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Environmental Perception, Ethical Consumer Behavior, and Price Sensitivity: Impact on Using Intention of Eco-Friendly Products*

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Abstract

Purpose – This study aims to identify the effect of corporate eco-friendly marketing, which focuses on corporate social responsibility, on the environment, natural preservation and protection, and environmental concern among consumers.

Research design, data, and methodology – A total of 92 valid questionnaires were used for analysis. A structured model was established and a 3-step mediated regression test was employed to see how consumers' perception of ethical consumer behavior and price sensitivity are influential in relation to the impact of consumer's perception of eco-friendliness on the using intention in relation to eco-friendly products.

Results – Three factors of eco-friendly perception all have a positive impact on ethical consumer behavior, thus lowering their price sensitivity. In particular, it is found that environmental knowledge and environmental concern are important to promote ethical consumer behavior.

Conclusion – It is found that, to increase the using intention of eco-friendly products, an enterprise should practice an eco-friendly marketing strategy, deliver eco-friendly related knowledge, and include contents to allow consumers to take an interest in the environment for effective performance of marketing.

Keywords: Eco-Friendly Product, Environmental Perception, Using Intention, Ethical Consumer Behavior and Price Sensitivity.

JEL Classifications: I11, L66, N55, Q10.

1. Introduction

Since the 20th century, the development of scientific technology and rapid development of industrialization enabled the promoted system of mass production, mass selling, and mass consumption (Park, 1993). The changes in consumption life accelerated consumption of energy resources and caused crisis in depletion of resources and environmental destruction and even faced a grave situation that the survival of human kind as well as sustained development were threatened (Kim, 2012). For such reasons, a new consumer group called as green consumer who practiced eco-friendly consumption has appeared since the severity of environmental destruction and interests in eco-friendly products are spreading widely ranging from purchase and use of products to waste disposal (Kim, 2012). Kim & Jang (2013) reported about the eco-friendly products, a recent issue, that with the spread of well-being trend that emphasizes worldwide stability of agricultural products and health, the potential of inorganic foods consumer market and market size are expanding continuously. Specifically, the market size of eco-friendly products is in the stage of continuous growth of more or less than 20% every year since 2000, largely in advanced countries such as America and Europe and the demand for eco-friendly products recently by China along with North America, Europe, and Japan continues to increase, thus showing growth of 20~30% on annual average, and especially with the increased interest in health by Smart Buying¹⁾ group who emerges as a new trend in Chinese consumption market in line with the globalization, China is expected to become a big country of consumption to buy organic foods in the future (Kim & Jang, 2013). However, the production of eco-friendly agricultural products in Korea had con-

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1) Smart Buying(白領) group refers to a new consumption group in China who are involved in consumption behavior of seeking for fashion and individuality by making use of financial means and new distribution channels under a certain income restrictions(middle income)(Sensible & Trendy) and protects their health and rights and interests, but at the same time, actively involved in activities to help the neglected class of people while taking interest in social issues (Active & Responsible) (Source : LGERI, Secoul Economy Sept. 2013; Kim & Jang in 2013)

tinued to increase till 2009, but since then, has been gradually decreasing (Kim et al., 2013). Fortunately, it is reported that organic farming is increasingly produced rather than reduced production of eco-friendly agricultural products, which is a fortunate thing to the older generation who is liable for passing healthy nature and environment to the future generations by protecting environment.

Eco-friendly Marketing is a marketing activity that considers the quality of life for the future generations while satisfying the current physical life as well as a philosophy on marketing management that focuses on corporate social responsibility for the preservation and protection of environment and nature and consumer's environmental concern (Peatti, 1992). Kotler & Armstrong (1997) defined eco-friendly marketing as development of ecologically safer products, recycled products, naturally decomposed packing materials, antipollution equipment, and energy saving methods (Lee et al., 2013) and Jung (2010) also defined it as corporate activity such as communication activity which is performed for the purpose of forming an organic relationship with the market by making use of eco-friendliness of both products and business activity .

