Woo and Kim [35] revealed the significant effect of ATT on green food PI. By focusing on the hybrid vehicles PI, Bhutto et al. [8] also reported the same significant impact of ATT on consumer PI. Similarly, Qureshi et al. [26] also found a substantial influence of ATT on PI. In addition, the considerable role of ATT on PI is also noted in the literature [24, 32, 36, 41]. However, Ling et al. [44], and Mazhar et al. [45] found an insignificant effect of ATT on behavioural intention. Therefore, the relationship between the ATT and PI on green cosmetics requires further investigation, and the hypothesis below is proposed for this purpose.

H9: ATT positively affects PI in green cosmetics.

2.7 Attitude as mediator

This study further proposed that the four environmental-related stimuli (EC, GSI, PGV, and ER) would indirectly influence the consumers' PI. Nketiah et al. [22] remarked that EC could indirectly affect behaviour, and ATT is usually a superior mediator in the relationship. Additionally, this supposition aligns with Farani et al. [46], who suggested that some additional constructs that consider the study's unique context may indirectly impact the behavioural intention via the constructs in TPB, such as ATT. Furthermore, the S-O-R framework also offers a superior method for examining the mediating role of the organism, as the organism in the S-O-R could successfully mediate the association between stimulus and response [16]. The significant mediating effect of the ATT is also acknowledged in the literature. For instance, Duong et

al. [41] found that ATT significantly mediated the relationships between ER and EC toward PI. Moreover, Moshood et al. [21] and Liao et al. [23] also revealed similar findings on the mediating role of ATT. Similarly, Shimul and Cheah [39] also noted the indirect significant role of ER on PI through ATT. Besides, the mediating role of ATT on the association of ethical self-identity and buying behaviour was also found by Zaman et al. [47]. In addition, Moshood et al. [21] revealed that ATT significantly mediates the relationship between perceived value and behavioural intention. Hence, the following hypotheses were formulated.

H10: ATT mediates the relationship between EC and PI on green cosmetics.

H11: ATT mediates the relationship between GSI and PI on green cosmetics.

H12: ATT mediates the relationship between PGV and PI on green cosmetics.

H13: ATT mediates the relationship between ER and PI on green cosmetics.

The discussion above has provided a solid explanation of the development of the study's hypotheses. With that, the study proposed the following research model in Figure 1.

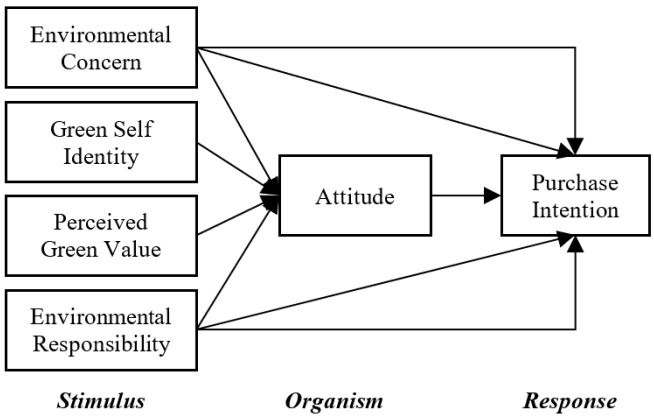

Figure 1. Proposed research framework

3. RESEARCH METHODOLOGY

The quantitative approach is used to achieve the study's objectives. The targeted respondents are the Malaysian general public, including those who have the intention and also have no intention to buy green cosmetics in the future. The non-probability convenience sampling technique is employed to select the study's respondents as it is the most widely used and efficient technique in collecting data [48]. This study has collected 204 valid primary responses, and it is considered sufficient for the study as this sample size is greater than the minimum sample size requirement of 189, which was calculated by the power analysis with the criteria of an effect size of 0.15, a power level of 0.95, together with 13 hypotheses.

The Google Forms platform created the online survey, and all targeted populations were invited to participate in this study voluntarily. Twenty-three validated items adapted from previous studies were used to develop the questionnaire. For instance, four items of EC and ER were borrowed from Tan and Goh [27] and Duong et al. [41]. Besides, GSI was measured using three items elicited from Raza and Farrukh [49]. Three items of PGV were adapted from Wei et al. [50]. ATT was measured using the four items borrowed from Qureshi et al. [26]. Lastly, the five items of PI were adapted from Duong [51]. The respondents are required to measure these items using a seven-point Likert-type scale, from strongly disagree (1) to strongly agree (7). The questionnaire was prepared in two languages (English and Bahasa Malaysia) to avoid misunderstanding.

