

The Research of Environmental Knowledge, Consumer Attitudes and Price Sensitivity Towards Green Purchase Intention of Green Skincare Products

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Abstract :

The United Nations has ratified the 2030 Sustainable Development Goals (SDGs) in 2015. Consumers paid more attention and concern to the environment where they live, therefore green consumption is not only the slogan anymore, the communities start take actions since then. Due to the life style change of consumers, and rising consensus of environmental sustainability, topics like sustainable environmental knowledge, green consumption behavior and the concept of circular economy have gained more attention. The beauty & skincare product markets have witnessed substantial growth, leading to the demand of green skincare products. Therefore, this study aims fill the gap by evaluating the influence of environmental knowledge, consumer attitudes, and price sensitivity towards green purchase intention for green skincare products.

This study examines five critical dimensions: environmental knowledge, the usability of green skincare products, price sensitivity, consumer attitudes, and green purchase intention of green products. The study utilizes statistics software SPSS 22.0 to conduct descriptive statistics, Reliability Analysis, Factor Analysis, Independent Sample T-test, ANOVA, Pearson's correlation analysis, Regression Analysis. The findings indicate that buyer motivation plays a pivotal role in independent sample T-test, while consumer attitudes hold significant sway in ANOVA. Furthermore, all examined dimensions demonstrate a positive and significant correlation as revealed by Pearson's correlation and regression analysis.

Keywords: Environmental Knowledge; Consumer Attitudes; Price Sensitivity; Green Purchase Intention

1. Introduction

1.1 Research Background and Motivation

The global community is becoming increasingly aware of environmental issues due to the negative impact of pollution, industrialization, and urbanization (Chen, 2011). The cause of past and ongoing environmental issues is undeniably linked to human activities. (Sharma,

2011). Since the 1970s, theorists and practitioners have attempted to contribute to the effort to protect the planet and preserve the fauna and flora (Kinnear et al., 1974; Agan, 2013). In particular, discussions about consuming green products have become increasingly important for researchers and managers (Zhu et al., 2013; Jaiswal and Kant, 2018). The term ‘green’ has become synonymous with “organic”, “sustainable” or “healthy”. It is observed that due to the threat of climatic changes, global warming and environmental issues, the concept of ‘Going Green’ has gained momentum (Santos F Bruno, 2015). Half of the global population admits to becoming more eco-friendly (PwC, 2021). Simultaneously, consumers' desire for safe, healthy, and clean cosmetics and personal care products has grown worldwide, particularly after the Covid-19 pandemic (Zollo et al., 2021). Therefore, green skincare products are one of the green products categories worthy of in-depth research today. The United Nations ratified the 2030 Sustainable Development Goals (SDGs) in 2015. Accordingly, the global market segment for natural and organic cosmetics products is growing globally with an increase from \$34,500 million in 2018 to \$36,300 million in 2019 and is predicted to reach \$54,500 million in 2027 (Statista, 2020). The outcomes related to consumer attitudes towards natural ‘green’ cosmetics and green consumer behaviors as a whole have remained largely inconclusive (Wang et al., 2019). However, research in this field such as environmental knowledge, green consumption behaviors & attitudes and buyer motivation are still limited. And this increase in market size and consumer interest in green products makes the exploration of this consumer segment worthwhile. Therefore, this study aims to evaluate the influence of environmental knowledge, consumer attitudes, and price sensitivity on purchase intention for green skin care products.

1.2 Research Purpose

This study looks into environmental knowledge, consumer attitudes, price sensitivity, and green purchase intention in the green skincare products area, defining the scope of the study in Taiwan. Hence, the purpose can be divided as follows:

To study the impact of environmental knowledge on green purchase intention towards green skincare products.

1. To study the impact of consumer attitudes on green purchase intention towards skincare products.
2. To study the impact of price sensitivity on green purchase intention towards skincare products.
3. To study the influence of environmental knowledge, consumer attitudes, price sensitivity on green purchase intention towards skincare products among Taiwanese consumers.

