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Predictors of green purchase intention toward eco-innovation and green products: Evidence from Taiwan

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ABSTRACT

Recently, purchasing intention towards green products has gained global attention due to their extensive use and high environmental issues. Thus, the current article investigates environmental concern, environmental knowledge, green product, and eco-innovation influence on the green purchase intention of green products in Taiwan industry. The research also examines the mediating role of consumers' attention among environmental concerns environmental knowledge, green products eco-innovation, and green purchase intention. The article used questionnaires to collect the primary data from the sampled population. To examine the hypothesis, the PLS methodology was adopted. The results indicated that environmental concern, environmental knowledge, green product, and eco-innovation have a positive association with green purchase intention. The findings also exposed that consumer attention significantly and positively mediates environmental concern, environmental knowledge, green product, eco-innovation, and green purchase intention. The paper also proposed some guidelines to the practitioners which help them in the development of green-related policies to increase purchase intention.

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M31; Q56; Q57; Q58

1. Introduction

Due to the happening of global warming, the environment all over the globe has been accelerating rapidly. These conventional products affect not only the environment but also human health. The adverse effect of traditional products globally is diverting towards environment-friendly products, technology, etc. Such environmental and human-friendly products are narrated as green products. The prime way to divert the users from conventional to green products purchase. As green purchase intention

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refers to the intention of a customer to purchase a more environmentally friendly product and avoid purchasing products that are harmful to the environment. Rapid economic and technical growth has brought even more convenience to human life and came up with several environmental problems like global warming, air pollution, and climate change. Green products are organic, non-toxic, environmental-friendly, and mainly made from recycled materials. Many human activities have a severe effect on the environment. Some of them are the rapid consumption of natural resources, depletion of the ozone layer, and carbon emission. Green purchasing is vital for the environment as unplanned purchasing of goods might harm the environment. Consumer household purchase is responsible for about 40% of the environmental damage. Now consumers have options to minimize the environmental damage by using green products. It has been observed that consumers have a positive attitude when it comes to choosing green products and they themselves demand for such products.

Recent statistics regarding green product market share exhibits that consumer when making the decision to purchase products, the environmental consideration is less concerned for them. However, their emphasis shifts more toward environmental impact. Literature expressed a noticeable gap between a consumer showing a positive attitude and the actual purchasing practice as about 67% of consumers show a positive attitude toward the purchase of organic food but only 4% purchased those products (Birch et al., 2019; Costa et al., 2021; Zhao et al., 2021). Factors like price, product availability, and social influences among the other products lead to the discrepancy between customer attitude and purchase behavior. High prices and inconvenience in purchasing green products are the major barriers affecting consumer green purchase behavior. Environmental degradation is the main issue in developing countries, and the awareness of purchasing green products is also very little in these countries. People are not aware of their responsibilities toward the environment and the availability of green organic products in the market. The availability and production of green products in developing countries are minimal, affecting the environment. One of the other reasons consumers don't buy green products is that people think these products are costly. Before the consumer even saw the product price, they made up their mind about its price as 4 out of 5 consumers believe that environment-friendly items are more expensive than the others available on the market. Moreover, only 3 out of 5 consumers would buy the green product if it cost the same as the non-green product in the market (Ali et al., 2020; Tan et al., 2021). These are some noticeable issues that allowed us to explore green products and their purchaser intentions at some advanced stages.

As the conventional chemical beauty products proved quite harmful to the skin. The chemical beauty products used have been drawn to headaches, premature aging, acne, and other allergies. Due to this, people are now shifting toward Green Beauty Products. These products are produced with only organic and natural ingredients and have almost no side effects. These products include hair oil, fairness cream, face wash, etc. The market for green products is increasing by 15% every year, showing that now people are aware of the importance of natural products. It is the misconception that these natural products are not effective rather, in reality, these products are more effective than chemical products (Sana, 2020). Plant makeup is the biggest

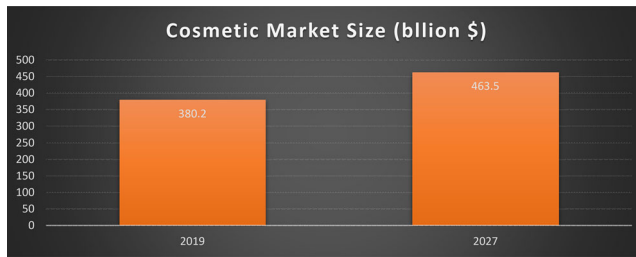


Figure 1. Global cosmetic market size.

Source: Authors' creation.

manufacturer of green cosmetics and has a brand value of 2.3 million dollars. The founder of green cosmetic products in Mongolia is Khulan Davaadorj, with a company named 'Lamour.' They claim that all their products are skin-friendly and made from unique Mongolian ingredients. Since 2014 Mongolia has been attracting the Asian market before stepping into the United States of America. The importance of Mongolian green cosmetic products can be witnessed from its 11.5 million worth of export of natural beauty products to only America (Liu, 2021; Moslehpour et al., 2021).

