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Consumer Values and Green Consumption: Implications for Marketing Strategy and Environmental Policy

Hyun Ju Lee*
Seong-Yeon Park**

The objective of this study is to find the effects of consumer values on eco-friendly buying behavior. This study examines environmental attitudes and involvement as moderating variables to explain eco-friendly buying behavior of consumers. Hypotheses were developed based on Focus Group Interviews, Depth Interviews, and literature reviews. To test such hypotheses, questionnaires were distributed and collected among female adults aged 18 or above, and who are either office workers or housewives.

The analysis results show that personal values, sociocultural values, and values related to eco-friendly products affect consumers in their eco-friendly buying behavior. Among those values, concern about safety and health, eco-friendly culture and trend, willingness to pay price premiums and functional effects of eco-friendly products have significant effects on eco-friendly buying behavior. Reflecting these results, business marketers must appeal to consumers with more focus on safety and health, perceived consumer effectiveness, self-monitoring, eco-friendly culture and trend, media exposure, willingness to pay price premiums, design excellence and functional effects, to implement marketing communication strategies accordingly.

Key words: Consumer Value, Environmental Attitude, Environmental Involvement, Perceived Consumer Effectiveness, Eco-Friendly Buying Behavior

I. Introduction

The global attention is focused on environmental problems with the acceleration of indiscreet

consumption of resources and environmental disruption in the name of growth and development. The rapid yet negative environmental and climate changes are on the verge of directly affecting the humanity. The current status of environmental

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problems is so severe that it can threaten the survival of mankind, and the people from all over the world seem to have felt the need to solve such problems.

According to PR newswire in 2015, a greater number of consumers expressed their willingness to live more environment-friendly compared to the previous year. However, 60% of consumers who are willing to purchase green products mentioned that they would purchase green products only if their price is cheaper than that of the regular products. 71% of Americans responded that they consider the environment when they purchase goods, and 90% responded that they are aware of their responsibility for caring the environment. Yet, only 30% of the respondents actually purchased green products and 42% discarded goods in an environment-friendly way. This might reflect that government's good environment policies and investment do not necessarily result in efficiency as long as consumers, who are the subject of the actions, do not practice such behaviors.

Why does this happen? Why do consumers respond that they would preferentially consume eco-friendly products but do not put it into action? This study begins from this question. The perception of consumers toward eco-friendly products is noteworthy for firms as it may be the core in creating new markets and for governments as it may promote participation from the public. Whereas attitudes and morality of both firms and governments regarding eco-

friendliness remained rather passive and conventional in the past, consolidation of competitive power through eco-friendly policies and investment is now highly emphasized these days.

Only firms and governments that preferentially secure technology development and production that is environment-friendly can achieve sustained growth and development. To this end, firms and governments must understand the value of eco-friendly consumption of consumers. Moreover, they must accept the change in consumer perception and focus on its psychological phenomenon in order to reflect it on their corporate activities and environment policies.

However, many studies on eco-friendly buying behavior mostly deal with the demographic characteristics of consumers (Schultz & Oskamp, 1996; Vining & Ebreo, 1990), or fragmentary psychological features of consumers (Soyez, 2012; Qader & Zainuddin, 2011), with insufficient research on what psychological features of consumers actually lead to eco-friendly consumption. Furthermore, research on the values that consumers consider important or on the social values in eco-friendly buying behavior is close to nonexistent.

Therefore, the objective of this study is to find how consumer value affects eco-friendly buying behavior. Moreover, this study will also examine environmental attitudes and involvement as moderating variables to explain eco-friendly buying behavior of consumers.

II. Literature review

2.1 Research on personal values of consumers

2.1.1 Concern about safety and health

Concern about safety and health indicates the level of concern of consumers in the quality of life and health issues for humans and non-humans (Qader & Zainuddin, 2011). Many people agree that the environment is important and know how to act in order to preserve it, but most of them cannot actually put their thoughts into practice because they must give up 'something' important for them (Schultz, 2001). In other words, the more value an individual places in what he or she must give up for eco-friendly behavior, the more it will be difficult to practice such behavior.

