Eco-design Clothing Purchase, Usage and Disposal -A Cross-country Study of China and Korea-

Cheng Jin · Yu Hua Cui[†]

Academy of Fine Arts, Yanbian University, China

Corresponding author
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Yu Hua Cui
Tel : +86-433-2435808
E-mail: cuiyuhua212@ybu.edu.cn

Keywords

environmental awareness,
eco-design clothing,
eco purchase, eco usage,
eco disposal

Abstract

Eco-design is an environmental key point since consumers' consumption behaviors have huge impacts on the environment. The objective of this study was to investigate the various responses between Chinese and Korean consumers and to look into the effects that consumers' environmental awareness have on eco-design clothing product purchase, usage and disposal. The study comprised of literature review and empirical research conducted through on line survey (www.sojump.com) from 5-20th Jan 2019. 200 Chinese respondents and 200 Korean respondents were collected and structural equation modeling (SEM) was used to test the research hypotheses. The results suggested that consumers' environmental awareness positively influenced their three ecological dimensions about consumption. In addition, the positive relationship was also influenced by respondents' nationality. These results suggest that consumers' environmental awareness is an important responsibilities and could become more important retail mix for clothing marketers. Findings would also enable environmental organizations to understand eco behavior and to design appropriate strategic decisions to appeal eco-summers. Other findings and implications were also discussed.

Ⅰ. Introduction

In the current environment of market economy, companies are dependent on multifaceted interrelations in huge and complex business systems. The processes within the enterprise, for example, the product development processes, are dependent on multifaceted interrelations to a large number of both internal and external processes, suppliers, actors and stakeholders. The production and use of industrial products are dependent on a network of actors in a societal system with numerous relations to nature. The usage of resources is very uneven among countries and within countries (Karlsson & Luttrop, 2006). In addition, the all worldwide level of consumption and related environmental loads are considered to be high, and this is even a large ethical issue. More and more enterprises are integrating environmental aspects as part of a sustainable production that also deals with health and safety and ethics. Consequently, eco-design activities have to relate to global and local priorities as well as to interdisciplinary and ethical issues.

Sustainable design (eco-design) is a complex and important issue that basically represents irreversible changes in production and consumption and thus, the way people interact with nature through the environments, buildings, as well as products (Deniz, 2016). For these eco-design to be successful, they need information about who are consumers who consider ecological issues (e.g., environmental awareness) as part of their personal values when making a decision for product purchase, usage, and disposal. Previous studies have examined consumers' purchase intention for or with eco-friendly products. The most relevant studies (Iosifidi, 2016; Okada, Tamaki, & Managi, 2019) have examined influential factors used to identify the consumers' purchase behavior. However, limited attention was paid to consumers' usage or disposal behavior of eco-friendly products. Accordingly, examining purchasing behavior of eco-design products in conjunction with usage and disposal behaviors should improve understanding of consumers' environmental consumption.

Our study is primarily motivated by the eco-design relevant debate on the rising environmental awareness. Kikuchi-Uehara, Nakatani and Hirao(2016) indicated that two factors can affect consumers' product choice are considered, namely environmental awareness and trust in environmental information provided by eco labeling. Regarding Chinese students' environmental awareness, higher environmental knowledge should strengthen them doing more related ecological activities and campaigns (Umuhire & Fang, 2016). Pang, Li, Yang and Shen (2018) investigates the impacts of carbon trading price and Chinese consumers' environmental awareness on carbon emissions in supply chain under the cap-and-trade system. When emphasizing social value in practical value of recycled clothing, marketing firms could increase the possibility that the Korean consumers in the Resale Group would purchase eco-friendly products (Sung & Kincade, 2010).

The purpose of this empirical study is to provide descriptive information about Chinese and Korean consumers who have environmental awareness and behaviors when purchasing, using and disposing of eco-design clothing. The objectives of this study are to (a) categorize consumers' consumption on the basis of eco-design behaviors; (b) investigate the effects of environmental awareness on the consumers' purchase, usage and disposal; (c) compare the influential factors of eco-design between China and Korea.