In addition to this, another country is keenly involved in green cosmetic products: Taiwan. Taiwan first sells beauty products from Japan, but they have started manufacturing beauty products. Taiwan's beauty industry also made progress slowly, unlike Japan and South Korea, but they have the potential to show the waves. Taiwan's domestic cosmetic sales value increased to 3.52 Billion dollars in 2018, but due to the Covid-19 Pandemic, it decreased to 2.67 Billion dollars in 2020, but financial experts predicted that it would cross the highest value of 3.52 Billion dollars. Taiwan's only make-up product export is 660 Million euros in 2020 (Khyargas et al., 2019; Moslehpour et al., 2022). The Taiwan beauty movement quickly made inroads in the U.S. Success behind Taiwan's beauty products is using green or natural products in cosmetic products. The famous cosmetic industry of cosmetic South Korea uses a chemical to capture the market by claiming that their products have a rapid action. But now, most people want to use green products, especially for cleansing, toners, moisturizers, and mask sheets. As the Taiwanese only used green products and Chinese medicine, they grew rapidly. Taiwan implemented many standards like a ban on animal testing for cosmetics also increased its brand value. The baseline of quality and effectiveness is not present in the market of South Korea and Japan. Many people perceive products as 'if it is made in Taiwan, then it is going to be great.' Taiwan's beauty industry is based on botanical ingredients, and now people are focusing on natural products instead of high-tech lasers. They want to use traditional things (Cheng Lung & Tran Huyen Thi, 2022; Lan et al., 2022). Due to these factors, Taiwan beauty products have become a part of many people's lives. The global cosmetic market size is given in Figure 1.

The present study will address some gaps does exist in the literature like 1) Sugandini et al. (2020), investigated whether green supply chain management and marketing strategy has any effect on green purchase intentions whereas the present study will check the predictors (i.e. environmental concern, knowledge, eco-

innovation and green products) of green purchase intentions in Mongolia and Taiwan perspective, 2) being one of the important topics like green purchase intentions and environment friendly products although researched although but still not reached its peak as numerous of its aspects are need to be explored, 3) the model consist of environmental concern, environmental knowledge, eco-innovation, green products, consumer attitude and green purchase intentions with latest date set is not tested before in Mongolia and Taiwan perspective, 4) Sheng et al. (2019), investigated whether cultural values has any effect on green purchase intentions whereas the present study will check the green purchase intentions from its predictors point of view with the addition of mediation effect i.e. consumer attitude with fresh data set, 5) Indriani et al. (2019) and Lan et al. (2022), investigated the green purchase intentions with environment knowledge whereas the present study will add the variable like environmental concerns, eco-innovation and green products along with the addition of mediation effect i.e. consumer attitude in Mongolian and Taiwan perspective, 6) Prakash et al. (2019), investigated the green purchase intentions with consumer attitude whereas the present study employed the consumer attitude as mediation variable and test the model in Mongolian and Taiwan, 7) Bhatti et al. (2018), investigated the product risk multiple aspects like convenience risk, product risk with online shopping and employed the intentions as moderating variable whereas the present study worked on green purchase intentions by employing consumer attitude as mediating variable and test the model in Mongolian and Taiwan. The significance of the study are 1) will highlight the importance of green cosmetic products being environment friendly and green purchase intentions in Mongolia and Taiwan, 2) help the professional to revamp their policies regarding green products production with the aim to support the environment and attract the people towards purchase of green products, 3) will also help the researchers to explore more aspects of green cosmetic products and green purchase intentions which impact the individual and environment.

The paper is divided into different phases; the first phase is about the introduction, and after an introduction, the second phase of the study deals with evidence regarding an environmental concern, environmental knowledge, eco-innovation, green products, consumer attitude, and green purchase intentions in the light of the past studies. The third phase of the study will shine the spotlight on the methodology applied to collect the data regarding the environmental concern, environmental knowledge, eco-innovation, green products, consumer attitude, and green purchase intentions and analyze its validity. In the fourth phase of the study, results and findings will be presented. In the last and final phase, the study implications, conclusion, and future recommendations will be presented.

2. Literature Review

According to Chen and Chai (2010), Green purchasing is basically related to eco-friendly products, hence neglecting those products which cause damage to environment. Green purchase intention and behavior are basically the instrument of green purchasing. According to Ramayah et al. (2010), green purchase intention is the willingness of individual which he/she show towards green product when making

purchasing decision. Hence, it is a complex process and involved with ethical decision-making patterns which has a reflection of responsible behavior. Consume when act as a socially responsible person, he/she shows concern what he/she is consuming and for that he/she makes sure to focus on green products in order to bring social change (Moisander, 2007), Therefore in an attempt to explain green purchase intention, the said article focuses on ABC model as it is argued that attitude alone is not sufficient to increase the purchase intention of consumer. Hence, indicates that there exist other factors as well which could strengthen the relationship. ABC (Attitude-Behavior-Context) model is proposed by Guagnano et al. (1995). The model is best fit to understand consumer behavior. As the model suggested, green purchase intention of customer is not affected by consumer attitude only, but several contextual factors are responsible to influence green purchase intention. These factors could be favorable or unfavorable. For suppose green purchase intention does not happen because consumer has positive attitude towards green products. But it also depends on the availability of green products (Joshi & Rahman, 2015). Thereby the theory is highly appropriate to explain the proposed model of the study.

Over the past few decades, environmental issues and concerns have attained importance. This importance is not only highlighted in the world environment protection forums but also highlighted in the organizations. Recently, purchasing intention towards green cosmetics products has gained global attention due to their extensive use and high environmental issues. In this context: Islam et al. (2021) and Kamarudin et al. (2021) examined the challenges and trends toward the environmental concerns that contribute significantly to purchasing intentions. Usually, environmental concerns are concerned with animals, plants, air, sea, and land protection. This protection is also worried about the natural world and products consumed and used by the consumers. Similarly, Kim and Hall (2020) narrated the sustainable practices of restaurants for enhancing the loyalty of customers according to environmental concerns. Environmental concerns are also considered the degree of environmental problems that are important to be resolved. Environmental concerns consider eliminating environmental problems with the involvement of critical environmental factors. Accordingly, Choi and Johnson (2019) investigated the impacts of hedonic and environmental motivations among consumers and intentions to purchase green products. These factors are considered essential for converting consumer attention toward green marketing. Consumers who intend to insert their attention toward the environmental problems induce a favorable attitude toward the uplifting of green products. Therefore, it is also important for the organizations to maintain the environmental concerns over environmentally friendly products. This is helping and assisting toward the development of a green and healthy lifestyle. Thus, the hypotheses derived from the above debate is as under:

H1: Environmental concerns significantly and positively influence the green purchase intention.