Among many variables affecting attitudes toward the environment, there are consumer concerns and anxiety about the environment changing for the worse (Dunlap & Scarce, 1991). Wall (1995) views concern about safety and health as the most powerful predictor for attitude and behavior. Rundmo (1999) studied how consumer perception on risk affects attitude toward health and environmental concern and behavior. The results show that attitude toward health is associated with health related behaviors, and that environmental concern

affects environmental behavior.

2.1.2 Perceived consumer effectiveness

Perceived consumer effectiveness is a highly useful psychological variable that measures beliefs in the outcomes of individual behaviors. Moreover, perceived consumer effectiveness has been studied as a preceding variable of eco-friendly behavior, and is known to have the greatest explanatory power, while also serving as a variable that explains how it affects consumer behavior (Roberts, 1996; Webster & Frederick, 1975; Straughan & Roberts, 1999). This suggests that consumers who have high perceived consumer effectiveness have more eco-friendly attitudes and are more likely to do eco-friendly behavior than those who do not.

2.1.3 Self-monitoring

The outcomes of behaviors related to the environment affect not only the main agents themselves but also the entire society, and thus it is likely that they are determined by the surrounding circumstances or influence of others rather than one's own beliefs. It is necessary to pay attention to self-monitoring as an individual feature affected by such external situation.

People with high self-monitoring control their behaviors based on contextual information rather than internal information they have, and thus

in assessing social appropriacy of their behaviors, they consider their relationship with others as well as information on surrounding circumstances to act accordingly. On the other hand, people with low self-monitoring make decisions based on only internal information they have, without considering other clues (Snyder, 1979).

Considering the aforementioned attributes of self-monitoring, it can be explained that self-monitoring affects various consumer behaviors and changes the unique behaviors of individuals under the influence of others and external circumstances (Sherman & Fazio, 1983).

2.2 Research on sociocultural values of consumers

2.2.1 Eco-friendly culture and trend

Eco-friendly buying behavior is simultaneously affected by not only personal values and psychological factors of consumers but also social values and other related factors.

Consumer culture and trend are concepts used to refer to the constant tendency of consumer behaviors or related attitudes (Kim, 2010). If many people are engaged in the same behavior, we call it a trend. Consumer culture is a subdomain of culture, indicating not only consumption-related behaviors but also knowledge, attitudes, beliefs, values and norms that are internalized by consumers and dominate consumer life (Heo et al., 2006). Peter & Olson (2008)

argue that consumer culture and trend affect each other.

Consumer culture and trend have great significance in that they show the consumer trend of a society as well as what kind of consumption is valued by consumers. However, none of the previous studies on eco-friendly buying behavior analyzed the effects of eco-friendly consumer culture and trend on such behavior.

2.2.2 Media exposure

Recently, concern about eco-friendly consumption is increasing worldwide. Yet consumers will only show concern once they perceive the importance of eco-friendly consumption and decide that it is an important piece of information for them. Then how can the importance of eco-friendly consumption be conveyed to consumers? One of the answers could be that it should be mediated by all kinds of media.

As environmental pollution is recently becoming more severe, many broadcasting programs such as documentaries about the environment or related commercials are being aired. Broadcasting programs or commercials about eco-friendly consumption and environmental problems, as suggested by Lowe & Morrison (1984), are highly emotional and moral, conveying powerful cultural symbols.

2.3 Research on values related to eco-friendly products

2.3.1 Willingness to pay price premiums for eco-friendly products

One of the attributes of eco-friendly products is that they are generally more expensive. For consumers, having to pay a price premium in buying eco-friendly products may discourage their buying decisions. Price premium is “price difference that can be accepted by consumers when purchasing a product compared to other products of the same kind” (Kim, 2011).