With increased interests in environment, eco-friendly marketing has been dealt with as a very important subject in both academic research area and working-level area (Lee et al., 2013). This is because it is considered that enterprises who perform social responsibility for eco-friendly administration have competitive advantage for themselves and resultingly are recognized as an important factor to bring about sustainable growth as well as realization of long-term benefits, although international treaty on environmental issues and various environmental regulations at national level pressed the eco-friendly marketing activity (Peattie & Charter, 2003). Researches on the eco-friendly marketing also considered the definition and pattern of eco-friendly consumer earlier (e.g. Amyx et al., 1994; Antil, 1984; Menon, 1976) and researchers defined eco-friendly consumers as consumers who make a purchase decision by considering the impact on the environment and resources as well as individual satisfaction of desire as a consumer who consumes in a socially responsible manner (Antil, 1984) and also who recognizes the importance of environment and expresses their interest in ecological problems (Amyx et al., 1994). As another approach to the earlier researches, there were researchers who attempted to reveal preceding variables that might have an impact on the characteristics of eco-friendly consumers and consumer's perception of eco-friendliness (e.g. Balderjahn, 1988; Schwepker & Cornwell, 1991) and the following researchers (e.g. Langerak et al., 1998; Mainieri et al, 1997; Menon & Menon, 1997; Russo & Fouts, 1997) made an approach to how consumer's perception of eco-friendliness actually leads to consumer's eco-friendly behavior and how perception of eco-friendliness is shown in corporate management performance. However, Lee et al. (2013) reported that eco-friendly products in actual market demand are of little important compared to the overall interest in such products which considered the sustainability of eco-friendly products. Given the reality that the percentage of consumers who actually

buy eco-friendly products is nothing but 4% although the percentage of consumers who show purchase intention for eco-friendly products reach 40%, their research seems to be consistent with Ahn et al. (2010) who stated that corporate eco-friendly marketing activity does not lead to short-term and immediate market performance but is a result of indirect and long-term performance through corporate reputation. On the other hand, Lee & Yang (2012) noted that another factor like innovativeness compared to SERVQUAL factor in an organic farming-specialized store should play a mediating role to promote purchase intention. Yang et al. (2011) who maintained that policy trust even in green growth policy should be kept to make people immersed in an organization suggests that consumer's perception of eco-friendliness not only has a direct impact on purchase intention but also is stimulated by other factors.

Therefore, this study focused on the fact that it is rare that consumers actually purchase eco-friendly products although they showed purchase intention for eco-friendly products like Lee et al. (2013)'s. Lee et al. (2013) conducted research based on Luchs et al. (2010) who maintained that consumers who are highly eco-friendly would not always recognize sustainability as positive asset value and Griskevicius et al. (2010) who maintained that consumers could be influenced by socially oriented motives. On the other hand, the purpose of this study lies in identifying how consumer's price sensitivity has an impact on purchase intention of eco-friendly products, by focusing on the consumer's interest in environment and the vulnerable price competitiveness caused by the fact that ethical behavior, a consumer's will to seek for pro-social behavior and eco-friendly products are presented in consumers at a higher price.

This study is expected to provide various clues to the establishment of marketing strategy to appeal eco-friendly products from corporate perspective by making an empirical analysis of how ethical behavior and price sensitivity has an impact in the process that consumer's perception of eco-friendliness has an impact on purchase intention in many researchers that'd been carried out so far.

2. Theoretical Background & Hypotheses

2.1. Eco-friendly Perception

Regarding eco-friendly perception, Peattie (1992) mentioned that as eco-friendly conscious consumers show drastically different behaviors when they purchase environmental products rather than when they buy industrial products, such behaviors cannot be clearly classified only with the traditional market segmentation variables and Kim & Park (1995) said that consumer's environmental perception is the degree that general consumers usually think about environment and the degree that they recognize the severity of environmental issues and think about environment. In other words, environmental perception is an

awareness that consumers recognize environmental issues among everyday lives so deeply to improve the quality of environment, exclude behaviors causing environmental issues, select ecological life style and practices a thrifty habit, and make efforts to preserve environment (Kim, 2012). This study limited consumer's perception to eco-friendliness to interest in eco-friendliness (environmental concern), knowledge on eco-friendliness (environmental knowledge), and attitude toward eco-friendliness (environmental attitude) based on the previous researches (e.g. Ellen & Cobb, 1991; Lee et al., 1993; Park & Shin, 1998). This can be specified as follows:

First, interest in eco-friendliness (environmental concern) refers to a widespread notion that includes from perception of environment to support for environmental protection (Dunlap et al., 2000). To look at the previous researches related to the interest in environment and eco-friendly behavior, first, Schultz (2001) proposed that type of interest that an individual takes in environmental issues is associated with the degree that an individual includes nature within his/her conscious expression and Fujii (2006) mentioned that environmental concern and attitude toward saving has a correlation with eco-friendly consumer behavior and also found that environmental concern has a significant correlation with waste-reducing behavior intention. Therefore, consumers who have such consciousness can express various behaviors toward environment: specifically, they will consider the impact of their consumption behavior on the society and environment in the entire process of purchasing, using, and disposing goods and services.

Second, it is the knowledge on eco-friendliness (environmental knowledge). Regarding the consumption related knowledge, Brucks (1985) said that it is consumer's perception of exact quantity of information stored in consumer's memory that they had toward alternative products and Park et al. (1994) argued that consumer's knowledge consists of subjective knowledge and objective knowledge. According to them, subjective knowledge is defined as consumer's perception of how much they are familiar with the type of products and objective knowledge as exact information toward the type of products stored in long-term memory (Park et al., 1994). Therefore, it is suggested that consumer's memory about the products-related experience influences decision-making based on subjective knowledge and products-related experience stored in memory indirectly influence both subjective knowledge and objective knowledge based on the product information in store. In the same context, previous researches (e.g. Chan, 1999; Vining & Ebreo, 1990) regarded that consumer's knowledge on environmental issues is an important predictor for eco-friendly behavior.

Finally, attitude toward eco-friendliness (environmental attitude) can be explained about its influence by Ajzen (1991)'s and Ajzen & Fishbein (1980)'s social perception model. Ajzen & Fishbein (1980) defined such an attitude as tendency of being consistently favorable or unfavorable toward a particular object or the same category of such an object, which means that according to social perception model, eco-friendly attitude and pos-

itive attitude toward products can predict an individual's behavior and also causes more consistent selection with attitude. Since attitude is a psychological factor to determine behavior and attitude toward environment is based on anthropocentrism, limitation of growth, harmony with the nature, and interest in ecological crisis (Dunlap & Van Liere, 1978; Gardner & Stern, 2002), responsible behavior for environment may be a cause.

2.2. Ethical Consumer Behavior

Generally, consumer behavior is a consumer's reaction toward previous learning (Howard, 1997) and consumers are not involved in continuing to do consumption behavior depending on the degree of their satisfaction or dissatisfaction with the past experience (Forward, 2006). According to previous researches (e.g. Magnusson et al., 2003; McEachern & McClean, 2002; Minton & Rose, 1997), ethical consumption behavior are influenced a lot by consumer's environmental concern.

Ethical consumption behavior can be classified into allocation-of-resources behavior, purchase behavior, using behavior, and disposal behavior (Hong & Song, 2010). According to Cha (2013), first, allocation-of-resources behavior is a behavior that considered social responsibility such as consumer's income or expenditure and can be explained by ethical investment, sharing, and donation. Second, purchase behavior includes consumer's selection of products when they purchase, in other words, purchase of eco-friendly products, purchase of fair trade products, fair travel, local purchase, and boycott campaign. Third, using behavior means the behavior that includes consumer's behavior to use energy and water and save energy. Finally, disposal behavior is the behavior that includes consumer's participation in recycling of products, reusing behavior, and waste reduction. Therefore, ethical consumer behavior is likely to be influenced by eco-friendly perception and it is also expected that ethical standards have a positive impact on using intention of eco-friendly products.

2.3. Price Sensitivity

Zeithaml (1987) said that as the factors that constitute values toward one product are very individualistic and unique, price in consumer behavior can be determined as value of products or services that consider consumer's economical aspect and psychological aspect. From such a perspective, most consumers make a decision based on limited information and perception like experiences that they had in the past because they cannot evaluate and determine quality of products or services as exactly as possible. Therefore, consumer's reaction toward price is very subjective because it is determined by how consumers recognize price and how such recognition is formed. Price sensitivity can be explained by individual difference in how each individual reacts to the changes in the level of price in products or services. Therefore, price of eco-friendly products is likely to have an impact on the using intention of eco-friendly products depending on the degree of price sensitivity, as presented by

Goldsmith & Newell (1997).

