Assessment of Factors Influencing Purchase Intention for Green Cosmetic Products

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Abstract

Recent global environmental challenges have increased the demand for sustainable consumption and the use of green products around the world. One such example of green product is green cosmetics. The cosmetic industry is widely criticized for contributing to environmental and public health hazards due to the use of toxic chemicals. As a result, the manufacturing and distribution of eco-friendly cosmetics are receiving ongoing attention from both businesses and the markets. The purpose of this study is to identify the factors that influence customers inclination to purchase natural and organic cosmetics. A thorough assessment of the literature resulted in the identification of twelve distinct criteria and by using Factor Analysis these factors were reduced into three dimensions. A hierarchy was then established and AHP was used to come up with a comprehensive list of factors along with their degree of importance. The data for this study was gathered using a quantitative research approach and a total of 156 responses were obtained using an online questionnaire promoted through e-mails and social media platforms. This study adds to the knowledge base of managers on how they can encourage the use of green cosmetics and orient their strategies to address consumers environmental concerns.

Keywords

Green Cosmetics, Purchase Intention, Eco-Friendly Products, Multi Criteria Decision Making, Factor Analysis

1. Introduction

The worldwide demand for natural and eco-friendly beauty products is growing. An increasing number of people are opting for healthier lifestyles and organic personal care products, as they become more aware of the risks posed by synthetic chemicals (Ghazali et al. 2017). A "green product" is generally characterized as a product that is not detrimental to the environment or society. Products that are more eco-friendly and "green" tend to be safer for

consumers, the environment, and human health. According to Chen and Chai (2010), consumers are encouraged to buy green products due to the current environmental concerns and increasing demand for sustainable consumption. They are advantageous in many ways: they use fewer resources (water, materials, and energy) to manufacture, they don't harm the natural world in any way, and they come in recyclable and eco-friendly packaging (Zappelli et al. 2016). These advantages for consumers have long-term implications for the economy. For example, better recyclability can help save money on waste disposal (Azevedo et al. 2011). Green products may initially cost more than their conventional counterparts, but their overall cost of ownership may be lower (Steen 2005).

Cosmetics can be traced back to Egypt, where scented oils and soils were used to clean and soften the skin and remove undesirable odors (Bonini and Oppenheim 2008). Butter and barley flour were used as cosmetics in Roman times, and the origins can be traced all the way back to that time. Green cosmetics are made with all-natural components like aloe vera and avocados. The elements are bio-friendly since they are generated from living species such as plants and animals. Some of the ingredients used in green cosmetics include agricultural plants, microbes, and natural oils. The cosmetic is also considered "green" because its primary and secondary packaging are both recyclable and comprise of recycled materials (Sahota 2014). The use of synthetic beauty products is leading to the development of potentially dangerous bodily disorders such as skin damage, allergies and burning sensations. As a result, the focus of cosmetic buyers has shifted towards natural ingredients and eco-friendly packaging and they have started paying more attention to sustainable products (Lin et al. 2018). As the customer is more interested in the purchase of green cosmetic products it is important to investigate the factors which influence the purchase intention of such products.

Several studies have attempted to identify the factors that impact purchase intentions for green cosmetic products, but to the best of the authors' knowledge, there has been little study on the categorizing and ranking of these criteria. The purpose of this paper is to investigate the literature and identify factors that influence customer willingness to purchase green cosmetic products. The authors employed Factor Analysis to reduce the items into a number of dimensions, and then the Analytical Hierarchical Process (AHP), a Multi Criteria Decision Making (MCDM) technique, to analyze and rank the factors.

The objectives of this study are:

•   To determine the factors that lead to purchase intention of green cosmetic products.
•   To model the factors into a hierarchy
•   To identify the ranks for the factors to better understand their priority.

The study is organized as follows: Section 2 relates to review of literature along with identification of various factors that are associated with purchase intention for green cosmetic products. Further the research methodology of the study has been described in Section 3 followed by analysis and findings in Section 4. Discussions are elucidated in Section 5 followed by limitations, future research directions and conclusion in Section 6.