2. LITERATURE REVIEW

2.1 Environmental Knowledge

In the environmental knowledge literature, Peattie (2010) suggests that environmental knowledge is often seen as a crucial driver of environmentally conscious consumer behavior. As the level of environmental knowledge increases, it leads to an enhanced willingness among consumers to engage in green brand purchases (Ahmad, 2015). Environmental awareness refers to the level of consciousness and knowledge that individuals have about environmental issues and the impact of their consumption habits (Andrianto, 2022). According to previous research, environmental knowledge influences the intention to purchase green products (Amran, 2012). These studies clearly demonstrate that environmental knowledge is associated with green purchase intent. Conforming to Wang et al. (2014), there is a strong positive relationship between environmental knowledge and consumers' intention to buy eco-friendly products. Therefore, this study employs a valid measurement adapted from Mostafa (2007) to measure each of these elements. Including environmental cognition, facts have knowledge or beliefs. Emotions towards the environment, an individual's emotional judgment of respect or contempt, liking or disgust, affirmation or denial. Intention to the environment, for example, individuals are inclined to engage in green consumption, and support the relevant green consumption related laws and regulations to protect the environment, etc. In light of the literature, the following is hypothesized.

Hypothesis 1 (H1): Environmental knowledge significantly positively affects the intention to purchase green skincare products among consumers in Taiwan.

2.2 Green Consumption Attitude

Kolter (1991) posits that attitude is the continuous process of emotions, perceptions, motivations, and cognitions of certain objects in the environment, representing an individual's persistent cognitive evaluation, emotional feelings, and behavioral tendencies toward certain individuals or concepts. That includes the three elements of attitudes proposed by scholars both domestically and internationally, such as Rosenberg and Hovland (1960), Stotland (1969), Jian Zhenyu (1996), and Zhang Chunxing (2013): cognition, emotion, and intention. A study reported that the attitude towards green products among Taiwan consumers influenced their intention to purchase green products (Mokan, K.V.; Lee, T.C.; Bhoyar, M.R., 2018). Supported by the results of a survey in Taiwan performed by Common Wealth Magazine in 2010, more than 80% of Taiwanese customers were willing to spend more money to buy eco-friendly products (Olivier, 2021). Hence, the hypothesis below is proposed:

Hypothesis 2 (H2). Attitude towards green skincare products significantly positively affects the intention to purchase green skincare products among Taiwan consumers.

2.3 Price Sensitivity

Price sensitivity refers to the degree to which the price of a product affects consumers' purchasing behaviors. Several studies in the green field have shown that a green product is usually premium priced in several countries (Taiwan in Teng & Lu, 2016; Tunisia in Salah et

al., 2015; Scotland in Michaelidou & Hassan, 2008; etc.). For this reason, price is considered a barrier hindering the acquisition of green products (Marian et al., 2014; Rödiger et al., 2016). Walser & Nanopoulos (2007) stated that the more sensitive to green products' prices consumers are, the more unable they are to buy the products since these are more expensive than conventional counterparts. Low et al. (2013) stated that before purchasing green products, consumers like to compare prices, assess the value for money and check for price transparency. In light of the literature, the following hypothesis is proposed:

Hypothesis 3 (H3): Price sensitivity has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers.

2.4 Availability of Green Skincare Products

Dangelico & Pontrandolfo (2010) defined green products as having a positive impact by reducing the environmental impact of other products. The availability of green products offers ease of buying, ready comparison among products, and ease of exchange or return of products. Availability enhances a consumer's awareness and evaluation of green products prior to an actual purchase (Kapoor, R.; Singh, A.B.; Misra, R., 2019). Generally, a consumer would feel more confident in using green products due to their vast availability. The availability of green skincare products can enhance one's intention to engage in the use of such products over time (Dhanwani, N.; Jainani, K.; Ojha, N., 2020). Hence, the following hypothesis is proposed:

Hypothesis 4 (H4): Availability of green skincare products significantly positively affects the intention to purchase green skincare products among Taiwan consumers.