Knowledge is a symbol for consumers as well as organizations. The positive knowledge that supports the consumer environmental issues also helps the organizations develop the knowledge conveying products. Similarly, the products that are completely introduced in the markets with full knowledge and information increase the

green purchase intentions. In this context: Han (2021) examined the sustainability of the environment and consumer behaviors with the views of concepts and knowledge. Environmental knowledge has posed a significant impact on consumers' intentions toward green purchases. Accordingly, Heo and Muralidharan (2019) and Huang et al. (2022) indicated that consumers trigger the purchase due to eco-friendly products associated with environmental concerns, environmental knowledge, and consumer effectiveness. Compared with the other factors of the environment, environmental knowledge is essential and significant toward green purchase intentions. Green perceived risk is also considered among the consumers where environmental knowledge has uplifted the green purchase intentions. In a similar context: Amoako et al. (2020) assessed the importance of green and environmental knowledge positively influencing the youth's green purchasing intentions. The lack of knowledge among the consumers about green products reduces the intentions of green purchases and affects purchasing behaviors. The values of green perceived intentions are also related to consumer effectiveness, quality, values, trust, and collectivism. Environmental knowledge is information about the environment which is the responsibility of organizations to maintain the healthy and sustainable life of consumers. Thus, the hypothesis derived from the above debate is as under:

H2: Environmental knowledge influences green purchase intention positively.

The world is concerned about their economic savings and the environmental benefits of consumer behaviors. Eco-innovation is an essential factor that helps to attain the benefits of the environment and economy. In this context: Sharma et al. (2022b) analyzed green buying behavior relation with eco-innovation with the effects of emotional generation and loyalty. It depends on the process, products, and business methods used in eco-innovation to minimize the impact on the environment by reducing the ecological footprints. Eco-innovation helps prevent the waste and reuse of waste during the beginning of the production process. Moreover, Viale et al. (2022) assessed the upstream of eco-innovation, which develops the re-thinking of consumers and the involvement of purchasing managers. Eco-innovation is a strong predictor of the purchasing intention of consumers. Consumers need a feasible environment and innovative implementation for the product they convey their intentions to purchase. Green purchase intention of consumers has been grown by the significant contribution of eco-innovation. Additionally, Severo et al. (2018) investigated the relationship between eco-innovation, social responsibility, and cleaner production that changes sustainable perceptions. Innovation is eco-friendly that involves sustainable development for making significant changes toward company processes, services, and products. Eco-innovation is also a strong denominator of understanding by the proper use of behavior among consumers and pro-environmental intentions. Purchasing intentions of the consumers increase by the positive social attitude and innovation generativity. Thus, the hypothesis derived from the above debate is as under:

H3: Eco-Innovation influences green purchase intention positively.

The rising environmental problems have changed the perspectives of consumer buying intentions. The products are of different types that harm the environment, and the other is environment friendly. In this context: Tan et al. (2019) enumerated

the factors of green product buying decisions that change among young consumers. Green purchasing intentions have considerably referred both products with consumer willingness. Green purchasing is also measured as the green purchase behaviors and intentions. The world has faced a lot of damage to the environment due to the products that induce harm to the environment. Similarly, Ali et al. (2020) explored the altruism and green thinking for the electronic products that motivate the purchasing intentions. Consumers have widely used these products for a long time, and the recognition of the environment has helped the consumers develop environment-friendly products. The knowledge of the environment provided by the world forums plays a role in protecting the environment. Moreover, Cai et al. (2017) retailers and eco-label credibility connection and its impact on the purchasing intentions of green products. Green products have significantly introduced all the positive measures feasible for protecting the environment. Even though the green purchase intentions have been positively increased in the developing and developed countries where the public highly consumes the green products. Thus, the hypotheses derived from the above debate is as under:

H4: Green products influence green purchase intention positively.

The environment is essential for developing consumer moods and essential for the development of environment-friendly products. The purchasing decisions are positively affected by the consumer attitudes, which pose concerns over the environmental concerns and green purchase intentions. In this context: Chawla and Joshi (2019) assessed the importance of consumer attitude that helps change the intentions to use environment-friendly products. Consumer attitudes improve the spending that positively increases the outcomes of organizations. Consumers' attitude also supports the positive inclusion of green products and green purchase intentions. Additionally, Trivedi et al. (2018) analyzed the influence of media and information channels on the behaviors, intentions, and environmental attitudes leading toward green purchasing. Consumers' attention toward the environment significantly affects their purchasing of green and environmentally products. Environmental concerns have positively changed the decisions of youngsters toward green purchases. Young consumer attention has grown for environment-friendly products due to environmental concerns. Similarly, Sreen et al. (2018) examined the impacts of gender, behavior, and culture on customer attitudes that mediate environmental concerns and green purchase intentions. There is a direct and indirect influence of environmental concerns on the purchasing intentions and consumer attitudes toward the products of green energy brands. The consumer that intends to pay increasing attention to the ecological environment is more willing to purchase green products. Thus, the hypotheses derived from the above debate is as under:

H5: Association of environmental concern and green purchase intention is being mediated through consumer attitude