2. Literature Review

According to Ajzen (1991), attitude towards the behavior, subjective norms, and perceived behavioral control all influence the development of an intention, making intention the antecedent of actual behavior. The motivation of an individual to engage in a particular behavior is once again a fundamental component of the Theory of Planned Behavior. The elements that drive behavior are thought to be controlled by intentions. Green buying intention refers to a person's likelihood and desire to prefer ecologically friendly attributes above conventional ones while making a purchase decision (Sharma et al. 2022). As consumers' green purchase intentions are a reflection of their green behavior, understanding the elements that influence these intentions is crucial for businesses to shape their marketing strategy. Consumers in both developed and developing nations are taking substantial steps to reduce environmental degradation and are willing to pay a higher price for ecologically friendly products. Customers also evaluate other considerations in a product selection and decision-making. If the price of a product looks to be too high, a trade-off may be made; nonetheless, research reveals that consumers are unwilling to pay a premium for green things (D'Souza et al. 2007). Apart from price, quality of a product is an additional consideration for consumers of green products. According to Chan (2004), Green Advertising is defined as claims that the features of the promoted product or associated production process helped protecting the environment or had positive effects on the environment. Consumers were far more likely to respond favorably to the green advertisement, including the promoted message, the company image, and the corporate products, if they had previously held positive opinions of corporate environmental concern (Davis 1994). The product's environmental, economic, and reliability benefits, as well as its overall appearance, are all important to green consumers. According to Boztepe (2012), environmental consciousness

is the result of an understanding of environmental problems, solutions, and environmental advantages from specific green products. A broad understanding of environmental protection, environmental treatments, green labelling, and economic benefits influence a consumer's decision to purchase a green product (Maniatis 2016). Aware consumerism prefers natural and biologically degradable packaging to plastic packaging. The cosmetics sector is looking for long-term solutions to boost bio-anciency while maintaining the circular economy principles. Green customers would ideally learn more about recycled packaging materials by analyzing the packaging and contents of eco-friendly products. The packaging of a product can alert customers to a specific and obvious feature of environmental concern (D'Souza et al. 2007). According to the findings of a study, green corporate impression influenced green purchasing intention significantly (Kong et al. 2014). Consumers may be motivated to engage in green purchasing behavior in order to support companies that care about environmental sustainability. The social norm construct refers to the social pressure to accept and embrace a certain type of behavior (Ajzen 1991). This measure is about social conditions, and it considers the impact of people who are close to or important to the person, such as friends, relatives, and coworkers. Furthermore, a person's impression of society's pressure to perform specified behaviors is referred to as social norms. Green Products are more likely to be purchased by consumers who have favorable societal standards on a particular behavior. Cultural elements such as the individualism and collectivism index must be considered when analyzing the impact of social norms on green shopping (Kumar 2012). Family and friends play an important role in people's social lives (Liobikienė et al. 2017). Social pressure determines emotional norms in human behavior. Close relatives (guardians, family members, companions, partner, and teachers) may exert social pressure on a person to participate in a certain behavior. Social media has a significant impact on shaping consumer opinions, attitudes, and purchasing decisions (Mangold and Faulds 2009). Social networks can encourage and sustain environmentally friendly behavior and celebrities on social media can influence consumer attitudes toward green cosmetics (Murwaningtyas et al. 2020). Social media has changed consumer-company communication, especially green product communication, allowing consumers to have a more engaged purchase experience. It has become a significant communication tool in the cosmetics sector. Health consciousness is vital for the attitude towards purchasing organic shampoo and body lotion (Kim and Chung 2011). On the other hand, health consciousness has a significant influence on consumers' attitudes toward green cosmetics. In the case of personal care, health consciousness should be prioritized, whereas in the case of color cosmetics, brand and quality are determining factors. According to Ritter et al. (2015) and Azizan and Suki (2014), health consciousness has a significant influence on green purchase intention.

Environmental attitudes are determined by respondents' perceptions of the importance of environmental components, difficulties, and preservation. The attitude towards the environment was the most widely investigated factor. According to various studies, environmental feelings are positively connected with green consumer behavior (Akehurst et al. 2012; Roberts and Bacon 1997). Several studies, however, have found a weak to moderate link between environmental attitudes and green consumer behavior (Berger and Corbin 1992; Tanner and Kast 2003).

Along with this discussion, there are several factors in the literature that influences the purchase intention for green cosmetic products. With the insights presented in the literature, the authors in this study have put in efforts to classify and evaluate the factors. The factors along with their description are presented in Table 1 below.