Ⅱ. Literature Review

1. Eco-design

Eco-design is a concept that integrates multifaceted aspects of design and environmental considerations. The purpose is to create sustainable solutions that satisfy human needs and desires (Karlsson & Luttrop, 2006). Eco-design is concerned with the development of products which are more durable, energy efficient, avoid the use of toxic materials and which can be easily disassembled for recycling (Gottberg, Morris, Pollard, Mark-Herbert, & Cook, 2006). Eco-design improvement

option only stands a chance, if it is supported by stimuli other than the expected environmental benefit alone. As mentioned previously, considerable differences were found regarding the absolute numbers of eco-design options belonging to a certain type of eco-design principle. The 5 most frequently suggested eco-design principles are (1) Recycling of materials (2) High reliability/durability (3) Recycled materials (4) Low energy consumption (5) Remanufacturing/refurbishing (Hemel & Cramer, 2002)

The framework presents on the fact that detailed product focused information brings eco-design examples alive and such as clothing product consumption. Although some tools provide clothing product focused information in conjunction with their case studies, this is often limited to a brief description which may include materials information. None of the tools provided the detailed product focused eco-design information (such as clip details, materials etc.), identified within Lofthouse (2006) study as being important to industrial designers. Within a period of 3 years experimental study (Hemel & Cramer, 2002), an eco-design principle is, therefore, successful if a relatively large number of eco-design options of this type had been prioritised; it then has a high success percentage. In this study, we present a theoretical model, which draws together the elements of sustainability and fashion design.

Iranmanesh, Fayezi, Hanim and Hyun (2018) indicates that regulation and social responsibility are positively associated with eco-design initiatives, which have a positive effect on the ecologic, economic, and intangible outcomes of companies in both Australia and Malaysia. Only in Australia, customer pressure is the motivator of eco-design initiatives. As for Malaysia, expected business benefit is the driver of eco-design initiatives. In Gallego-Schmid, Jeswani, Mendoza and Azapagic (2018) study, the effects at the EU level of changes in kettle durability and energy efficiency have been analyzed as they have been identified as potential major criteria for a future EU eco-design regulation. They indicates that possible future trends, such as decreased availability of scare raw materials or improvements in the electricity mix or energy efficiency, could increase the relative

environmental significance of material resources and, therefore, justify the necessity of increasing the durability to keep improving the environmental footprint of kettles. Gottber et al. (2006) showed that choice between individual and centrally provided waste recovery schemes rested on perceptions of relative costs and practicability within European companies. It was evident that bans on hazardous substances, product declarations and supply chain pressures, were often more effective promoters of eco-design.

When manufacturers add the environmental factors into the product, the value of the eco-design clothing always increases. Most of empirical studies have shown the eco-design effects at the EU level, therefore, this study will focus on Eastern Asian countries to gauge the effect of eco-design on the impacts and help guide development of the ecological consumption behavior.

2. environmental awareness

With the corporate perspective, awareness and concern about product recycling appeared to be related to general environmental awareness, which was greater in the large companies than in the small and medium size enterprises (Gottberg et al., 2006). Deniz (2016) indicates environmental awareness and sustainable design aim to preserve natural resources and to reach human and societal wellbeing. Chan, Hon, Chan and Okumus (2014)'s finding not only makes a contribution to studies of environmental management and practices, but also brings a new insight to green hoteliers who may consider an employee's ecological behavior as one of the criteria when selecting and hiring their employees.