2.5 Green Purchase Intention

Sustainability issues are increasingly a concern and interest for the cosmetic industry and are becoming more appealing in green consumer behavior studies. Green purchase intention, refers to consumers' willingness to engage in environmentally friendly or sustainable purchasing behaviors. Using green cosmetics is a lifestyle of treating self and the environment with respect (Kim and Seock, 2009; Hansen et al., 2012; Paul et al., 2016; Liobikienė et al., 2016). A consumer's concern for the environment may influence their intention to purchase green products (Al Mamun, et al., 2018). Yang (2017) found a strong relationship between purchase intentions and purchasing green skincare products while noting that consumer purchasing intention significantly affects the purchase of green skincare products to protect the environment (Chin, J., 2018). Hence, the hypothesis below is proposed:

Hypothesis 5 (H5): The influence of environmental knowledge, consumer attitudes, and price sensitivity has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers.

3. Research Methodology

3.1 Data collection and respondents' profile

In this study, 40 samples were collected from the pre-test sample. This study utilized purposive sampling as the sampling technique. This was to understand how cosmetics workers' purchase intentions for green skincare products differ. The population of this study is composed of Taiwan consumers aged between 18 and 60 years. The sample size was calculated using an online sample calculator with a 90 percent confidence interval and a 5 percent margin of error. The survey employed a pre-structured close-ended questionnaire, where the respondents had to rate the scores from a set of pre-defined options. The data collection for this cross-sectional study occurred from 1st May to 10th May 2023.

3.2 Questionnaire design

The questionnaire has two parts. The first part gathered the demographic profile. The second part of the questionnaire identified both the intention and consumption of green skincare products among Taiwan consumers. All the survey items (presented in Table 3.1) were adapted from previous empirical studies with minor modifications. The variables included in the questionnaire are summarized in Table 3.1.

Table 3.1. Survey items used in this study

Code	Questions	Source
EK 1-1	I know more about recycling than others.	Mostafa,2007
EK 1-2	I know that I buy products and packages that are environmentally safe.	
EK 1-3	I know how to select products and packages that reduce the amount of waste ending up in landfills.	
EK 1-4	I understand the environmental phrases and symbols on the product package.	
EK 1-5	I am very knowledgeable about environmental issues.	
AGSP 2-1	I intend to purchase green skincare products in future	Kapoor, Singh and Misra,2019
AGSP 2-2	I probably switch to using green skincare products in future	
AGSP 2-3	I prefer purchasing green skincare products than conventional skincare products	
AGSP 2-4	I plan to purchase green skincare products because of their positive environmental contribution	
AGSP 2-5	I would like to practice environment-friendly consumption	
PS 3-1	I am highly price sensitive	Stock,2005
PS 3-2	Small increases in price will lead to fewer purchases	
PS 3-3	For that customer, I think the price is the primary reason for choosing such skincare	
PS 3-4	It seems that customers enjoy comparing prices.	
PS 3-5	Customer prefers to buy low-cost or discounted items.	
GCA 4-1	I believe green skincare is better for my health.	Mamun et al. (2019)
GCA 4-2	I believe that green skincare products are more effective than conventional ones.	

GCA 4-3	I believe that there are substantial quality differences between green skincare and conventional skincare.	
GCA 4-4	I would prefer organic between green and conventional skincare with the same price.	
GPI 5-1	I will consider purchasing green skincare products as they should be less harmful to the environment in the coming years.	Mamun et al. (2019) and Ghazali et al. (2017).
GPI 5-2	For safety benefits, I would be moving to environmentally friendly green skincare products.	
GPI 5-3	In the immediate future, I certainly want to buy green products.	
GPI 5-4	I would even consider purchasing green skincare products for others.	

*EK (Environmental Knowledge), AGSP (Availability of Green Skincare Products),

PS (Price Sensitivity), GCA (Green Consumption Attitudes), GPI (Green Purchase Intention)

4. Results and discussion

4.1 Demographic Factors

This survey consists 40 effective questionnaires including 21 females (52.5%) and 19 males (47.5%). The oldest age ranges from 51-60 (32.5%). The monthly salary ranges 26,401-40,000 and 44,001-61,600 with a total of 13 people (32.5%). Please refer to the following table.