Table 1. Factors influencing purchase intention for Green Cosmetic Products

S.No.	Factors	Description	Code	References
1.	Purchase Price	The price at which a particular item can be bought.	F1	(Sheth et al. 1991), (Maheswari and Malhotra 2011)
2.	Brand & Quality	The brand to which the product belongs and the quality of the product.	F2	(Bei and Simpson 1995),(Braimah 2015)
3.	Advertisement	Advertisements are characterized as claims that the marketed product or associated manufacturing process contributed to environmental protection orhad other positive environmental consequences.	F3	(Chan 2004), (Davis 1994)

S.No.	Factors	Description	Code	References
4.	Consumer Situation	Utility derived in a specific situation	F4	(Han et al. 2022)
5	Environmental Consciousness	Environmental challenges, environmental solutions, and environmental advantages from specific green products.	F5	(Kautish et al. 2019)
6	Eco-Packaging	For businesses and customers, packaging serves as a means of communication and attention capture. Individual perceptions of container shape, size, color, materials,and labelled information contribute to a consumer's overall perception of packaging.	F6	(Draskovic et al. 2009)
7	Green Corporate Perception	Perception regarding the companies if they are green or not.	F7	(D'Souza et al. 2007),(Kong et al. 2014)
8	Social Norm	Individually appropriated norms are linked to social norms.	F8	(Witek and Kuzniar 2020)
9	Suggestion from friends and family	Young people's purchasing selections are heavily influenced by family and friends.	F9	(Liobikienė et al. 2017)
10	Social Media	Consumers generally use social media to gather product information.	F10	(Mangold and Faulds 2009), (Murwaningtyas et al. 2020)
11	Health Consciousness	A favorable attitude toward one's own health.	F11	(Ritter et al. 2015), (Azizan and Suki 2014)
12	Environmental Attitude	Attitudes of environmental concern are rooted in a person's concept of self and the degree to which an individual perceives him or herself to being integral part of the natural environment	F12	(Berger and Corbin 1992), (Tanner and Kast 2003).

3. Methodology

3.1 Factor Analysis
Factor analysis using Principal Component Analysis (PCA) is used to minimize the factors where it linearly reduces the correlated factor into smaller uncorrelated factors without much data loss. The projected data are essentially linear combinations of the original data that capture the majority of the volatility (Jolliffe 2002).
When to use PCA
• If one want to reduce the variable or factors but is not sure which one to dispose of.
• To ensure that the variable/factors are not related to one another.

3.2 Analytic Hierarchy Process (AHP)
AHP is a decision-making approximation that involves structuring multiple selection criteria in a hierarchy (DSS 2008). The AHP's primary application is to solve choice problems in a multicriteria environment. The method assesses the relative importance of those criteria, compares alternatives to each criterion, and assigns a ranking to the alternatives. It's different from past decision-making methods in that it quantifies criteria and possibilities that were

previously difficult to quantify using concrete data. AHP guides decision-makers to the alternative that best reflects their views and understanding of the problem, rather than prescribing a "right" one.

3.3 Data collection
The data for this research is collected through Online Questionnaire. To gather the responses a Google Form was circulated through emails and various social media platforms. The total responses for the study came out to be 156. The question consisted of three sections. The first section comprises the respondent's demographic information. The second portion included information on cosmetic product purchases and desire to acquire green cosmetic items. The third section discusses the variables that clients consider while selecting green cosmetics. Five-point Likert scale with choice range between Strongly Agree to Strongly Disagree was used in the questionnaire for measuring the likelihood of the factors. Simple random sampling technique was used for data collection.