The study first examined the multivariate normality test using Mardia's coefficient procedure, and the result found that the kurtosis coefficient (62.7601) exceeds the level of 20 [52], which determines the data is not normally distributed. The partial least square structural equation modelling (PLS-SEM) is the appropriate technique to analyse this unnormal distributed data [53]. Therefore, the PLS-SEM in SmartPLS was adopted to analyse the collected responses.

4. RESULTS

4.1 Respondents' characteristics

The distribution of the study's respondents from different characteristics has been presented in Table 1. Approximately two-thirds of the respondents were females, and more than 90% were aged below 30. Regarding marital status, 87% of the respondents are single. Besides, 64% are students, followed by 25% as employees. The profiles of respondents further showed that around 81% of respondents only earned RM2500 and below and have a tertiary education level (Certificate / Diploma / Bachelor Degree). This further revealed that the younger generation dominates the study's respondents with a monthly income of RM2500 and below (or students at tertiary education institutions), most of whom are highly educated.

Table 1. Characteristics of participated respondents

Characteristics	Frequency	Percentage
Gender		
Male	67	32.84
Female	137	67.16
Age Range		
20 YO and Below	43	21.08
21 – 25 YO	118	57.84
26 – 30 YO	24	11.76
31 – 35 YO	11	5.39
36 – 40 YO	2	0.98
41 YO and Above	6	2.94
Marital Status		
Married	19	9.31
Single	177	86.76
Others	8	3.92
Occupation		
Employee	52	25.49
Self-Employed	11	5.39
Student	130	63.73
Housewife	4	1.96
Others	7	3.43
Income Range		
RM1500 and below	140	68.63
RM1501 – RM2500	26	12.75
RM2501 – RM3500	15	7.35
RM3501 – RM4500	11	5.39
RM4501 – RM5500	4	1.96
RM5501 and above	8	3.92
Highest Education Level		
Primary / Secondary School	27	13.24
Certificate / Diploma / Bachelor Degree	165	80.88
Master Degree	9	4.41
Others	3	1.47

4.2 Measurement model assessment

The reliability and validity tests were first performed, and the results are presented in Table 2 and Table 3. As presented in Table 2, the convergent validity was achieved as both outer loading and average variance extracted (AVE) met the minimum threshold level of 0.7080 [54] and also 0.5000 [55]. In addition, the involved factors' composite reliability (CR) values exceed the 0.7000 level [56], indicating high internal consistency. The heterotrait-monotrait (HTMT) correlation ratio was further used to evaluate the discriminant validity of the study. Table 3 shows that the discriminant validity was also established, as the HTMT values are less than the conservative threshold level of 0.8500 [52]. Accordingly, these results indicated the collected responses are satisfactorily reliable and valid.

Furthermore, the study data is gathered using a cross-sectional survey, and this may cause the possibility of common method bias (CMB). Both the Harman Single factor test and full collinearity test were performed. The result of the Harman Single factor indicated that only 48.0450% of the variance in the first factors was measured by all measurement items, which is less than the threshold value of 50% [57]. This finding indicated that the CMB is absent in this study. Besides, in Table 2, the variance inflation factors (VIFs) values from the full collinearity test also support this conclusion, whereas the VIFs values for all involved constructs are lower than 3.3 [58]. Therefore, both findings proved that this study doesn't suffer from the CMB problem.

Table 2. Results of reliability and convergent validity

Items	Loading	AVE	CR	VIF
EC1	0.8262	0.7166	0.9099	2.351
EC2	0.8916			
EC3	0.8644			
EC4	0.8011			
ER1	0.7747	0.6497	0.8811	2.285
ER2	0.8249			
ER3	0.7813			
ER4	0.8412			
GSI1	0.9226	0.8279	0.9352	2.464
GSI2	0.9080			
GSI3	0.8989			
PGV1	0.9242	0.8696	0.9524	2.405
PGV2	0.9341			
PGV3	0.9392			
ATT1	0.9165	0.8466	0.9567	2.404
ATT2	0.9353			
ATT3	0.9215			
ATT4	0.9070			
PI1	0.8203	0.7334	0.9321	2.965
PI2	0.8925			
PI3	0.9000			
PI4	0.8065			
PI5	0.8585			