Many previous studies on eco-friendliness have been investigating how consumers accept the fact that eco-friendly products are more expensive than ordinary products and are willing to pay the price (Harris & Freeman, 2008; Gam et al. 2010). Guagnano (2001) reveals that 86% of 367 consumers in the U.S. are willing to pay the price premium for kitchen products made of recycled materials. Maguire et al. (2004) analyzed that consumers are willing to pay at least 22% more price premium for organic foods instead of regular baby foods.

2.3.2 Design excellence and functional effects of eco-friendly products

Like ordinary products, consumer perception of quality may be an important factor in buying decision for eco-friendly products as

well. Perceived quality including design and functional effects refers to the level of general quality of specific products perceived by consumers. Garvin (1987) defines perceived quality as subjective quality felt by individual consumers in terms of indirect assessment through brand, product image and advertising. Studies on perception of product quality had initially focused on assessment of product attributes, but later, many studies explained various aspects of buying decision and brand response. Accordingly, perceived quality includes not only just functional attributes but also judgment made by consumers about the overall superiority of the product formed in their minds (Zeithaml, 1988).

2.4 Research on environmental attitudes

Many researchers use environmental concerns and environmental attitudes as synonyms (Van Liere & Dunlap, 1981), but also as different meanings (Stern & Dietz, 1994; Schultz et al., 2004). Environmental concern refers to a more general attitude, while environmental attitude is used as a more psychological term (Bamberg, 2003). However, to define environmental attitudes linked to eco-friendly behavior, the simple perspective of like/dislike or positive/negative is not enough for measuring the current environmental attitudes.

Therefore, it is necessary to examine the ‘New Ecological Paradigm (NEP)’, which is a

concept widely used to measure environmental attitudes. The NEP was developed to more accurately describe beliefs about the environment (Dunlap & Van Liere, 1978; Dunlap et al., 2000). Accordingly, this study defines environmental attitudes as an individual's perception on the environmental situation currently faced by the human race, and uses the NEP to measure them.

2.5 Research on environmental involvement

Environmental involvement refers to an emotion related to belief about environmental protection (Schultz et al., 2004). Grunert (1993) reveals that people with high emotional involvement in the environment tend to purchase organic products more often. In addition, Bang et al. (2000) prove that people more emotionally involved with environmental topics are willing to pay more in renewable energy than others. Applying this to eco-friendly consumption, it can be predicted that emotional involvement is an important determinant for eco-friendly buying behavior such as purchasing of organic products (Grunert 1993). Based on a study conducted among teenagers in Hong Kong, Lee (2011) also suggests that environmental involvement acts as a predictor that affects eco-friendly buying behavior.

However, research on environmental involvement is close to nonexistent and there has been a lack of consensus on which role it actually

plays. Therefore, this study aims to examine how environmental attitudes and involvement moderate eco-friendly buying behavior that is influenced by personal values, sociocultural values, and values related to eco-friendly products.

2.6 Research on eco-friendly buying behavior

Previous studies on eco-friendly consumers can be classified into demographic, sociological and psychological characteristics. First, studies that examine eco-friendly consumers with demographic characteristics trace back to the early 1970s. Anderson & Cunningham (1972) are pioneers of research on consumers with social responsibility. Their research findings suggest that consumers with social responsibility are women with a high level of social consciousness in early middle age, who are well educated and have a social status above average.

However, mixed results began to appear as research proceeded. Reizenstein et al. (1974) propose that only men are willing to pay for the costs necessary in reducing air pollution. Balderjahn (1988) reports that the relationship between environmentally conscious attitude and the use of products that do not cause environmental pollution appears to be stronger in men than women.

Studies conducted after the 2000s examine consumers in the U.S., and report that eco-friendly consumers are generally young women

that are relatively wealthy and well educated (Thøgersen & Olander, 2006; Zelezny, Chua, & Aldrich, 2000). However, some studies failed to prove the significant correlation despite the assumption that men may be more eco-friendly since they are more political than women and tend to participate more in community activities (Gamba and Oskamp 1994; Valle Reis, Menezes and Rebelo 2004). As such, studies on the relationship between gender and eco-friendly consumers provide inconsistent results.