With the consumers' perspective, Xiamen University students' ocean awareness could improves their environmental behaviors as like ecological campaign (Umuhire & Fang, 2016). Japanese consumers' environmental awareness and trust in environmental information provided by eco-labeling have an positive effect on consumers' preferences for eco-label products (Kikuchi-Uehara et al., 2016). The retailers' fairness concern may change the trend of the retailer's profit

with consumer environmental awareness when the retailer is concerned about favorable distulty (Zhang, Zhou, Liu, & Lu, 2019). The effect of environmental awareness on the level of consumption and labor supply of households is broadly related to two very large, but quite independent literatures: economics based, social sciences (Iosifidi, 2016).

Deniz (2016) validated that environmental awareness contains five dimensions: Human-centered design, social innovation, sharing knowledge, economic vitality and ecological connectivity. Okada et al. (2019) focuses on the environmental awareness and compares the estimations between the purchase intentions of non-electric vehicles users and the post-purchase satisfaction of electric vehicles users. They found the environmental awareness has a positive effect on the purchase intention of a non-electric vehicles user. In Chan et al. (2014) study, the respondents' environmental awareness, knowledge and concern are positively associated with ecological behaviour and ecological behaviour is positively associated with intention to behavior.

2. Purchase, Usage and Disposal

Nearly any type of marketing concept is based on a linear product path starting with the raw material and ending after usage with the disposal of the product (Thumm, W., Finke, A., Neumeier, B., Beck, B., Kettrup, A., Moskowitz, P. D., & Chapin, R., 1995). According previous studies, product consumption process contains product purchase, product usage and product disposal. Tucker and Farrelly (2016) indicates the implications of consumer choice in food from purchase to disposal. There are some levels at which the problem of, and hence solutions to, household food waste can be viewed as one aspect of wider environmental concerns. United States General Accounting Office (2003) also provided the information on the purchase, use and disposal of engine lubricating oil by the federal government.

Purchase is the most important and the first action with environmental behaviors. Eco-social purchase is the most important factor of ecologic conscious consumer behavior, which is focused on the purchasing preference of consumers regarding electric vehicles, that nomological behavior is positively associated with environmental concern (Saleem, Eagle, & Low, 2018). Consumers perceived credibility of eco-labels, past green purchase, green furniture awareness, education level were all found to positively affect consumers' green purchase intention (Cai, Xie, & Aguilar, 2017).

Usage of eco-friendly or green products have been focused by previous studies in this field. For the mobile phone, the manufacturer could recycle and reuse some electronic components to decrease the pollution (Zhang et al., 2019). Product usage which deviates from the best environmental practices that user behaviour is influenced by four constraints (habit, beliefs, comfort and time) simultaneously (Popoff, Millet, & Pialot, 2016). Jain, Tyalor and Peschiera (2011) confirmed the link between interface engagement and reductions in energy consumption and to add user log-in as a metric for assessing the performance of eco-feedback interfaces and associated interface elements.

Disposal behaviors have been included to get rid of unused clothing temporarily by lending it or permanently by reselling, donating, non-recycling (Sung & Kincade, 2010). Goworek, Hiller, Fisher, Cooper and Woodward (2013) introduced the disposal action as improving sustainability were: Keep something as long as possible; Sell, give away or donate unwanted something; Put used something in recycling bank; Reduce amount of something disposal; Alter or re-use the something. In Keller, Cox, Loon, Lodge, Herborg and Rothlisberger (2016) study, slowing the spread of invasive earthworms will require efforts to change the species sold at bait stores and efforts to change angler behavior. Thus, exploring the relationship between environmental concern and eco-design purchase, usage, disposal are necessary.

Ⅲ. Methods

1. Research Model and Hypothesis

Literatures suggest that green consumers' environmental awareness are associated with eco consumption or or other environmental behavior. For this study, afairly complete scale is attempted by eco-design clothing consumption, which has three dimensions of the theoretical framework: purchase, usage, and disposal consumption. This study uses quantitative research method to empirically validate the scale, addressing the relationship between Chinese and Korean consumers' environmental awareness and their eco-design product purchase, usage and disposal. Figure 1 outlines the framework understudy and hypothesis as below.