Table 3. Result of discriminant validity using HTMT

	EC	ER	GSI	PGV	ATT	PI
EC						
ER	0.6774					
GSI	0.7094	0.4656				
PGV	0.6678	0.7998	0.5494			
ATT	0.6182	0.4031	0.7459	0.5434		
PI	0.7367	0.5650	0.7817	0.5851	0.7662	

4.3 Structural model assessment

The results of the structural model assessment, including hypothesis testing, coefficient determination, and predictive relevancy, were provided in Tables 4-6 and Figure 2. Firstly, by focusing on the direct hypotheses, the result in Table 4 showed that two out of nine hypotheses failed to support (H6 and H7), while the remaining seven were supported. Specifically, the result indicated that EC (β = 0.1616), GSI (β = 0.5105), and PGV (β = 0.2073) significantly influenced ATT and support H1, H3, and H5. Besides, the hypotheses of H2, H4, H8, and H9 were supported as the finding revealed that the PI on green cosmetics is significantly affected by EC (β = 0.2046), GSI (β = 0.2846), ER (β = 0.1346), and ATT (β = 0.3538).

Table 4. Result of hypothesis testing on direct hypotheses using PLS-SEM

Hypo.	Path	Coeff.	T-value	P-value
H1	EC - > ATT	0.1616	2.0250	0.0215
H2	EC - > PI	0.2046	2.6137	0.0045
H3	GSI - > ATT	0.5105	6.8581	0.0000
H4	GSI - > PI	0.2846	3.3389	0.0004
H5	PGV - > ATT	0.2073	2.6538	0.0040
H6	PGV - > PI	-0.0042	0.0634	0.4747
H7	ER - > ATT	-0.0723	1.0362	0.1501
H8	ER - > PI	0.1346	2.0779	0.0189
H9	ATT -> PI	0.3538	4.8574	0.0000

Besides, the results of the mediating analysis in Table 5 found that three out of four mediating hypotheses are supported, except for H13. Precisely, ATT has significantly mediated the relationship between EC (β = 0.0572), PGV (β = 0.0734), and GSI (β = 0.1806) on PI on green cosmetics. At the same time, ATT's insignificant mediating role is found in ER's relationship with PI (β = -0.0256).

Table 5. Result of hypothesis testing on mediating hypotheses using PLS-SEM

Hypo.	Path	Coeff.	T-value	P-value
H10	EC - > ATT -> PI	0.0572	1.8030	0.0357
H11	GSI - > ATT -> PI	0.1806	3.6532	0.0001
H12	PGV - > ATT -> PI	0.0734	2.5411	0.0055
H13	ER - > ATT -> PI	-0.0256	1.0040	0.1577

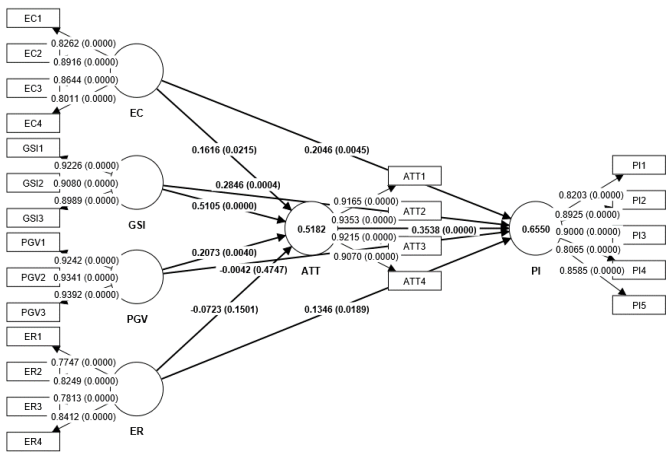

Figure 2. Analysis results on hypothesis testing using PLS-SEM

Furthermore, Table 6 presents the coefficient of determination (R^2) and predictive relevancy (Q^2) results. The R^2 value indicated that the four exogenous variables (EC, PGV, GSI, and ER) could explain approximately 51.82% of the variance in ATT. In contrast, 65.50% of the variation in PI on green cosmetics is predicted by the five predictors (EC, PGV, GSI, ER, and ATT). Moreover, the Q^2 values for ATT and PI are greater than zero, which shows that all exogenous variables have a significant predictive ability to predict the endogenous variables [54].