3.4 Demographics
Due to the large availability of demographic variables, demographic analysis is a popular statistical analysis for segmenting consumers. Marketers can use age, gender, income, and education to segment clients and locate green customers using a variety of characteristics (Diamantopoulos et al. 2003).
Below is the distribution of the demographics from the data authors have collected.
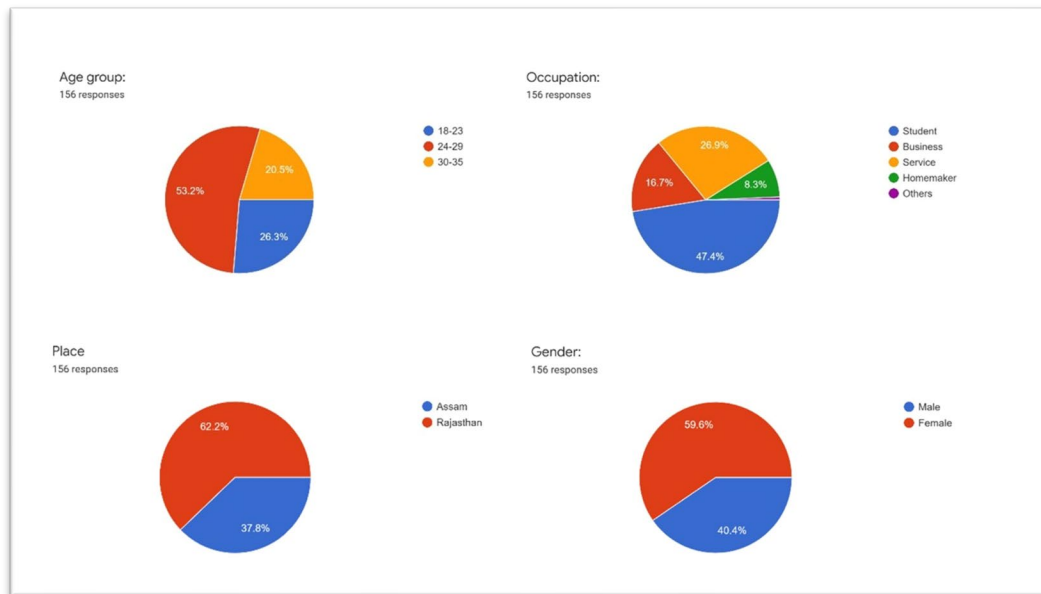

Figure 1. Distribution of Demographics

4. Analysis and Findings

Table 2. Results for KMO and Bartlett's Test

Kaiser- Meyer- Olkin Measure of Sampling Adequacy.		.823
Bartlett's Test of Sphericity	Approx. Chi-Square	523.66
	df	66
	Sig.	.000

In the above table of the analysis, authors have performed the KMO and Bartlett's Test. This test helps us examine the degree of the partial correlation between the variables (how the components explain each other). Normally it

should be greater than 0.5 and the closer it is to 1.0 is ideal. Value less than 0.5 is unacceptable. The KMO value in our analysis was 0.823, which is satisfactory, indicating that the degree of information of the variables overlap significantly indicating the presence of a strong partial correlation. As a result, factor analysis is an alternative worth considering. Bartlett's test of sphericity is used to test the null hypothesis that the correlation matrix is an identity matrix. The variables are unrelated if correlation matrix is same, making factor analysis impossible. The significance value for the Bartlett's Test must be less than 0.05, indicating that the correlation matrix is not an identity matrix.

The scatter plot below indicates how much variance are being captured from the data. It always displays a downward curve. On the y-axis are the eigenvalues, and on the x-axis is the number of components. The point where the curves start to flatten is the number of factors that can be formed. In our analysis 3 components were formed.
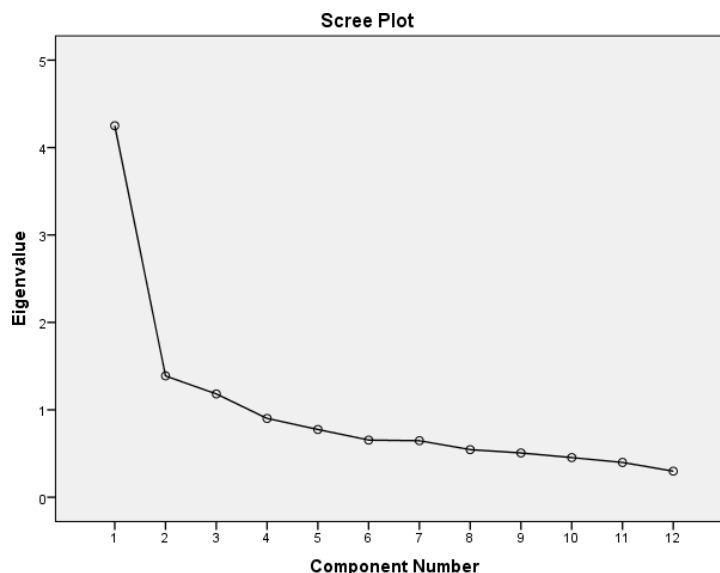

Figure 2. Scree plot of eigenvalue with factors associated.

Table 3. Rotated Component Matrix

	Component		
	1	2	3
F1		.671	
F2		.582	
F3		.832	
F4		.734	
F5	.510		
F6	.768		
F7	.603		
F8			.690
F9			.801
F10			.664
F11	.698		
F12	.740		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization
Rotation converged in 5 iterations.