H1. Consumers' environmental awareness has positive effect on eco-design clothing purchase.

H2. Consumers' environmental awareness has positive effect on eco-design clothing usage.

H3. Consumers' environmental awareness has positive effect on eco-design clothing disposal.

H4. Consumers' nationality moderates the positive relationships among environmental awareness and eco-design clothing purchase, usage, disposal.

2. Questionnaire Development and Data Collection

A self-administered questionnaire consisting of 13 statements developed from previous studies was used to assess consumers' environmental awareness (4 items), eco-design clothing purchase (3 items), eco-design clothing usage (3 items), eco-design clothing purchase (3 items). The first part of the questionnaire measured the environmental awareness of consumers developed from Okada et al. (2019). Respondents evaluate their stance on environmental awareness with questions such as, "How important is the policy to you?" In addition, the second part constructs were adapted from different references, including eco-design clothing purchase, usage and disposal adapted from related literature (Keller et al., 2016; Sung & Kincade, 2010), and modificated to fit the question items of eco-design clothing product. The final part measured consumers' demographic characteristics such as age, gender, education, profession and monthly income. The scale of responses is five-point Likert (1=strongly disagree, 5=strongly agree). Table 1 presents
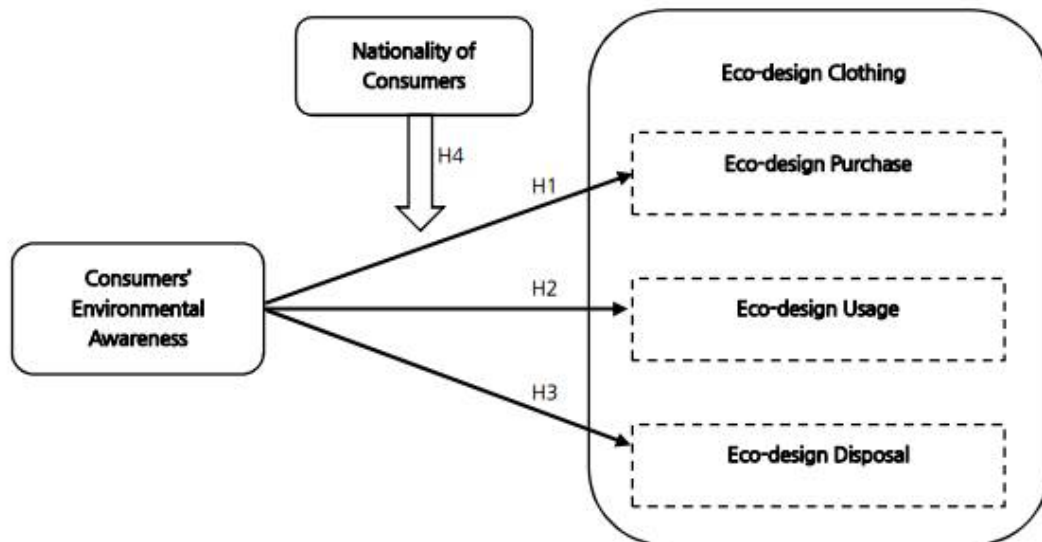

Figure 1. The Proposed Research Model

Table 1. Confirmatory Factor Analysis and Measurement Results for Model Constructs