Table 6. Result of coefficient of determination and predictive relevancy

	R^2	Q^2
ATT	0.5182	0.4304
PI	0.6550	0.4646

5. CONCLUSIONS AND DISCUSSIONS

This study investigated the four environmental factors' role in consumers' ATT and PI toward green cosmetics. This study has proposed a research framework using the S-O-R framework, with four environmental-related factors as external stimuli, consumers' ATT as an internal organism, and consumers' PI toward green cosmetics products as responses. A total of 204 Malaysian consumers have participated in the study. The PLS-SEM results first showed that EC, GSI, and PGV have a significant impact consumers' ATT. In contrast, the study further proved that EC, GSI, ER, and ATT have a significant effect on consumers' PI on green cosmetics products. In addition, the study also found that EC, GSI, and PGV indirectly impact consumers' PI through the mediation of ATT. This study proved that all four proposed environmental-related factors significantly affect either ATT and/or PI, and three factors indirectly affect the PI via ATT.

The study's findings revealed that all four environmental-related factors directly or indirectly affect either ATT or PI on green cosmetics products. Specifically, EC played a crucial role in influencing both ATT and PI. This indicates that EC is essential in establishing consumers' favourable ATT toward green cosmetics. If consumers are concerned and aware of ecological issues, they will have a positive ATT towards green cosmetics. The significant role of EC toward ATT aligns with [21, 24, 25]. The results also showed that EC significantly affects consumers' PI on green cosmetics. It signifies that consumer who possess awareness and consciousness regarding ecological issues are more likely to buy green cosmetics. This is aligned with past studies [27-29].

GSI was also found to have a significant relationship with ATT and PI. Specifically, the significant influence of GSI on ATT implies that consumers would have a positive and favourable ATT toward green cosmetic if they perceive themselves as green consumers. This significant effect is paralleled with [30, 32], who also demonstrated the crucial impact of self-identity on their ATT toward green products. GSI also significantly affected consumers' PI of green cosmetics products, supporting the findings of [29, 31]. This implies that consumers buy green products when they identify themselves as "green" to demonstrate their stance on environmental issues.

Additionally, the significant effect of PGV on the consumers' ATT is noted in this study, which aligns with [26, 36]. The findings indicated that consumers tend to favour green cosmetics products if they believe they will gain more benefits and value. However, in contrast with empirical studies [34, 37, 38], the findings revealed an insignificant association between PGV and PI. The negligible effect of PGV on PI implies that the perceived benefits and values of the green products do not directly affect the consumers, and this indicate that this green value is less critical in encouraging green PI. Therefore, the study showed that PGV would influence consumer ATT but not their PI of green cosmetics products.

However, the study showed that ER has a dissimilar effect on ATT and PI. The consumers' ATT is insignificantly related to ER, which is opposed to previous studies [39, 41]. This insignificant relationship suggests that students' ecological responsibility will not directly affect consumers' ATT toward green cosmetics products. However, similar to previous studies [28, 34, 42], the sense of responsibility for the ecological issues of the consumers would significantly influence their PI. These findings suggested that consumers' ER will only directly affect their PI, as they cannot form a favourable ATT toward these green cosmetics products.

This study also identified the positive effect of ATT on consumers' PI. The significant association between ATT and PI is paralleled with previous studies [35, 36, 41]. This result suggested that if consumers have a favourable ATT towards green products, they are more likely to buy green products, including green cosmetics Therefore, it is important to promote consumers' favourable and good ATT towards these green products, as it has proven that it may eventually encourage consumers to buy them. As revealed in the above section, EC, GSI, and PGV played an essential role in positively influencing consumers' ATT and promoting consumers' favourable ATT toward green products.

Lastly, besides the direct influence of the proposed stimuli on the consumers' PI, the study's finding also revealed the significant indirect effect of the three environmental-related factors (EC, GSI, and PGV) on green cosmetics PI, through ATT. The significant mediating effect of the ATT is similar to previous studies [21, 23, 39, 41], and others. This finding signified that ATT is an effective mediator in the relationship between the three external stimuli (EC, GSI, and PGV) and PI on green cosmetics. It is worth mentioning that, initially, PGV has no significant direct effect on PI. Nevertheless, with the mediating effect of ATT, PGV significantly influences the consumer's PI.