Environmental knowledge is an essential factor in consumer behaviors and attitudes. The attitude certainly changes from time to time when consumer conveys their intention to purchase environment-friendly products. In this context: Ainou et al. (2022) and Fam et al. (2019) elaborated on the consumer attitude that significantly

contributes to sales promotion techniques. The role of consumer attitude is positive between the green purchase intentions and environmental knowledge. The mediating effect of consumer attitude indicates the importance of environmental knowledge to consumers for increasing buying intentions. The responsibility of environmental knowledge is organized according to consumer attitudes, which helps enhance sustainable development. Accordingly, Di Martino et al. (2019) discussed the influence of eco-labeling information and pro-environmental attitudes on green purchasing decisions. Environmental knowledge has increased the development of knowledge and information for the consumers. This has positively developed the association of consumers with environmentally friendly items. Consumer knowledge of the environment is also an important indicator and influencer toward green purchase intentions. Similarly, L. Wang et al. (2020) analyzed the demographic influence of consumer purchasing and their intentions toward the green selection of products. Consumer attitude changes with the consistent knowledge of the environment and the health and wealth importance of green products. The mediating effect of consumer attitude is crystal clear for the environmental knowledge that convinces the consumers. Thus, the hypothesis derived from the above debate is as under:

H6: Association of environmental knowledge and green purchase intention is being mediated by consumer attitude

The intentions toward the purchasing behaviors change frequently. This change occurs due to the changing attitudes of consumers towards an object. It is upon the favorableness and unfavorableness of individuals who intend to purchase certain products. Therefore, innovation in products places a dominant impact on green purchase intentions. In this context: Amin et al. (2017) assessed the preference of consumer attitude contributes positive attention to various productive sectors. The favorable conditions occur when the organizations effectively measure the consumer attitude. Organizations certainly insert the elements of eco-innovation to predict consumer attitudes. The role of consumer attitude is essential between the green purchase intention and eco-innovation. Moreover, Liao and Tsai (2019) developed the role of eco-innovation, creativity enhancement, and innovation intensity strategy toward the regulations of environments and consumer demands. The green purchase intentions primarily focus on the consumers who prefer the products that fit their attitudes. Various companies offer new products according to consumer needs, and those products are developed and introduced by the proper inducement of eco-innovation. Additionally, Chaudhary and Bisai (2018) proposed consumers' planned behaviors that frequently change with eco-innovation and green purchase intentions. Effective sustainable development is a need of green purchase intentions, which are positively supported by eco-innovation. Moreover, the innovation perspectives are considerably increased due to the demands and consideration of consumers. Thus, the hypotheses derived from the above debate is as under:

H7: Association of eco-innovation and green purchase intention is being mediated by consumer attitude

The environmental factor is an essential aspect for the consumers and the products. Some products are not adequately affiliated with the environment and cause

Table 1. Environmental concern items.

Items	Statements	Sources
EC1	'Human beings need to understand the ways of nature and act accordingly.'	(Chan, 2001)
EC2	'We should maintain harmony with nature.'	
EC3	'Being the master of the world, human beings are entitled to deploy any of the natural resources as they like.'	
EC4	'Human beings are only part of nature.'	
EC5	'We should master instead of adapting to the environment.'	

Source: Authors' Calculations.

negative impacts. Consumer attitudes play a vital role in green products and green purchase intentions. In this context: Gupta and Singh (2021) investigated consumers' attitudes toward the sustainable living of consumers and attracting green purchase intentions. Environment-friendly products are the main and huge item preferred by many customers. Consumer attitude varies from time to time when innovation and technology take place. Green products have significantly changed consumers' attitudes, where intentions of green purchases have been increased. Additionally, H. Wang et al. (2019) discussed the importance of green product knowledge that promotes the intentions of green purchases. There are many elements of consumer attitude that could mediate the green products and green purchase intentions. Individuals having positive are more likely to induce intentions to purchase products that convey complete comfort. Similarly, Liobikienė and Bernatoniene (2017) assessed the determinants of green purchase intentions positively mediated by consumer attitudes toward green products. These comforts are dependent on the liking and disliking of consumers who are intended to purchase green products. Consumer attitude as a mediator helps the consumer to attract their attention for green products which increase purchase intention. Thus, the hypotheses derived from the above debate is as under:

H8: green products and green purchase intention is being mediated by consumer attitude

3. Research Methods

The article explores the effectiveness of environmental related factors on the green purchase intention. The study also aims to explore the relationship among constructs in the presence of consumer attitude in the context of Taiwan and Mongolian cosmetic industry. The article has used questionnaires to collect the primary data from the chosen customers. The instrument has been adopted from the past studies, such as the environmental concern (EC) has five items taken from Chan (2001). These items with statements and sources are given in Table 1.

In addition, the environmental knowledge (EK) has six items taken from a past study such as Mohr et al. (1998). These items with statements and sources are given in Table 2.

Moreover, the customer attitude (CA) has also taken in the study with six items extracted from a past study such as Armitage et al. (1999). These items are mentioned in Tables 3 and 4.

Table 2. Environmental knowledge items.

Items	Statements	Sources
EK1	'I know that I buy products and packages that are environmentally safe.'	(Mohr et al., 1998)
EK2	'I know more about recycling than the average person.'	
EK3	'I know how to select products and packages that reduce the amount of waste ending up in landfills.'	
EK4	'I understand the environmental phrases and symbols on product packages.'	
EK5	'I am confident that I know how to sort my recyclables properly.'	
EK6	'I am very knowledgeable about environmental issues.'	

Source: Authors' Calculations.

Table 3. Consumer attention items.

Items	Statements	Sources
CA1	'Purchasing green cosmetics products is good.'	(Armitage et al., 1999)
CA2	'Purchasing green cosmetics products is wise.'	
CA3	'Purchasing green cosmetics products is beneficial.'	
CA4	'Purchasing green cosmetics products is favorable.'	
CA5	'Purchasing green cosmetics products is positive.'	
CA6	'Purchasing green cosmetics products is satisfactory.'	