Dimensions		Items	Standard Loading(λ)	Cronbach's α	AVE	CR
Environmental Awareness		The level of importance for percentage of eco cars in total number of car owners	.643 (.725)	.783 (.796)	.570 (.594)	.967 (.970)
		The level of importance for percentage of annual emissions of greenhouse gas	.738 (.701)			
		The level of importance for percentage of pollution index of rivers and lakes	.648 (.688)			
		The level of importance for percentage of the concentration of PM2.5	.709 (.697)			
Eco-design Clothing	Purchase	Purchase eco-design clothing for environmental purpose	.793 (.717)	.768 (.712)	.556 (.598)	.970 (.953)
		Purchase eco-design clothing from second hand shop	.866 (.838)			
		Eco-design clothing is purchase preferred	.538 (.528)			
	Usage	Reuse eco-design clothing a long time	.655 (.548)	.733 (.677)	.576 (.513)	.960 (.916)
		Save eco-design clothing for the next time	.718 (.606)			
		Use eco-design clothing carefully for next time	.695 (.522)			
	Disposal	Donate eco-design clothing to a charity or church	.705 (.528)	.786 (.606)	.574 (.542)	.972 (.914)
		Resale eco-design clothing for environmental purpose	.842 (.676)			
		Separate collection when throwing away	.718 (.540)			

Notes: Parentheses for Korean respondents' results

the survey questions. Chinese and Korean residents were the population for this study. The data were collected through a professional web survey (www.sojump.com) during January 5–20 2019, 200 Chinese and 200 Korean respondents final usable questionnaires were collected. SPSS18.0 and AMOS 18.0 were used to analyze the hypothesis in this proposed research model.

Ⅳ. Results and Discussion

1. Profile of respondents

A total of 200 Chinese respondents and 200 Korean respondents were included in the sample, and their demographic profile were analyzed in turn.The respondents comprised 273 females (Chinese=137, 68.5%; Korean=136, 68%) and 127 males (Chinese=63, 31.5%; Korean=64, 32%). The respondents' ages varied, namely, 39% Chinese (N=78) were 10–19 years old and 39% (N=78) were 20–29 years old; 22% Korean (N=44) were 10–19 years old and 44% (N=88) were 20–29 years old. In Chinese respondents, 59% (N=118) are understand students. Nearly half of the Korean respondents are graduate students (N=99, 49.5%). For monthly income in Yuan, almost 57% (N=114)of Chinese respondents were earning less than 10thousand, 40.5% (N=81)Korean respondents were earning 10–20 thousand. The Korean questionnaires use Won as currency unit, but in order to

balance the scale between China and Korea, Won is converted into Yuan in this paper.

2. Measurement Model

For testing the convergent validity, a confirmatory factor analysis (CFA) using the maximum likelihood method was conducted. The model fit indices were considered highly acceptable (X^2=337.203, df=127, X^2/df=2.655, IFI=.884, TLI=.856, RMSEA=.064, NFI=.826, and CFI=.882). CFI, IFI, TLI are higher than .8 that means satisfactory fit (Floyd & Widaman, 1995; Fornell & Larcker, 1981) and the factor loading value of all items on each construct were found highly significant (p<.001) and exceeded the threshold value of 0.5 suggested by Hulland (1999). Subscale scores were calculated as the means of Chinese and Korean participants' responses on the items listed in table 1. The reliability analysis examines the four variables, and the value of Cronbach's alpha coefficient for all the factors are above .60. It means that the items contained internal consistency the reliability coefficients of each variable that proposed by Nunnally (1978).

Thereafter, the average extracted variance and construct reliability scores for each construct were supportive of uni-dimension. In both countries, CR of above .9 was observed for all of the constructs,

indicating the rules and guidelines by Hair, Sarstedt, Ringle and Mena (2012) are satisfied. To assess discriminant validity, we contrasted the correlations of each pair of factors with the squared root variance extracted from each factor (Fornell & Larcker, 1981). In each case, the average variance extracted (AVE) of each latent variable in this study were higher than the squared correlations with all other latent variable, exceeding the above correlation (see Table 2).Therefore, all constructs have discriminant validity.