2.4. Using Intention of Environmentally Friendly Products

In general, intention is an individual's planned behavior for the future and thus means the probability that belief and attitude are transformed into action (Engel et al., 1995; Yoon & Yoon, 2013) and using intention consists of motivational factors that may have an impact on behavior and thus can be defined as indicator of efforts to put into action (Yoon, 2006). In other words, using intention is a customer's will to use products and services and can be the most immediate determinant of actions that may have a direct impact on actual use (Kwon, 2013). In particular, using intention is an indicator that expresses consumer's evaluation most directly regarding if consumers will use products and services repeatedly later and thus closely related with actual re-use behavior and consumer maintenance (Engel et al., 1995). Therefore, consumer's using intention of eco-friendly products is a consumer's will to use eco-friendly products and can be influenced by eco-friendly conscious behavior and ethical consumer behavior that may have a direct impact on the actual use, as presented by Kwon (2013) and thus expected to be influenced by the degree of price sensitivity as well.

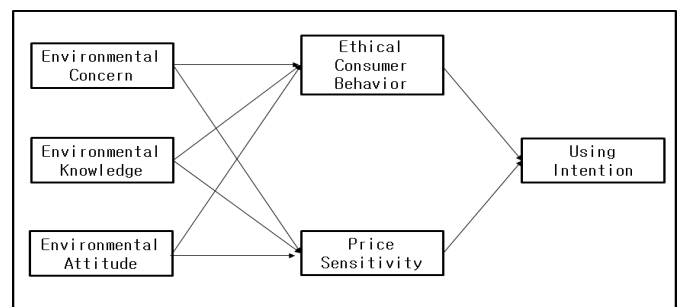
3. Methodologies

3.1. Research model and hypothesis

As found in previous researches, ethical consumer behavior is expected to play an important role between eco-friendly perception and eco-friendly consumer behavior, based on Park & Shin (1998) who maintained that perception of eco-friendliness is consumer's attitude to consider public results that an individual's private consumption may cause and Tognacci et al. (1972) who maintained that the degree of interest in environment that promotes eco-friendly consumption behavior is closely associated with attitude and behavior of future environmental problems. In addition, according to previous researches (Amyx et al., 1994; Bang et al., 2000; Chan, 2001; Han & Choi, 2006), consumer's eco-friendly knowledge is directly related to purchase activity. Such researches are specifically, Amyx et al. (1994) who maintained that subjective knowledge on environment is more effective than objective knowledge in predicting purchase intention of eco-friendly products, Han & Choi (2006) who stated that knowledge and information on environmental products have a significantly positive(+) impact on purchase intention of eco-friendly products, and Chan (2001) who said that individual's knowledge on environment has an impact on attitude toward eco-friendly products, purchase intention of eco-friendly products, and purchase behavior of eco-friendly products. In addition, previous researches (e.g. Alwitt & Berge, 1993; De Young, 1989; Kim, 2004) argued that eco-friendly attitude may have a positive impact on environmental behavior. However, it cannot be dis-

regarded that there may be a psychological line of resistance which is not consistent with the eco-friendly attitude and environmental behavior. For example, price sensitivity can be such a psychological line of resistance. Usually, consumer's using intention is influenced by various factors: first belief or attitude caused by an individual's direct/indirect experience with products and services or unexpected situational factors (Ajzen & Fishbein, 1980; Kotler, 2000; Kwon, 2013). Using intention generally can be classified into subjective aspect which depends on customer's individualistic propensity and behavioral aspect that appear by others' recommendation (Lee, 2010), and particularly if based on consumer behavior model, using intention influences consumer's loyalty to a certain product, which causes continuous reuse in the future as well (Assael, 1998).