In addition, the green purchase intention (GPI) has four items taken from a past study such as Armitage et al. (1999). These items with statements and sources are given in Table 4.

Source: Authors' Calculations.

Table 4. Green purchase intention items.

Items	Statements	Sources
GPI1	'I want to purchase green cosmetics products.'	(Armitage et al., 1999)
GPI2	'I plan to purchase green cosmetics products.'	
GPI3	'The price of green cosmetics products would have to go up quite a bit before I would switch to other conventional cosmetics products.'	
GPI4	'I am willing to pay a higher price for green cosmetics products than for conventional cosmetics products.'	

Source: Authors' Calculations.

Table 5. Eco-innovation items.

Items	Statements	Sources
EI1	'Our business develops products using less material.'	(Yurdakul & Kazan, 2020)
EI2	'Our company develops products that can be recycled easily.'	
EI3	'Our business develops products that cause the least amount of waste.'	
EI4	'Our business develops products that minimize the damage caused by waste.'	
EI5	'Our business develops products to minimize energy use.'	
EI6	'Our business develops easily separable products.'	

Source: Authors' Calculations.

Moreover, the eco-innovation (EI) has also taken in the study with six items extracted from past study such as Yurdakul and Kazan (2020). These items are mentioned in Table 5.

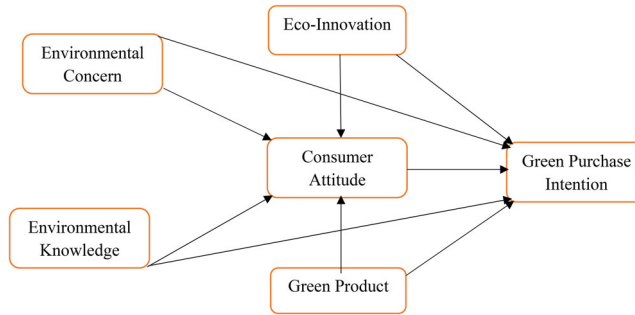
Finally, the green product (GP) has five items taken from a past study such as Chang et al. (2019). These items with statements and sources are given in Table 6.

The current study researchers have sent these surveys to the cosmetic industry customers who frequently visit the outlets. The data of these customers are taken from the outlet managers working in the capital cities of Taiwan and Mongolia. The surveys were given to the customers by personal visits to the outlet continued for fifteen days and also sent the questionnaires using mail. The researchers have sent around 607 surveys

Table 6. Green purchase intention items.

Items	Statements	Sources
GP1	'The green product contributes significant benefits to the consumer.'	(Chang et al., 2019)
GP2	'The outstanding green product enhances consumer satisfaction and gain intentions.'	
GP3	'The green product continues to improve its development over time.'	
GP4	'The green product is more attractive than its competitors.'	
GP5	'The green product can achieve its aims to attract the consumers.'	

Source: Authors' Calculations.

**Figure 2.** Theoretical model.

Source: Authors' creation.

but only received 374 surveys after one month. These surveys represent approximately 61.61 percent rate of response. The research also applied the smart-PLS to examine the nexus among variables and test the hypotheses. It is an effective statistical tool that provides the best estimation even though researchers have used complex models (Hair et al., 2019). In addition, the researchers have used the four predictive variables such as environmental concerns (EC), environmental knowledge (EK), eco-innovation (EI), and green product (GP). Moreover, this study has taken the consumer attitude (CA) as the mediating variable and green purchase intention (GPI) as the dependent variable in the study. These variables are presented in Figure 2.

4. Research Findings

The article has applied the convergent validity examination test such as average variance extracted (AVE). The findings show that all AVE values are greater than 0.5. These outcomes indicated that the high correlation among items and convergent validity proved valid. The study employed composite reliability and Cronbach for reliability examination. As the values are greater than 0.7, hence confirm the reliability is valid. To examine content validity factor loadings were used. As values are greater than 0.5, means the validity met the standard. Below table presents the detailed analysis. (Table 7)

The findings also include discriminant validity. From table, it indicates that the very first value is greater than among others. The values show the construct's association itself is stronger as compare to other variables. Table 8 presents the finding in detail.

The findings also exhibit the discriminant validity through cross-loadings. It indicates that the values that indicated the linkage with the variable itself are larger than

Table 7. Convergent validity.

Constructs	Items	Loadings	Alpha	CR	AVE
Consumer attitude	CA1	0.838	0.868	0.902	0.606
	CA2	0.840			
	CA3	0.748			
	CA4	0.783			
	CA5	0.779			
	CA6	0.669			
Environmental concern	EC1	0.861	0.848	0.892	0.625
	EC2	0.754			
	EC3	0.841			
	EC4	0.782			
	EC5	0.702			
Eco-innovation	EI1	0.782	0.873	0.904	0.611
	EI2	0.773			
	EI3	0.835			
	EI4	0.744			
	EI5	0.749			
	EI6	0.803			
Environmental knowledge	EK1	0.891	0.928	0.944	0.737
	EK2	0.815			
	EK3	0.822			
	EK4	0.884			
	EK5	0.875			
	EK6	0.861			
Green product	GP1	0.835	0.933	0.949	0.789
	GP2	0.940			
	GP3	0.876			
	GP4	0.875			
	GP5	0.914			
Green purchase intention	GPI1	0.768	0.798	0.868	0.622
	GPI2	0.789			
	GPI3	0.807			
	GPI4	0.792			

Source: Authors' Calculations.

Table 8. Fornell Larcker.