In the Rotated component matrix, the components are given certain values through factor loading. It is observed that some factors are clustered under the same column, indicating that these values are correlated to each other and may be taken as one factor. Our analysis, as shown in table 2, revealed that our 12 variables can be reduced to three to assess purchasing intent. In a nutshell, three factors emerged from the exploratory factor analysis for green product purchase intention.

Factor 1: - Environmental Factors
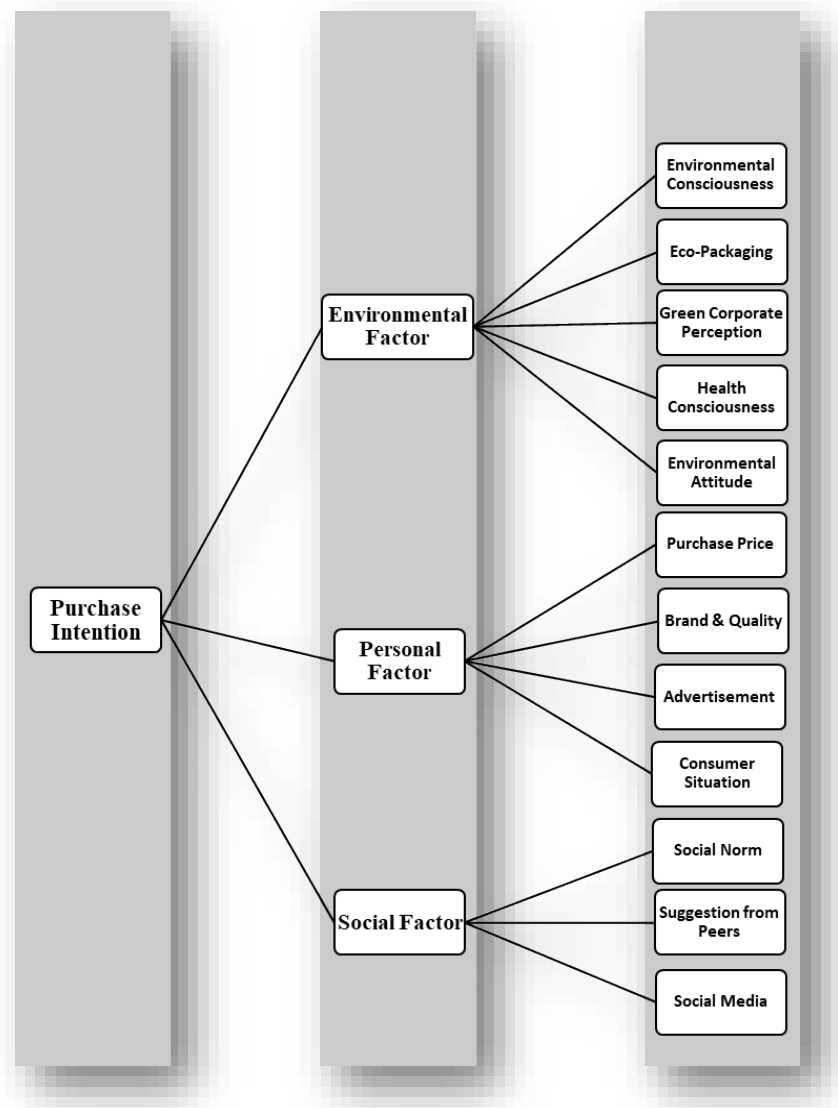Factor 2: - Personal Factors
Factor 3: - Social Factors

Figure 4. Results for factor analysis and hierarchy developed for AHP

Table 3: - Ranking of the factors leading to purchase intention of the green cosmetic products.

Factors	F. No	Criteria	Importance Weight	Relative Weight	Relative Ranking	Global Weight	Global Ranking
Eco-Packaging	F6	Environmental Factors	0.4050	0.2531	2	0.1025	4
Environmental Consciousness	F5			0.3952	1	0.1601	3
Green Corporate Perception	F7			0.2161	3	0.0875	6
Health Consciousness	F11			0.0851	4	0.0345	9
Environmental Attitude	F12			0.0510	5	0.0207	11
Brand & Quality	F2	Personal Factor	0.4810	0.3342	2	0.1608	2
Purchase Price	F1			0.4110	1	0.1977	1
Advertisement	F3			0.1953	3	0.0939	5
Consumer Situation	F4			0.0611	4	0.0294	10
Suggestion from friends and family	F9	Social Factor	0.1141	0.4842	1	0.0552	7
Social Norm	F8			0.4231	2	0.0483	8
Social Media	F10			0.0920	3	0.0105	12