Based on theoretical background and previous researches shown in the above, this study classified consumer's perception of eco-friendliness into three sub-factors: environmental concern, environmental knowledge, and environmental attitude and identified how these factors have an impact on using intention of eco-friendly products. This study also established structured research model and hypothesis to see how two factors such as ethical consumer behavior that is expected to react as positive factor between eco-friendly perception and using intention and price-sensitivity that acts importantly as individualistic value and may be a psychological or economic line of resistance despite eco-friendly perception play a role in this relationship. Research model is presented in Figure 1.



<Figure 1> Research Model

Hypothesis 1. Environmental perception will have a positive (+) impact on ethical behavior.

- Hypothesis 1-1. Environmental concern will have a positive (+) impact on ethical behavior.
- Hypothesis 1-2. Environmental knowledge will have a positive (+) impact on ethical behavior.
- Hypothesis 1-3. Environmental attitude will have a positive (+) impact on ethical behavior.

Hypothesis 2. Environmental perception will have a negative (-) impact on price sensitivity.

- Hypothesis 2-1. Environmental concern will have a negative (-) impact on price sensitivity.
- Hypothesis 2-2. Environmental knowledge will have a neg-

ative (-) impact on price sensitivity.

Hypothesis 2-3. Environmental attitude will have a negative (-) impact on price sensitivity.

Hypothesis 3. Ethical behavior will have a positive (+) impact on using intention of eco-friendly products.

Hypothesis 4. Price sensitivity will have a positive (+) impact on using intention of eco-friendly products.

Hypothesis 5. Ethical behavior will mediate between environmental perception and using intention of eco-friendly products.

Hypothesis 5-1. Ethical behavior will mediate between environmental concern and using intention of eco-friendly products.

Hypothesis 5-2. Ethical behavior will mediate between environmental knowledge and using intention of eco-friendly products.

Hypothesis 5-3. Ethical behavior will mediate between environmental attitude and using intention of eco-friendly products.

Hypothesis 6. Price sensitivity will mediate between environmental perception and using intention of eco-friendly products.

Hypothesis 6-1. Price sensitivity will mediate between environmental concern and using intention of eco-friendly products.

Hypothesis 6-2. Price sensitivity will mediate between environmental knowledge and using intention of eco-friendly products.

Hypothesis 6-3. Price sensitivity will mediate between environmental attitude and using intention of eco-friendly products.

3.2. Data Collection

To conduct this study, a survey was carried out in consumers living in Seoul and capital region. A total of 106 questionnaires were returned and among which, 14 questionnaires which responded unfaithfully were excluded. The rest 92 questionnaires were used. Frequency analysis, descriptive statistic analysis, correlation analysis, simple regression analysis, multiple regression analysis, and 3-step mediated regression analysis were conducted using SPSS 19.0 and AMOS 19.0. After path analysis using structural equating model, goodness of fit was identified before presenting the correction model. Respondent's demographic characteristics are presented in Table 1.

3.3. Methods

Of environmental perceptions, five environmental-concern items drawn based on Dunlap et al. (2000), three environmental-knowledge items drawn based on Maloney et al. (1975), and three environmental-attitude items drawn based on Maloney et al. (1975) and Fraj & Martinez (2007) were measured using

Likert's 5-point scale. Eight ethical-behavior items were measured with Likert 5-point scale based on Karp (1996) and three price sensitivity on eco-friendly product items were measured with Likert 7-point scale based on Goldsmith & Newell (1997). To relieve the scale difference between variables, it was converted to z-score for analysis.

<Table 1> Demographic Characteristics

Characteristics	Sub-dimension	Frequency	Ratio(%)
Gender	Male	44	47.8
	Female	48	52.2
Age	Less than 25	4	4.3
	26~35	22	23.9
	36~45	19	20.7
	46~55	35	38.0
	More than 56	12	13.0
Marriage Status	Married	71	78.0
	Unmarried	20	22.0

Note) Marriage status 2 participant missing

4. Empirical Analysis

4.1. Reliability and Validity

To find out if measurement items are internally consistent, reliability was verified using Cronbach α . Nunnally (1978) said that if Cronbach α is over 0.7, it is considered reliable. In this respect, the reliability of variables in this study was found to be 0.782~0.906. As a result of confirmatory factor analysis to verify feasibility of variables, price sensitivity was found to be that average variance extraction index is less than 0.5 and concept validity is also less than 0.7. However, this study understood the convergent validity through comparison with coefficient of determination, squared value of coefficient and utilized reliability of 0.822 for analysis as it appeared. The scale for each item in price sensitivity was reversely transformed for analysis.