	CA	EC	EI	EK	GP	GPI
CA	0.778					
EC	0.538	0.790				
EI	0.512	0.726	0.782			
EK	0.454	0.514	0.433	0.858		
GP	0.436	0.483	0.492	0.605	0.888	
GPI	0.677	0.679	0.621	0.588	0.576	0.789

Source: Authors' Calculations.

the values exposed that indicated the linkage with other variables. These values exposed valid discriminant validity. [Table 9](#) shows all of the above results.

The results also exposed the discriminant validity using Heterotrait Monotrait (HTMT) ratio, and the results indicated that the values of HTMT ratios are lower than 0.85. [Table 10](#) present the values in detail.

The results in [Figures 3](#) and [4](#) indicated that environmental concern, environmental knowledge, green product, and eco-innovation are positively connected with green purchase intention, hence supporting H1-H4. Results exposed that consumer attention significantly and positively mediates among environmental concern, environmental knowledge, green product, eco-innovation, and green purchase intention and accept H5, H6, H7, and H8. [Table 11](#) shows all of the above results.

Table 9. Cross-loadings.

	CA	EC	EI	EK	GP	GPI
CA1	0.838	0.459	0.478	0.373	0.370	0.615
CA2	0.840	0.386	0.371	0.377	0.392	0.555
CA3	0.748	0.501	0.422	0.435	0.367	0.542
CA4	0.783	0.407	0.416	0.290	0.288	0.510
CA5	0.779	0.343	0.335	0.314	0.335	0.487
CA6	0.669	0.402	0.347	0.312	0.267	0.425
EC1	0.417	0.861	0.725	0.382	0.390	0.597
EC2	0.494	0.754	0.459	0.510	0.462	0.526
EC3	0.453	0.841	0.640	0.429	0.347	0.605
EC4	0.317	0.782	0.640	0.312	0.319	0.501
EC5	0.430	0.702	0.388	0.381	0.384	0.435
EI1	0.392	0.642	0.782	0.431	0.429	0.520
EI2	0.412	0.469	0.773	0.275	0.381	0.394
EI3	0.467	0.640	0.835	0.382	0.417	0.586
EI4	0.344	0.582	0.744	0.348	0.382	0.486
EI5	0.375	0.444	0.749	0.232	0.344	0.358
EI6	0.398	0.589	0.803	0.331	0.348	0.524
EK1	0.422	0.428	0.365	0.891	0.537	0.541
EK2	0.387	0.431	0.360	0.815	0.545	0.516
EK3	0.349	0.459	0.417	0.822	0.533	0.448
EK4	0.378	0.462	0.364	0.884	0.501	0.501
EK5	0.432	0.414	0.365	0.875	0.509	0.529
EK6	0.360	0.463	0.363	0.861	0.491	0.480
GP1	0.377	0.402	0.422	0.552	0.835	0.455
GP2	0.345	0.443	0.456	0.554	0.940	0.499
GP3	0.389	0.389	0.412	0.495	0.876	0.549
GP4	0.477	0.486	0.457	0.568	0.875	0.561
GP5	0.322	0.410	0.432	0.511	0.914	0.469
GPI1	0.567	0.541	0.490	0.444	0.366	0.768
GPI2	0.677	0.492	0.393	0.455	0.418	0.789
GPI3	0.456	0.568	0.544	0.505	0.507	0.807
GPI4	0.428	0.545	0.537	0.450	0.529	0.792

Source: Authors' Calculations.

Table 10. Heterotrait Monotrait ratio.

	CA	EC	EI	EK	GP	GPI
CA						
EC	0.621					
EI	0.581	0.831				
EK	0.500	0.578	0.475			
GP	0.475	0.539	0.542	0.649		
GPI	0.805	0.822	0.734	0.680	0.662	

Source: Authors' Calculations.

5. Discussions

The article investigates the impact of environmental concern, environmental knowledge, green product, and eco-innovation on the green purchase intention of green cosmetic products in Taiwan and the Mongolian cosmetic industry. The study findings revealed that eco-innovation and green purchase intention shared positive connection. It implies that in Taiwan and Mongolia, the firms which apply ecological friendly innovation in the production processes and put ecological friendly features to the products and services succeed in satisfying the customers who have green buying intentions and raising marketing. These results are supported by Sharma et al. (2022a), which reveals that the customers who have complete environmental awareness want to purchase products and services based on green material and green