3. Invariance Test of the Measurement Model

Acceptable results were obtained through the measurement model. Accordingly, this study evaluated the structural model. The explained variance were conducted in a multi-sample confirmatory factor analysis (CFA), carrying out as a measurement invariance test, in order to analyze the differences according to respondents' nationality. This method is considered as the model adequacy in confirming invariance of variables included in the measurement model (Steenkamp & Baumgartner, 1998). For both countries, a configural invariance test was carried out to confirm whether the measurement frameworks are identical equations. Regarding with this measurement model, the Chi-square value was statistical significantly high of explaining X^2=309.077, df=118 and

Table 2. Reliability and Validity of Measures

	Environmental Awareness	Eco-design Purchase	Eco-design Usage	Eco-design Disposal
Environmental Awareness	.570[a] (.594[a])			
Eco-design Purchase	.312[b] (.325[b])	.556[a] (.598[a])		
Eco-design Usage	.306[b] (.392[b])	.386[b] (.328[b])	.576[a] (.513[a])	
Eco-design Disposal	.290[b] (.305[b])	.411[b] (.332[b])	.396[a] (.352[a])	.574[a] (.542[a])

Notes: Parentheses for Korean consumers' results
Chinese consumers (Korean consumers), [a]AVEofeachvariable;[b]Square of correlation coefficient between latent variables

$p<.001$, respectively. Moreover, other indices showed a quite high goodness-of-fit by calculating Normed X^2=2.619, CFI=.893 and RMSEA=.064.All variables' measurement items were found to have a factor loading value of over .5, therefore, this suggest model has a statistically significant level of configural invariance.

Thereafter, comparing to the non-restricted model, the restricted model for factor loading metrics between Chinese and Korean sample were carried out to confirm the measurement equivalence. The results were found that the increase in Chi-square(X^2) value was not statistically significant (ΔX^2=26.126, Δdf=9, p=.000), indicating absolutely equivalence in measurement by Mullen (1995). For two countries, all latent variables in this suggest model were confirmed to be equivalent, so that a full measurement invariance model was exhibited
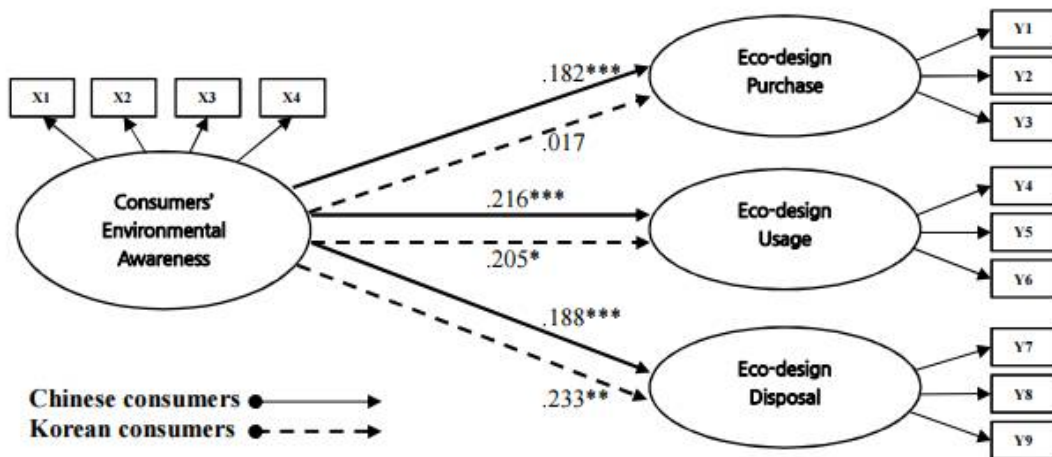
acceptable fit and high predictive relevance (see Table 3).

4. Test of Path Coefficient Disparity

SEM with multiple sample modeling was carried out to test the hypotheses using the multi-sample technique. In the full measurement invariance model, this study analyzed the disparity of path coefficient between Chinese and Korean respondents sample. The chi-square value was significantly high (X^2=337.203,df=127, $p<.001$), but for all other indices the two sample had high goodness-of-fit (Normed X^2=2.655,CFI=.882, IFI=.884, TLI=.856, NFI=.826, RMSEA=.064), indicating the suggested model and information were suitable. Figure 2 summarized all results of hypotheses tests on the original research model.