Demographic Factors	Percentage(%)				
	Gender	female		male	
	52.5		47.5		
Age	20-30years	31-40years	41-50years	51-60years	
	20	17.5	30	32.5	
Salary(monthly)	Below 26400	26401-44000	44001-61600	61601-79200	79200以上
	12.5	32.5	32.5	5.0	17.5

Source: Author's data analysis

4.2 Independent Variables and Dependent Variable

The research result shows GPI (Green Purchase Intention) is significant in independent sample T-test. When adopting unequal variances, the result 0.062 indicates a significant difference between males and females.

		Levene equal variances test		T-test of Average value(if equal)						
		F	Significance	T	df	Significance (two-tailed)	Average difference	Standard error	95% Confidence Interval of variances	
									upper limit	lower limit
EK	equal variances	3.083	.087	2.230	38	.032	.65263	.29267	.06016	1.24511
	unequal variances			2.271	35.635	.029	.65263	.28740	.06956	1.23570
AGSP	equal variances	1.985	.167	2.041	38	.048	.62707	.30731	.00496	1.24918
	unequal variances			2.078	35.550	.045	.62707	.30170	.01493	1.23921
PS	equal variances	0.306	.583	1.485	38	.146	.57080	.38436	-.20730	1.34890
	unequal variances			1.495	37.96	.143	.57080	.38172	-.20197	1.34358
GCA	equal variances	3.877	.056	.901	38	.373	.28922	.32091	-.36043	.93888
	unequal variances			.914	36.908	.367	.28922	.31648	-.35207	.93052
GPI	equal variances	5.309	.027	1.888	38	.067	.56391	.29874	-.04085	1.16867
	unequal variances			1.927	34.724	.062	.56391	.29264	-.03095	1.15817

Source: Author's data analysis

Through analysis on different ages, ANOVA result shows significantly difference (F=3.042) in PS (Price Sensitivity). However, through Scheffe's post hoc analysis it shows no difference.

Table.4.3 ANOVA analysis

		Sum of squares	Df	Square of average value	F	Significance	Scheffe's post hoc
EK	Between groups	6.226	3	2.075	2.450	.079	no difference
	within group	30.490	36	.847			
AGSP	Between groups	5.880	3	1.960	2.085	.119	no difference
	within group	33.839	36	.940			
PS	Between groups	11.982	3	3.994	3.042	.041	no difference
	within group	47.267	36	1.313			
GCA	Between groups	2.627	3	.876	.846	.478	no difference
	within group	37.244	36	1.035			
GPI	Between groups	4.837	3	1.612	1.805	.164	no difference
	within group	32.163	36	.893			

Source: Author's data analysis

4.4 Reliability and Validity of Constructs

The research shows through reliability Analysis, all the Cronach's α are bigger than 0.8, which shows all α values are reliable. For this study, as shown by the table 4.4.1, the Cronbach's alpha coefficients range from 0.876 to 0.934.

Table 4.4.1 Reliability and Validity of Constructs

Total statistics data				
	Scale average (If items have been deleted)	Scale variances (If items have been deleted)	Corrected total item correlation	Cronbach Alpha (If items have been deleted)
EK	9.8663	14.167	.732	.909
AGSP	9.9113	13.031	.879	.880
PS	9.9250	11.714	.856	.886
GCA	9.7413	14.779	.599	.934
GPI	9.9813	13.129	.904	.876

Source: Author's data analysis

4.5 Exploratory Factor Analysis

The KMO value is 0.805 and significant in BARTLETT test, which shows the selected data is suitable for adopting factor analysis.

Table 4.5.1 KMO and Bartlett test

KMO and Bartlett test		
Kaiser-Meyer-Olkin		(Sampling Adequacy) .805
KMO test Bartlett's Spherical test	Average chi-squared	843.728
	Df	210
	Significance	.000

Source: Author's data analysis

4.6 Regression Analysis

Hypothesis 1: Environmental knowledge has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers. The analysis of environmental knowledge impact on green purchase intention towards skincare products among Taiwanese consumers using Multiple Regression statistical analysis, as follows (table 4.6.1), the findings align with studies by Ali et al. (2023) and Wang et al. (2014) consistent, which show a strong positive relationship highlight the role of environmental knowledge in shaping green consumption. Table 4.6.1 Multiple Regression Analysis of environmental knowledge impact on green purchase intention towards skincare products