Studies on the relationship between age and eco-friendly behavior also show conflicting results. Some studies revealed that there is no significant correlation between the two variables (Oskamp, Harrington, Edward, Sherwood, Okuda and Swanson 1991; Valle et al. 2004), while others argue that older age leads to more eco-friendly behavior (Lansana 1992; Ewert and Baker 2001). Furthermore, studies on the relevance between education level and eco-friendly behavior are divided into studies showing no significant correlation between the two variables (Gamba and Oskamp 1994; Valle et al. 2004) and studies showing positive correlation (Jacobs et al. 1984; Owens, Dickerson and Macintosh 2000).

Considering these studies, there is a need for extensive research on personal values of consumers within a sociocultural framework, away from the basic research on demographic characteristics with regard to eco-friendly buying behavior. However, there is no research that applied an

integrated and extensive framework regarding eco-friendly buying behavior. Therefore, this study will raise questions in this perspective and verify them through quantitative research based on the qualitative research by Lee & Park (2013).

III. Research model and hypotheses

3.1 Research model

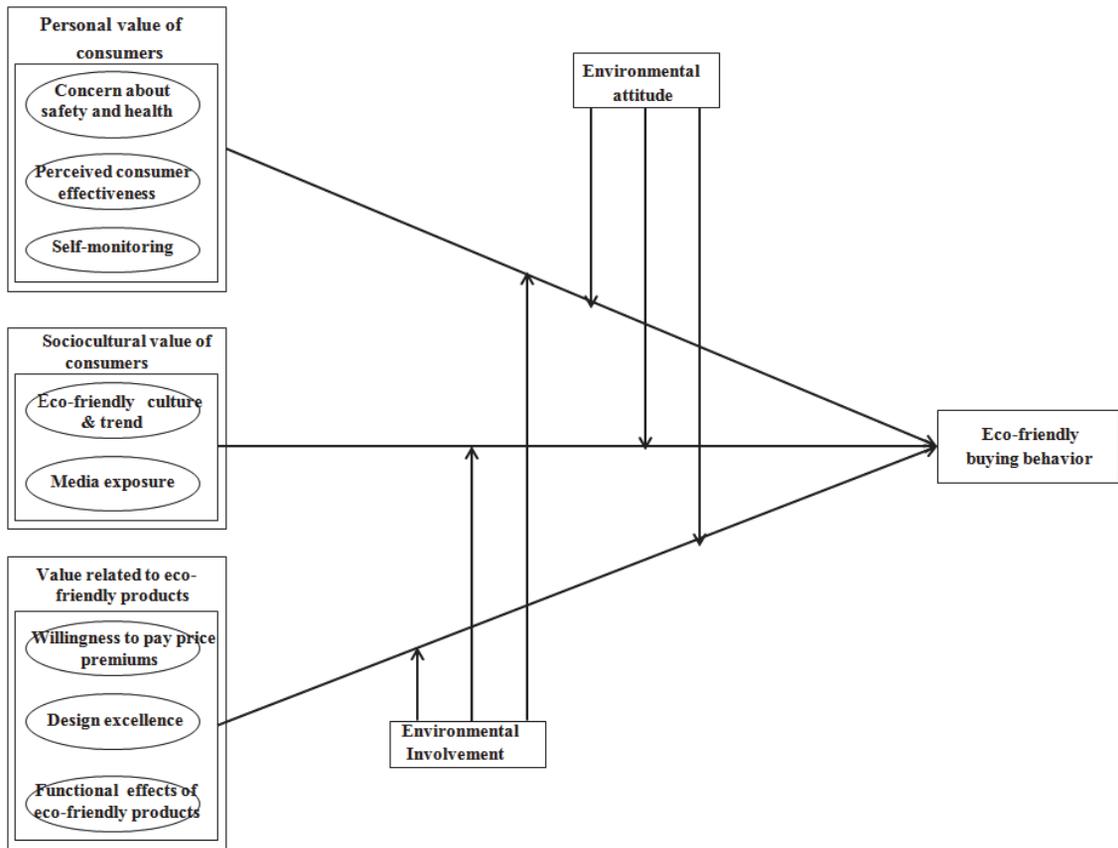
This study examines how personal values, sociocultural values and values related to eco-friendly products affect eco-friendly buying behavior, and empirically clarifies what moderating effects environmental attitudes and involvement have. To achieve the goal of this study, a research model shown in (Figure 1) was developed based on various grounds obtained from literature review, focusing on the concept deduced from qualitative research by Lee & Park (2013).