Table 3. Comparison of Measurement Model as Non-restricted Model and Restricted Model

	X^2	df	RMSEA	AIC	CFI
Non-restricted Model	309.077	118	.064	489.077	893
Full Metric Invariance	337.203	127	.064	499.203	.882

Notes: X^2= 337.203 (df = 127, $p<$ .001), Normed X^2= 2.655, CFI = .882, IFI=.884, TLI=.856, NFI=.826, RMSEA = .064; ***$p<$ .001,**$p<$ .01, *$p<$ .05

Figure 2. Test of the Structural Model between Two Groups

To test hypothesis, disparities between the two countries were examined. First, the equivalency of path coefficients that correspond to each other in the research models for the two countries' sample had to be examined. A non-restricted model was constructed that none of the path coefficients were restricted. This would be the reference model. The series of non-restricted models were set up with each of the corresponding paths restricted. Chi-square (X^2) values between the non-restricted model and the other models were calculated, indicating a significant disparity was observed in all cases. A summary of results can be seen in Table 4.

Regarding the relationship between environmental awareness and eco-design clothing purchase, there's a significant disparity in Chinese and Korean respondents (ΔX^2=168.306, Δdf=7, p=.000). Korean consumers showed no direct relationship (β=.182, p<.001) between Environmental Awareness and eco-design clothing purchase. On the other hand, Chinese consumers showed a significant direct effect (β=.017, p>.05), displaying yet another significant disparity between the two countries. Thus, hypothesis 1 was partially supported; consumers' environmental awareness affects eco-design clothing purchase positively in China but no in Korea.

In both countries, consumers' environmental awareness has a significant positive impact on eco-design clothing usage, and statistical results point out that there is a significant disparity between the two countries (ΔX^2=176.652, Δdf=7, p=.000). According to Chinese consumers, the path coefficient between consumers' environmental awareness and eco-design clothing usage was very high at .216 (p<.001), but the Korean consumers had a relatively low path coefficient of .205 (p<.05). The effect of consumers' environmental awareness on eco-design clothing usage was significantly greater for the Chinese consumers than Korean. Thus, hypothesis 2 which posits that consumers' environmental awareness has a positive effect on eco-design clothing usage, was supported across both country.

Meanwhile, consumers' environmental awareness has a significant effect on eco-design clothing disposal, and there was a significant difference of economic level between the path coefficients of the two countries (ΔX^2=170.032, Δdf=7, p=.000). The path coefficient between consumers' environmental awareness and eco-design clothing disposal was found to be higher with Korean consumers (β=.233, p<.01) than Chinese consumers (β=.188, p<.001). In other words, environmental awareness affects eco-design clothing disposal more greatly for Korean consumers. Finally, hypothesis 3 was also supported across both countries. In addition, all paths were significantly different between two countries' sample, so that the hypothesis 4 was supported.

Table 4. Group Comparisons of Path Coefficients

		β [a]		X^2	Df	ΔX^2	Δdf	p
		Chinese (n = 200)	Korean (n = 200)					
Reference Model	Measurement Weights	—	—	337.203	127	—	—	—
Restricted Model (restricted path)	Environmental awareness → Eco-designClothing Purchase	.182***	.017	505.509	134	168.306	7	.000
	Environmental awareness → Eco-designClothing Usage	.216***	.205*	513.855	134	176.652	7	.000
	Environmental awareness → Eco-designClothing Disposal	.188***	.233**	507.235	134	170.032	7	.000

Notes: [a] the standardized path coefficient in the reference model; ***p<.001, **p<.01, *p<.05

Ⅴ. Conclusion

In view of the growing environmental concern, marketers and researchers need to pay attention to eco-design clothing and consumers' behaviors. Previous studies have already examined the relative variables and their impact on consumption behaviors, however, limited academic studies have examined these variables (i.e., purchase, use and disposal) within one study. In addition, this study examined the consumers' environmental awareness and their effect on eco-design clothing purchase, usage and disposal in order to assess the impact of differing consumers' nationality. An online survey of China-resident and Korea-resident respondents were carried out. Considering environment issue between Chinese and Korean consumers, differentiated factors were derived.