<Table 2> Reliability and Validity

Variables	Sub-dimension	Final items	Cronbach α	Construct Reliability	AVE
Environmental Awareness	Concern	5	.856	.882	.606
	Knowledge	3	.782	.842	.646
	Attitude	3	.807	.823	.608
Ethical Consumer Behavior		8	.906	.949	.700
Price Sensitivity		3	.822	.695	.432
Using intention		4	.889	.805	.511

4.2. Correlation Analysis

The directional nature and possible causal relationship between variables were identified through confirmatory factor analysis and the results from correlation analysis which was carried

out to identify the validity of variables whose validity was not identified were presented in Table 3. After correlation analysis, squared value of correlation coefficient for price sensitivity and variance extraction index were compared. As a result, validity was found. As shown in the result, both three environmental-perception factors and ethical consumer behavior had a positive (+) relationship with purchase intention and had a negative (-) relationship with price sensitivity, which suggested that environmental perception could be an inhibiting factor that inhibits using intention of eco-friendly products.

<Table 3> Results of Corelation analysis

	1	2	3	4	5	6
1. Concern	(.606)					
2. Knowledge	.436**	(.646)				
3. Attitude	.473**	.589**	(.608)			
4. Ethical Behavior	.419**	.533**	.485**	(.700)		
5. Price sensitivity	-.239**	-.417**	-.363**	-.379**	(.432)	
6. Using intention	.360**	.444**	.358**	.405**	.619**	(.511)
Mean	4.06	3.42	3.69	3.59	3.78	4.91
S.D	0.75	0.73	0.79	0.72	1.23	1.23

Note) ** p<.01, AVE marked in ()

4.3. Verification of the hypothesis

To verify direct effect, demographic variables such as gender, age, and marital status were controlled and then simple regression analysis was carried out. As a result, environmental concern ($\beta=.423$, $p<.01$), environmental knowledge ($\beta=.530$, $p<.01$), and environmental attitude($\beta=.468$, $p<.01$) all have a positive(+) impact on ethical behavior. Therefore, hypotheses <1-1>, <1-2>, and <1-3> were all accepted. As a multiple regression analysis carried out to find out the impact of which factors, among sub factors of environmental perception had an impact on ethical behavior although not determined as hypothesis. it was found that it appeared influential in the order of environmental knowledge ($\beta=.338$, $p<.01$), environmental concern ($\beta=.196$, $p<.05$).

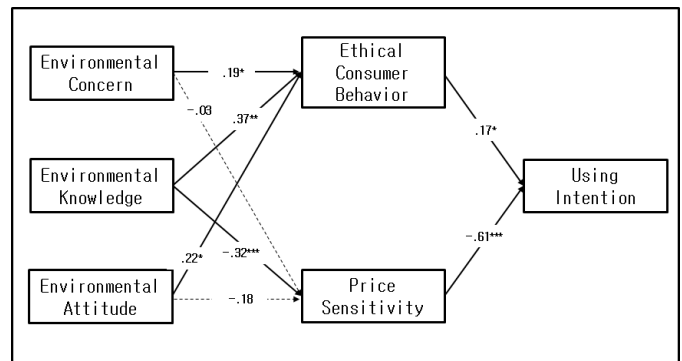
Environmental concern ($\beta=-.245$, $p<.05$), environmental knowledge ($\beta=-.436$, $p<.01$), and environmental attitude ($\beta=-.360$, $p<.01$) all had a negative(-) impact on price sensitivity. Therefore, hypotheses <2-1>, <2-2>, and <2-3> were all accepted. As a result of multiple regression analysis carried out to identify the impact of which factor, among sub factors of environmental perception had an impact on price sensitivity, it was found that environmental knowledge ($\beta=-.331$, $p<.05$) only had a statistically significant negative (-) impact.