3.2 Research hypotheses

3.2.1 Effects of personal values of consumers (concern about safety and health, perceived consumer effectiveness, self-monitoring) on eco-friendly buying behavior

Among personal values of consumers affecting

<Figure 1> Research model



eco-friendly buying behavior, concern about safety and health is defined as consumer's concern about the environment for humans and non-humans, quality of life, and health-related issues (Qader & Zainuddin, 2011). Previous studies on concern about health suggest that such concern motivates consumers to purchase organic products (Granqvist & Biel, 2001; Lockie et al., 2002), and enables prediction about attitudes, intentions and purchases of organic products (Magnusson et al., 2001, 2003).

Among personal values of consumers affecting

eco-friendly buying behavior, perceived consumer effectiveness has been studied by many researchers, which was measured by environmental concern (Kinneer et al., 1974) or individual efforts to effectively reduce environmental pollution, or as a factor of individual personality that predicts environmental consumer responsibility patterns (Balderjahn, 1988). Perceived consumer effectiveness of consumers has a positive effect on forming environmentally conscious behavior (Berger & Corbin, 1992; Weiner & Doescher, 1991). Roberts (1995) argues that

perceived consumer effectiveness is the most powerful predictor of eco-friendly behavior.

Among personal values affecting eco-friendly buying behavior, self-monitoring is defined as the disposition to observe, control and manage oneself according to contextual clues in order to obtain social acknowledgement of one's expressive behavior (Snyder, 1974). In association with eco-friendly buying behavior, consumers with high self-monitoring are more likely to conduct eco-friendly buying behavior considering whether their behavior is socially acceptable or whether others think highly of such behavior, whereas those with low self-monitoring are less likely to conduct eco-friendly buying behavior as they make decisions based on their own judgment and internal information.

Therefore, the following hypotheses can be stated based on previous studies.

Hypothesis 1. Personal values of consumers will have a positive effect on eco-friendly buying behavior.

Hypothesis 1-1. Concern of consumers about safety and health will have a positive effect on eco-friendly buying behavior.

Hypothesis 1-2. Perceived consumer effectiveness will have a positive effect on eco-friendly buying behavior.

Hypothesis 1-3. Self-monitoring of consumers will have a positive effect on eco-friendly buying behavior.

3.2.2 Effects of sociocultural values (eco-friendly culture and trend, media influence) on eco-friendly buying behavior

Among sociocultural values of consumers affecting eco-friendly buying behavior, eco-friendly culture and trend refer to a constant tendency of consumer behavior or related attitude (Kim, 2011). Consumer culture as a subdomain of culture can be defined as not only consumption-related behaviors but also knowledge, attitudes, beliefs, values and norms that are internalized by consumers and dominate consumer life (Heo et al., 2006). In association with eco-friendly buying behavior, it can be assumed that culture and trend such as socially accepted beliefs, values or norms of eco-friendly culture may affect eco-friendly buying behavior of consumers.

Why does eco-friendly consumption not reach individual consumers despite the fact that eco-friendly consumption is socially widespread? One of the reasons why information related to eco-friendly consumption is not delivered to consumers is a lack of media influence. Media changes consumer behaviors and beliefs (DeFleur & Dennis, 1998). If consumers are influenced by media such as broadcasting programs, documentaries or advertisements related to eco-friendly consumption, this will lead to positive effects on eco-friendly buying behavior.