Consumers' environmental awareness impact positively on eco-design clothing purchase, usage, disposal in turn. Generally, as consumers recognize more environmental awareness, their eco-design clothing behavior gets higher. This is in line with the observations already made by previous research (Cai et al., 2017; Goworek et al., 2013; Iosifidi, 2016; Saleem et al., 2018; Zhang et al., 2019) that investigated the impact of the consumers' perceived environmental awareness on eco behavior and consumption. These results suggest once again that eco mind design or sustainable products are quite useful in gaining competitive advantage supporting Deniz (2016) and Iranmanesh et al. (2018). The findings offer implications for manufacturers, brands and retailers in any industry, as well as having the potential to influence government policies towards eco-design products. The major findings from this study were as follows:

First, this study examined the difference in path coefficient analyses according to the respondents' nationality. Chinese consumers' environmental awareness can improve their purchase behavior of eco-design clothing. This result is consistent with Xiamen University students' data reported in Umuhire and Fang (2016)'s study, which revealed that if Chinese consumers perceive high eco-friendly awareness or information, they may make their best to do environmental behaviors. However, in the subset that Korean respondents, the path from environmental awareness to the purchase behavior of eco-design clothing was not significant at all. This indicates that in the case of Korean consumers' environmental awareness, no matter how high it may be, will not improve eco-design purchasing. Lofthouse (2006), as with any information design, eco-design information needs to presented in a style that is appropriate for the user. However, many existing tools fail because they do not focus on design. Especially for the design-oriented consumers as like Korean, it is only because environmental awareness is very difficult for Korean consumers to purchase.

Second, in the path connecting environmental awareness to usage behavior of eco-design clothing, the subset who were Chinese respondents had a higher path coefficient than those who were Korean respondents. This is related to the argument that not only is the specialized environment knowledge of consumers helpful in how to use product with ethics or social responsibility. This kind of result would be attribute that Chinese consumers are more economical and simple than Korean. It is consistent with Cai et al. (2017) who reported that Chinese consumers perceived chemicals awareness were very important to green product choice, and usually they have long usage time and using frequently. Exactly, the mean value of Chinese respondents' monthly household income that is lower than Korean sample in this research study. It must be assured that Chinese and Korean consumers will need different green intervention strategies to better their usage practices.

Third, both of Chinese and Korean respondents' environmental awareness could improve their eco-design clothing disposal, with Korean sample showing higher mean scores on disposal behavior. These findings add clarity and partial verification of previous study (Sung & Kincade, 2010), in general, Korean typical eco-summers described as more consistent with clothing donate and resell. In other words, Korean government's garbage disposal system is more stringent and equipped than

other countries in Asia, such as separating collection when throwing away. Although the effect scores of environmental awareness to eco-design clothing consumption are different between Chinese and Korean respondents, there is an invariable fact that consumers' environmental awareness have significant positive influence. That is, if consumers are informed about the consequences of practicing (environmental importance), it would motivate them more towards eco consumption. These findings from the main study provided important insight into the types of practice that need to be considered how improving consumers' awareness with environment.

In addition, other tools used to promote environmental awareness and the adoption of eco-design clothing may have an important role in promoting eco consumption. Further research into the synergy between such variables and other environmental awareness efforts would assist in understanding how best to approach environmental awareness training to improve eco-design consumption. The dependent variables including eco-design purchase, usage, disposal in this paper aims to be used in our future research, in a wider life cycle model for the eco-design of clothing, focusing on design.

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