6. IMPLICATIONS

This study offers several important implications. Theoretically, this study extends the existing literature by providing new evidence on the applicability of the S-O-R framework in predicting consumers' PI on green cosmetics products. As Perez-Vega et al. [15] emphasised, the sequential mechanism of the S-O-R provides a superior framework for investigating complex human behaviour. The study's finding showed that this S-O-R framework fit in predicting the external stimuli (EC, GSI, PGV, and ER) that may influence consumers' internal organism (ATT) and their response (PI), as these four stimuli explained approximately 52% and 66% of the variation in ATT and PI, respectively. Besides, the study also contributes to the knowledge as it proved that all four external stimuli directly impact either ATT and/or PI toward green cosmetics products. This finding emphasised that

environmental factors were essential in explaining the consumers' ATT and PI, which may always be ignored in previous studies. Moreover, the study further revealed the indirect effect of the proposed environmental-related factors on the consumers' PI through the mediator of ATT. Interestingly, the study first found that PGV has no significant direct influence on PI. However, with the mediator of ATT, PGV indirectly impacts consumers' PI for green cosmetics. These findings provide crucial implications in the literature, especially on the consumers' PI toward green products.

The study's findings also offer insightful implications for stakeholders in cultivating consumers' PI towards green cosmetic products. The study proved that EC is vital in establishing a favourable ATT and promoting the consumers' PI. Thus, stakeholders, such as government agencies and businesses, should implement strategies to increase consumers' awareness of environmental issues. For instance, the awareness program has to be frequently organised to update the consumers on the current ecological issues and problems and suggest solutions for reducing these consequences. Consumers will be highly concerned and aware of the environmental situation, translating into their feelings and perception of green products, eventually increasing their intention to buy them. Similarly, consumers' GSI also played a crucial role in forming consumers' positive ATT and PI on green cosmetic products. This finding suggests that the stakeholders should aim to establish the consumers' GSI. When consumers perceive they are green or pro-environmental, their favourable ATT and PI toward green products will be enhanced. Activities that help consumers figure out and build their identity toward the pro-environment should be implemented.

The finding also found a significant relationship between PGV and consumers' ATT but not PI. Therefore, the benefits and values generated by consuming green products must be widely disseminated as they will help enhance consumers' understanding of the advantages of green products. Consumers are inclined to have a favourable attitude toward green products if they understand the benefits and rewards of using them compared to conventional products. In contrast to PGV, stakeholders should focus more on building consumers' responsibility toward the environment, which is crucial in driving consumers to buy green products. Therefore, to increase the consumers' PI toward green products, the stakeholders must make consumers understand that everyone is responsible and obligated to protect the environment. Consumers tend to purchase green products to ease environmental degradation when they feel responsible for environmental problems.

Furthermore, the findings also confirmed the significant role of ATT in promoting green PI. To encourage consumers to buy green cosmetics products, stakeholders must make sure consumers have a favourable ATT toward them. As discussed above, EC, GSI, and PGV are among the three factors that can create an exemplary ATT toward green products. Therefore, stakeholders must concentrate on these three factors to promote the intention to purchase green among consumers. The indirect findings suggest that ATT significantly mediates the relationship between EC, GSI, and PGV on the consumers' PI. This further signified that the stakeholders must focus on these three factors, as they are expected to directly affect the consumers' ATT and indirectly affect their PI on green cosmetic products.

7. LIMITATIONS AND SUGGESTIONS FOR FUTURE STUDIES

Some limitations appeared in this study, which could be addressed in future studies. Firstly, the study only collected the responses using an online questionnaire survey; thus, only surface data could be gathered. This limitation may have caused the research findings to provide only statistical findings on the research objectives, but it could not further explore the reason behind them. Therefore, future study is suggested to employ a qualitative approach or mixed approach to provide a better understanding of the subject matter. Next, the generalisability of the study's findings is limited as the primary responses of the study were gathered only from Malaysia. Different countries may have different cultures, levels of environmental knowledge and awareness, and others; therefore, future studies may consider conducting a comparison study by collecting primary data from more than one country. Besides, the study employs convenience sampling in selecting the respondents, which may present some bias in the findings. Hence, it is suggested that future studies may use purposive sampling to select the respondents, using some criteria to ensure the participants' eligibility. This study hypothesised all respondents were homogeneous. However, the study's demographic profiles showed that most respondents are females aged 30 years and below, single, students, and have a monthly income of RM2,500 and below. Future research should also investigate the discrepancy between the sub-cultures across the samples, such as male vs. female respondents and lower vs. higher income, as different sub-cultural samples may have different perceptions towards the same subject matter. Additionally, this study only proposed four environmental-related factors as stimuli and one organism factor in the S-O-R framework. Therefore, adding some stimuli from other perspectives, like price sensitivity, product quality, brand reputation, and internal organisms such as green trust and satisfaction, could be considered in future studies to develop a more comprehensive research model.

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