Regression Analysis Results-H1			
Item	IT		p value
	y	SE	
Intercept	0.554 ⁺	0.298	0.07
EK	0.731 ^{***}	0.112	0.00
F-value	42.968 ^{***}		0.00

Source: Author's data analysis

Hypothesis 2: Attitude towards green skincare products has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers. The analysis of attitude towards green skincare impact on green purchase intention towards skincare products among Taiwanese consumers using Multiple Regression statistical analysis, as follows (table 4.6.2). The findings align with studies by (Mokan, K.V.; Lee, T.C.; Bhoyar, M.R., 2018) consistent, which there is a strong positive relationship highlight the role of attitude towards green skincare in shaping green consumption.

Table 4.6.2 Multiple regression analysis of attitude towards green skincare products shows a significantly positive effect on the intention to purchase intention towards skincare products

Regression Analysis Results-H2				
Item	IT			p value
	γ		SE	
Intercept	0.348		0.212	0.11
GCA	0.829 ^{***}		0.08	0.00
F-value	106.846 ^{***}			0.00

Source: Author's data analysis

Hypothesis 3: Price sensitivity has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers. The analysis of price sensitivity impact on green purchase intention towards skincare products among Taiwanese consumers using Multiple Regression statistical analysis, as follows (table 4.6.3). The findings align with studies by Low et al. (2013) consistent, which there is a strong positive relationship highlight the role of price sensitivity in shaping green consumption.

Table 4.6.3 Multiple Regression Analysis of price sensitivity impact on green purchase intention towards skincare products

Regression Analysis Results-H3				
Item	IT			p value
	γ		SE	
Intercept	0.689 ^{***}		0.167	0.00
PS	0.694 ^{***}		0.061	0.00
F-value	127.45 ^{***}			0.00

Source: Author's data analysis

Hypothesis 4: Availability of green skincare products has a significantly positive effect on the intention to purchase green skincare products among Taiwan consumers. The analysis of availability of green skincare products impact on green purchase intention towards skincare products among Taiwanese consumers using Multiple Regression statistical analysis, as follows (table 4.6.4). The findings align with studies by Dhanwani, N.; Jainani, K.; Ojha, N.,2020 consistent, which highlight the role of Availability of green skincare products ategies in shaping green consumption.

Table 4.6.4 Multiple Regression Analysis of impact on green purchase intention towards skincare products

Regression Analysis Results-H4				
Item	IT			p value
	γ		SE	
Intercept	0.689 [*]		0.346	0.02
AGSP	0.59 ^{***}		0.124	0.00
F-value	22.814 ^{***}			0.00

Source: Author's data analysis

4.7 Pearson's

This part adopts Pearson's correlation analysis. It analyzes if each variance is significantly correlated. The analysis on each variance shows as follows:

4.7.1 Related analysis						
		EK	AGSP	PS	GCA	CPI
EK	Pearson coefficient	1				
	two-tailed significance					
AGSP	Pearson coefficient	.764**	1			
	two-tailed significance	.000				
PS	Pearson coefficient	.650**	.856**	1		
	two-tailed significance	.000	.000			
GCA	Pearson coefficient	.470**	.536**	.575**	1	
	two-tailed significance	.002	.002	.000		
GPI	Pearson coefficient	.728**	.859**	.878**	.612**	1
	two-tailed significance	.000	.000	.000	.000	

**Correlation higher than 0.01 is significant(two-tailed)

5. Conclusions

In conclusion, this research illuminates the impact of environmental knowledge, consumer attitudes, and price sensitivity on green purchase intentions for skincare products among Taiwanese consumers. The findings unveil several key insights, including the demographic characteristics of beauty product consumers, their knowledge levels of environmental awareness, and their green purchase intentions. The regression analysis indicated a positive and statistically significant relationship between environmental knowledge, consumer attitudes, and price sensitivity, and green purchase intentions. Overall, this research offers valuable insights into the influence of environmental knowledge, consumer attitudes and price sensitivity influence green purchase intentions among Taiwanese consumers in the beauty products market. The findings enrich the understanding of the interplay between environmental knowledge, consumer attitudes, price sensitivity, and green purchase intention.

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