Ethical behavior ($\beta=.360$, $p<.01$) had a positive(+) impact on price sensitivity($\beta=-.668$, $p<.01$) had a negative(-) impact on using intention of eco-friendly products. As a result of multiple regression analysis, it was found that price sensitivity ($\beta=-.626$, $p<.01$) only had a statistically significant negative (-) impact.

To verify the mediating effect of ethical behavior and price

sensitivity between environmental perception and purchase intention of eco-friendly products, the results of 3-step mediated regression analysis by Baron & Kenny (1986) are presented in Table 4. They reported that to test for mediation, one should estimate the three following regression equations: first, regressing the mediator on the independent variable; second, regressing the dependent variable on the independent variable; and third, regressing the dependent variable on both the independent variable and on the mediator (Baron & Kenny, 1986). As shown in Table 4, ethical behavior was found to partially mediate environmental concern, environmental attitude, and using intention of eco-friendly products. However, environmental knowledge and using intention of eco-friendly products were found not to have a mediating effect because the relationship between the twos was not statistically significant in the three step.

Therefore, hypotheses <5-1> and <5-3> were accepted, but <5-2> rejected. It was found that price sensitivity partially mediated the relationship between environmental concern, environmental knowledge, and using intention of eco-friendly products and fully mediated the relationship between environmental attitude and using intention of eco-friendly products. Therefore, hypotheses <6-1>, <6-2>, and <6-3> were all accepted.



Note) * p<.05, ** p<.01, *** p<.001

<Figure 2> Results of Path Analysis

The results of the analysis carried out to identify the suitability of research model and the valid path between variables are presented in Figure 2 and Table 5. As a result of path analysis, environmental concern, environmental knowledge, and environmental attitude all had a positive impact on using intention of eco-friendly products through ethical consumer behavior. However, price sensitivity was found to lower the using intention of eco-friendly products as it acted as a psychological or economic line of resistance although environmental knowledge mitigated the price sensitivity. In goodness-of-fit of path model, $\chi^2=74.707$, $d.f=7$, $p=.000$, $GFI=.775$, $NFI=.613$, $CFI=.619$, and $RMR=.251$, which suggested that the goodness-of-fit proposed by the structural equation model was not reached.

<Table 4> Results of 3-Step Mediated Regression

Independent Variables (IV)	Mediation Variables (MV)	Step	Results	R2	F
Concern	Ethical Consumers Behavior	1(β_1)	.423**	.224	4.904**
		2(β_2)	.362**		
		3(β_3,IV)	.262*		
		3(β_3,MV)	.238*		
Knowledge		1(β_1)	.530**	.252	5.718**
		2(β_2)	.435**		
		3(β_3,IV)	.350**		
		3(β_3,MV)	.161		
Attitude		1(β_1)	.468**	.213	4.602**
		2(β_2)	.352**		
		3(β_3,IV)	.242*		
		3(β_3,MV)	.236*		
Concern	Price Sensitivity	1(β_1)	-.245*	.534	19.482**
		2(β_2)	.362**		
		3(β_3,IV)	.212**		
		3(β_3,MV)	-.615**		
Knowledge		1(β_1)	-.436**	.517	18.185**
		2(β_2)	.435**		
		3(β_3,IV)	.177*		
		3(β_3,MV)	-.592**		
Attitude		1(β_1)	-.360**	.506	17.444**
		2(β_2)	.352**		
		3(β_3,IV)	.128		
		3(β_3,MV)	-.621**		

Note) ** p<.01

<Table 5> Results of Path Analysis

Path	Standard Estimate	Standard Error	t-value	p
Concern → Ethical behavior	.193	.084	2.089	.037
Concern → Price sensitivity	-.026	.094	-.265	.791
Knowledge → Ethical behavior	.368	.084	3.987	.000
Knowledge → Price sensitivity	-.318	.094	-3.253	.001
Attitude → Ethical behavior	.223	.084	2.408	.016
Attitude → Price sensitivity	-.177	.094	-1.814	.070
Ethical behavior → Using intention	.168	.084	2.094	.036
Price sensitivity → Using intention	-.607	.080	-7.576	.000

In response to this, Jöreskog & Sörbom (1981) proposed the Modification Index (MI) that if one freedom of parameter estimate (a.k.a path coefficient) is increased, chi-square (χ^2) is reduced. As AMOS provides analysis based on modification index, additional path that positive environmental concern and various knowledge on environment would have a positive impact on environmental attitude. As a result, better goodness of fit ($\chi^2=27.513$, d.f=5, p=.000, GFI=.910, NFI=.857, CFI=.873, RMR=.154) could be obtained although research model was not optimized and the difference verification results between χ^2 in correction model and χ^2 in original model was found to have a statistically significant improvement effect (correction model analysis results are not presented).