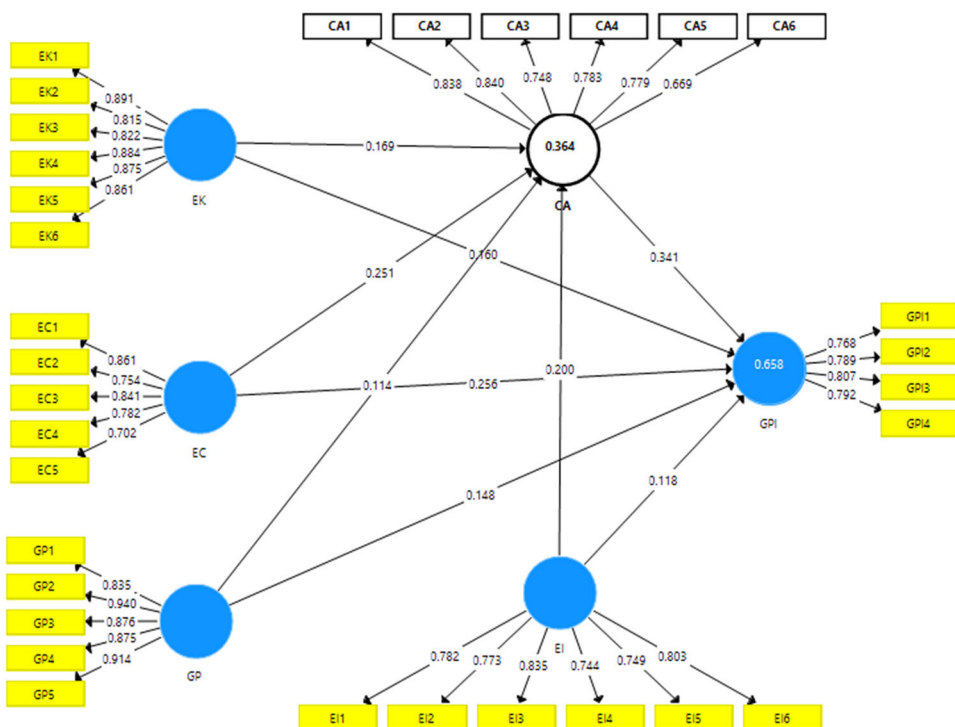


Figure 3. Measurement assessment model.

Source: Authors' creation.

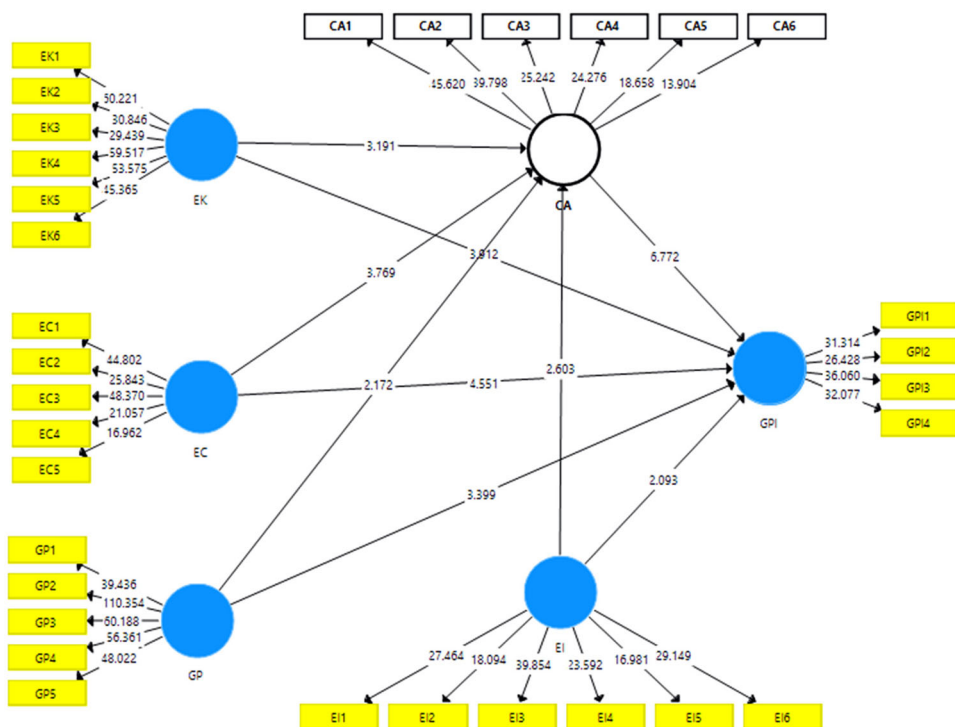


Figure 4. Structural assessment model.

Source: Authors' creation.

Table 11. Path analysis.

Relationships	Beta	Standard deviation	T statistics	P values
CA -> GPI	0.341	0.050	6.772	0.000
EC -> CA	0.251	0.067	3.769	0.000
EC -> GPI	0.256	0.056	4.551	0.000
EI -> CA	0.200	0.077	2.603	0.010
EI -> GPI	0.118	0.057	2.093	0.037
EK -> CA	0.169	0.053	3.191	0.002
EK -> GPI	0.160	0.041	3.912	0.000
GP -> CA	0.114	0.052	2.172	0.030
GP -> GPI	0.148	0.044	3.399	0.001
EK -> CA -> GPI	0.058	0.020	2.897	0.004
EC -> CA -> GPI	0.086	0.027	3.198	0.001
GP -> CA -> GPI	0.039	0.018	2.159	0.031
EI -> CA -> GPI	0.068	0.031	2.225	0.027

Source: Authors' Calculations.

design. When the firms include in their policies to bring innovation in the quality and designing of their products and services and adopt the innovative technologies, resources, ad modes of production that could help produce to reduce environmental impacts of production and provide ecological friendly products and services. Such innovation adoption satisfies the customers and motivates them to buy products. These results are consistent with Loučanová et al. (2021), which indicates that the ecological-friendly innovation in the business operations helps fulfill the customers' ecological-friendly requirements about the products purchased.

The study findings revealed that environmental concerns have a positive relation to green purchase intention. The Taiwan and Mongolia areas have to face many environmental concerns associated with business practices. The awareness in the customers of these environmental concerns, reasons, and their results forms the green purchase intention in them so that they can overcome environmental concerns. These results are in line with, Choi and Johnson (2019) which highlight that if the customers have an awareness of the environmental concerns and hardships which they have to face because of these environmental concerns and find that the firms are taking part in eco-friendly practices to overcome the environmental concerns, their intention to buy green products is satisfied. These results are also supported by Zhang et al. (2018), which highlight that the customers who are attentive to the environmental concerns like GHG emissions, harmful wastes, water pollution, global warming, waste disposal, ocean acidification, and loss of biodiversity, form intention to purchase only green products and services to encourage the environmental performance of the businesses.