5. Discussion

The current study was carried out to understand the purchase intention of customers towards green cosmetic products. Through factor analysis, the researchers found out that the identified 12 factors can be reduced to three dimensions. The correlation of factor 1,2,3 and 4 with personal factors is 0.671, 0.582, 0.832 and 0.734 respectively which is above 0.4 indicating a good correlation with the factor or component it lies in. Similarly, factor 5 (r = 0.510), factor 6 (r = 0.768), factor 7 (r = 0.603), factor 11 (r = 0.698) and factor 12 (r = 0.740) all have the correlation value above 0.4. Authors can interpret that the loadings are of importance for the component it lies in. In the same way the factor loadings of component 3 are all above 0.4 i.e., factor 8 (r = 0.690), factor 9 (r = 0.801), and factor 10 (r = 0.664) indicating a strong relation between the factors and their components. After the factor analysis a hierarchy was formed and the elements were further evaluated to deduce their rankings using AHP. Personal Factors were ranked first followed by Environmental Factors and Social Factors.

Four factors are associated with the personal dimension. The purchase price is given the highest priority because the price of any product has a large influence on purchase intention. The second factor was quality and brand, as consumers place more trust in brands than anything else; if the brand value is high, it is assumed to be of high quality. Advertisement and consumer situation have less of an impact on purchase intention than price and brand. Attractive advertisements eventually entice consumers to purchase products, and green products do not appeal to customers as much as they should.

Green products exist because of environmental factors. Although it is an important factor influencing purchase intention for green cosmetic products, it is ranked second because purchase power is driven more by the consumer's personal factors. Environmental consciousness is the most important factor in this dimension, with consumers purchasing green cosmetics for environmental reasons. Consumers who are aware of environmental issues will almost certainly choose green products, implying that environmental consciousness has an impact on purchasing. Following that, eco-packaging influences purchase because consumers who prefer green products will look for sustainable packaging because it is less harmful to the environment. As organizational behavior influences purchase intent, green corporate perception is ranked third in this dimension. If an organization's reputation for environmental stewardship is poor, consumers will prefer not to buy its products, influencing their purchasing intentions. Health consciousness and environmental attitude are ranked fourth and fifth, respectively, because consumers are aware of green products but do not prioritize their health or the environment, so their health and attitude toward the environment have little impact on their purchase intention.

The social factor dimension has much less of an impact on purchase intention, but consumers tend to buy green products because of their social group or because of their status. Family, friends, and peer group are ranked first in this dimension as have a significant impact on the purchase. Peers who are knowledgeable about green products are more likely to recommend them to others. Additionally, consumers tend to maintain their social status by purchasing

green cosmetic products that demonstrate their concern for the environment. Because social media does not provide much information about green products and why they should be used, it has little influence on their purchase.

6. Limitation, Future Scope and Conclusion

Time and money were the most significant limitations placed on the study. More factors could have been taken into consideration, but only a small sample size was used for this research. In subsequent research, it may be possible to take into account a larger sample size in addition to an increased number of factors. Also, researchers might take into account a variety of research approaches, such as in order to determine ranks, important weights, and cause-and-effect relationships. The goal can be accomplished through the implementation of DEMATEL, VIKOR, and other similar analysis techniques. In the beginning, factors were found through a review of the relevant literature. In addition, the identified factors were refined after taking into account both the domain knowledge and the results of the literature review. The final step was to compile a list of the 12 factors that influence a person's intention to buy environmentally friendly cosmetics. Taking all of these considerations into account, a questionnaire was developed. The responses were obtained through the use of a simple random sampling method. A total of 156 responses were gathered from approximately 700 people who were questioned after they were approached. The gathered information was analyzed with SPSS 26.0 using factor analysis, principal component analysis (PCA), and other statistical methods. Authors were able to identify a total of three principal components, which served as the basis for the subsequent development of the factor hierarchy. The three primary factors were the environmental, personal, and social factors. The study that was carried out will serve as a foundation for researchers in the future. The developed framework could be taken into consideration by subsequent researchers for the purpose of advancing research on topics related to purchase intention and environmentally friendly cosmetic products.

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