Therefore, the following hypotheses can be

stated based on previous studies.

Hypothesis 2. Sociocultural values will have a positive effect on eco-friendly buying behavior.

Hypothesis 2-1. Eco-friendly culture and trend will have a positive effect on eco-friendly buying behavior.

Hypothesis 2-2. Media exposure will have a positive effect on eco-friendly buying behavior.

3.2.3 Effects of values related to eco-friendly products (willingness to pay price premiums, design excellence of eco-friendly products, functional effects of eco-friendly products) on eco-friendly buying behavior

Values related to eco-friendly products affecting eco-friendly buying behavior include willingness to pay price premiums for eco-friendly products. Eco-friendly products generally require price premiums and are thus more expensive than ordinary products.

Along with the willingness to pay price premiums for eco-friendly products, consumer perception of quality including design excellence and functional effects of eco-friendly products affects eco-friendly buying decisions. However, there is a lack of systematic design approach, merely providing fragmentary cases (Son et al., 2007). Perceived quality including design and functional effects refers to the level of

general quality of specific products perceived by consumers. Garvin (1987) defines perceived quality as subjective quality felt by individual consumers in terms of indirect assessment through brand, product image and advertising. Similarly, Song (2011) states that consumer brand purchase of eco-friendly design products is affected when they are buying products that directly touch the skin. Lee & Park (2013) conducted a qualitative research on consumers, and the results showed that consumers prefer designs that induce emotional needs even when purchasing eco-friendly products, and are skeptical about the abstract and invisible aspects of eco-friendly products, such as whether the products properly display their functional effects.

Therefore, the following hypotheses can be stated based on previous studies.

Hypothesis 3. Values related to eco-friendly products will have a positive effect on eco-friendly buying behavior.

Hypothesis 3-1. Willingness to pay price premiums will have a positive effect on eco-friendly buying behavior.

Hypothesis 3-2. Design excellence of eco-friendly products will have a positive effect on eco-friendly buying behavior.

Hypothesis 3-3. Functional effects of eco-friendly products will have a positive effect on eco-friendly buying behavior.

3.2.4 Moderating role of environmental attitudes and involvement regarding the effects of personal values, sociocultural values and values related to eco-friendly products of consumers on eco-friendly buying behavior

Consumers would not necessarily conduct eco-friendly buying behavior just because they have positive and friendly personal values toward the environment. This study considered environmental attitudes and involvement, as moderating variables and reflected the NEP to define environmental attitudes. Since previous studies generally define environmental attitudes as like/dislike or positive/negative, the NEP is used to determine environmental attitudes in order to figure out more specific consumer attitudes toward the environment.

Environmental involvement refers to an emotion related to belief about environmental protection (Schultz et al., 2004). Bang (2000) proves that people who are more emotionally involved with environmental topics are willing to pay more in using renewable energy than others. Lee (2011) also proves in the study of adolescents in Hong Kong that involvement in local environment is a predictor that affects eco-friendly buying behavior. However, research on environmental involvement is nearly nonexistent, and considering the multiple variables affecting eco-friendly buying behavior, there seems to

be a lack of consensus on what role environmental involvement plays in this relationship. Accordingly, this study proposes that environmental attitudes and involvement may play a moderating role in the relationship in which personal values, sociocultural values and values related to eco-friendly products affect eco-friendly buying behavior.

Therefore, the following hypotheses can be stated based on previous studies.

Hypothesis 4. Consumers' personal values will more positively influence eco-friendly buying behavior as consumers' environmental attitude becomes stronger.

Hypothesis 4-1. The effects of consumer concern about safety and health on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 4-2. The effects of perceived consumer effectiveness on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 4-3. The effects of self-monitoring of consumers on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 5. Sociocultural values will more positively influence eco-friendly buying behavior as consumers' environmental attitude becomes stronger.