5. Discussion and Limitations

This study aimed to understand if the corporate eco-friendly marketings which were carried out as marketing management philosophy focusing on corporate responsibility for preservation and protection of environment and nature and consumer's environmental concern are effective. In particular, as pointed out by Lee et al. (2013), this study noted that the percentage of consumers who showed purchase intention of eco-friendly products with positive perception of eco-friendliness reached 40% of the entire consumers, but among them, the percentage of consumers who actually bought was nothing but 4%. To this end, this

study first, classified environmental perception as three sub-factors of environmental concern, environmental knowledge, and environmental attitude and identified how these factors had an impact on using intention of eco-friendly products. This study also established and verified structured research model and hypothesis to see how two factors such as ethical consumer behavior that is expected to react as positive factor between eco-friendly perception and using intention and price-sensitivity that acts importantly as individualistic value and may be a psychological or economic line of resistance despite ecofriendly perception play a role in this relationship.

Our research findings and suggestions are as follows:

First, each factor of environmental perception had a positive impact on ethical consumer behavior. In other words, environmental concern, environmental knowledge, and environmental attitude toward eco-friendly knowledge and eco-friendliness had an impact on consumers by making them involved in ethical consumption behavior. In particular, on ethical consumption behavior, environmental knowledge and environmental concern were both a very important factor. Such a result suggests that to increase the using intention of eco-friendly products, an enterprise should provide an opportunity to allow consumers to get more information on and take more interest in eco-friendly marketing and also include eco-friendly marketing contents.

Second, each factor of environmental perception played a role of reducing price sensitivity. In other words, such a factor reduces the price sensitivity that may become a psychological and economic line of resistance and the possibility to use more eco-friendly products can be expected. In particular, environmental knowledge is a very important factor and thus it suggests that both an enterprise and government need to appeal the meaning of environmental protection more actively through various promotion activities and publicity in the future.

Third, ethical consumer behavior has a positive impact on using intention of eco-friendly products and price sensitivity has a negative impact on using intention of eco-friendly products. This suggests that the question of high pricing should be solved to promote the consumption of eco-friendly products while establishing a strategy to increase ethical consumer behavior in consumers. Therefore, an enterprise will be able to promote the consumption of eco-friendly products by making various cost-saving efforts related to the production of eco-friendly products.

Fourth, as a mediating-effect verification result, ethical consumer behavior excluding eco-friendly knowledge partially mediated the relationship between two environmental-perception factors and using intention of eco-friendly products and price sensitivity partially mediated the relationship between environmental concern or environmental knowledge and using intention and fully mediated the relationship between environmental attitude and eco-friendly products. Such a result means that previous

knowledge on eco-friendliness is very important for eco-friendly products and even consumers who have a positive attitude toward eco-friendliness lower their using intention if facing the barrier of price. Therefore, as presented in the above, various knowledge and information related to eco-friendliness and the necessity of environmental protection should be provided with consumers through various methods and more consumers should be encouraged to use eco-friendly products through cost-saving efforts.

However, this study has a few limitations although having a few of positive strategic implications as shown in the above. Thus, further researchers need to complement this. First, with insufficient number of respondents for structural equation analysis, additional questionnaires should be conducted to obtain more various implications in further researches. Second, price sensitivity, which was based on reliability and convergent validity, appears less than 0.7 in concept reliability. This is expected to be solved if increasing the number of respondents as pointed out in the above. Third, that goodness of fit is low as a result of path analysis means that this study is not optimized. Therefore, more sophisticated model should be developed or verified by inputting additional variables which are expected to have an impact on using intention of eco-friendly products.

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