The findings exposed that environmental knowledge and green purchase intention are positively correlated. The environmental awareness in both the customers and the business firms affects the customer's intention from where and which products they should buy. In Taiwan and Mongolia when the firms and customers have knowledge about how to determine the quality of environment, knowledge of environmental issues, and related consequences and solution, the customers have high intention to keep on buying green products. These results are also in line with Xu et al. (2020), which posits that the customers have the knowledge of environmental problems that the business practices, production modes adopted by firms, and products available in the market, they try to make the best choice of purchasing green products. These

results were also matched with Hamzah and Tanwir (2021), which throws light on the environmental performance of business firms and their capacity to attract customers. This study shows that the business firms with complete environmental knowledge, by executing effective strategies, can minimize the environmental impacts of the actions and develop environmentally-friendly features in their products and services. These firms successfully develop green purchase intentions in customers.

The study findings revealed that green product has a positive relation to green purchase intention. The results revealed that in Taiwan and Mongolia, the firms that provide the products that do not affect the consumers' health, skin, and environment where they are performing actions, the customers have green purchase intention. These results agree with Ahmad and Zhang (2020), which suggests that when customers find that firms provide such products free from pollution and have the features as it cannot affect the health of the users and the people around, they intend to make green purchases is satisfied. The results showed that consumer attitude plays a mediating role between eco-innovation and green purchase intention. These results agree with Chien et al. (2021), which proclaim that when the firms are known for adopting ecological friendly innovation in their business process, resources, and products, the consumers have a positive attitude towards the firms. Their positive attitude towards the firms motivates them to purchase green products and services. Hence, consumers' attitude builds a link between eco-innovation and customer green purchase intention.

The results showed that consumer attitude plays a mediating role between environmental concerns and green purchase intention. These results agree with B. Wang et al. (2019), which posits that when the environmental concerns GHG emissions, harmful wastes, water pollution, global warming, waste disposal, ocean acidification, and loss of biodiversity are greater in number and consumers have watched them, they form their attitudes accordingly. When the consumers have positive ecological thinking towards the firms while interacting with them, they form green purchase intentions. The results showed that consumer attitude plays a mediating role between environmental knowledge and green purchase intention. These results agree with Mohiuddin et al. (2018), which state that when consumers have high environmental knowledge, they show ecological attitudes while dealing with the business firms. Consumers' environmentally friendly attitudes to firms make them purchase green products. The results confirms the presence of consumer attitude as a mediator between construct, hence, showing consistency with Sreen et al. (2018), which reveals that when consumers have experienced ecological friendly products, they modify their attitude toward products and have green purchase intention.

6. Policy Implications

The present study has great significance to any emerging economies like Taiwan and Mongolia. It presents a way to improve environmental performance that is a factor in sustainability in economic development. This study throws light on the consumers' green purchase intention. Customers are the essential factor of any business as their rush towards the firms and retention determine their marketing, goodwill, and performance. The demands of the consumers shape the firms' policies for operations,

production, and regulations. So, this study has great significance for the individual businesses and the overall economy as it tells how to develop green purchase intentions among consumers. This study suggests that the adoption of eco-innovation, understanding of environmental concerns, enhanced environmental knowledge, and green product experience enhances consumers' green PI. So, this study is an excellent guideline for the government, regulators, educators, business firms, and consumers on how the consumer green purchase intention can be developed. The government and economists should form the policies to encourage eco-innovation and green production in the economy through subsidies, support, creating awareness, and imposing certain regulations so that the consumers are motivated to develop green purchase intentions. The article offers guidelines to the policy-making authorities while developing the policies related to increase the purchasing attention towards green cosmetic products. The government and educators must form the policies and strategies to develop an awareness of environmental concerns, eco-innovation innovation, and green product benefits to develop green purchase intention in consumers.

7. Conclusion

The study aimed to check the influences of eco-innovation, environmental concerns, environmental knowledge, and green product on consumers' green purchase intention and examine the consumer attitude between eco-innovation, environmental concerns, environmental knowledge, and green product and consumers' green purchase intention. A survey was conducted on Taiwan and Mongolia cosmetics industries to collect information on eco-innovation, environmental concerns, environmental knowledge, green product, consumer attitude, and green purchase intention. The study results showed that eco-innovation, environmental concerns, environmental knowledge, and green product positively contribute to consumers' green purchase intention. The results revealed that the firms that implement eco-innovations into their practices and production have to make green purchases as consumers want innovation and eco-products. The results showed that observation of environmental concerns, and their impact on natural resource quality and human health, encourage the consumer to have green purchase intention. The environmental knowledge provided to consumers at different stages of life polishes their information and enhances green purchase intention. Whenever consumers gain experience with green products, they acquire empirical-based knowledge and have green purchase intentions. The results showed that eco-innovation, environmental concerns, environmental knowledge, and green product improve consumers' green attitudes, further developing green purchase intention.

8. Limitations and Future Recommendations

Despite the empirical study implications, it has some limitations as well. These limitations can be removed in future research. The present study checks only the four factors' role: eco-innovation, environmental concerns, environmental knowledge, and green product in consumers' green purchase intention. Many other factors like social

influence, ICT role, and education can play a crucial role in developing green purchase intention in consumers. But these factors are not under consideration in this study. Future authors expect to consider the role of these factors in the consumer green purchase intention while writing on this topic later on. The study presented its findings on the impacts of eco-innovation, environmental concerns, environmental knowledge, and green product on consumers' green purchase intention based on information from Taiwan and Mongolia economies. These economies have specific economic conditions, and these areas have particular environments. So, the study results may not be equally valid everywhere. Future scholars must collect information from multiple economies. Moreover, this study focuses on the cosmetics industry to analyze eco-innovation, environmental concerns, environmental knowledge, and green product role in green purchase intention. In future studies, multiple manufacturing industries must be the target of investigation.

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