Hypothesis 5-1. The effects of eco-friendly

culture and trend on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 5-2. The effects of media exposure on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 6. Values related to eco-friendly products will more positively influence eco-friendly buying behavior as consumers' environmental attitude becomes stronger.

Hypothesis 6-1. The effects of willingness to pay price premiums on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 6-2. The effects of design excellence of eco-friendly products on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 6-3. The effects of functional effects of eco-friendly products on eco-friendly buying behavior will increase if environmental attitudes are stronger.

Hypothesis 7. Personal values of consumers will more positively influence eco-friendly buying behavior as environmental involvement becomes stronger.

Hypothesis 7-1. The effects of consumer concern about safety and health on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 7-2. The effects of perceived

consumer effectiveness on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 7-3. The effects of self-monitoring of consumers on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 8. Sociocultural values will more positively influence eco-friendly buying behavior as environmental involvement becomes stronger.

Hypothesis 8-1. The effects of eco-friendly culture and trend on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 8-2. The effects of media exposure on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 9. Values related to eco-friendly products will more positively influence eco-friendly buying behavior as environmental involvement becomes stronger.

Hypothesis 9-1. The effects of willingness to pay price premiums on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 9-2. The effects of design excellence of eco-friendly products on eco-friendly buying behavior will increase if environmental involvement is higher.

Hypothesis 9-3. The effects of functional effects of eco-friendly products on eco-friendly

buying behavior will increase if environmental involvement is higher.

3.3 Sampling procedure and data collection

For this study, a total of 270 questionnaires were distributed and 200 questionnaires were collected among female adults aged 18 or above living in large metropolitan areas, and who are either office workers or housewives. 70 questionnaires which were likely to bring confusion to the results were excluded, because the participants were sponsoring environmental groups or had children with skin diseases like atopy, as well as those with insincere responses or no experience of buying eco-friendly products.

This study conducts a statistical analysis based on the 200 questionnaires of survey data ultimately collected. SPSS 18.0 was used for statistical analysis of collected data. Reliability and validity of variables were tested, and a multiple regression analyses were conducted to test the hypotheses.

Regarding age, 67 respondents (33.5%) were 36-40 years with the highest percentage, followed by 65 (32.5%) aged 31-35. For marital status, 147 respondents (73.5%) were married and 53 (26.5%) were single. 67 respondents (33.5%) had two children with the highest percentage, followed by 57(28.5%) with one child.

For academic background, 137 respondents (68.5%) were college graduates, and 54 (27.0%)

had a master's degree or higher. For occupation, 88 respondents (44.0%) were housewives, and 52 (26.0%) were office workers.

IV. Data analysis

Since this study formed sub-factors of each variable based on previous studies and qualitative research, an exploratory factor analysis was conducted to test the validity of variables. SPSS 18.0 was used for the analysis, and as a result of conducting varimax rotation for the factor analysis, the minimum value of factor loading was 0.5. In general, if factor loading is 0.3 or higher, it is highly correlated with the relevant factor; thus, it can be seen that the survey items and factors of this study are highly correlated (Seong, 2011).

As a result of reliability testing of personal values, sociocultural values and values related to eco-friendly products, the Cronbach's α coefficients of all variables were 0.7 or higher as proposed by Nunnally (1978), thereby securing reliability of the variables (Kim, 2007). A factor analysis was conducted to test the validity of the measurement tools, and the result showed that personal values, sociocultural values and values related to eco-friendly products are classified into 8 factors as suggested by research model(Figure 1).

The results of reliability and validity analysis

of environmental attitudes, involvement and eco-friendly buying behavior showed that the Cronbach's α coefficients of all variables were 0.9 or higher, thereby securing reliability. The result of factor analysis verified that factors are classified as predicted.

In this study, a hierarchical regression analysis was conducted using SPSS 18.0 to test the hypotheses. Independent variables (concern about safety and health, perceived consumer effectiveness, self-monitoring, eco-friendly culture and trend, media influence, willingness to pay price premiums, design excellence of eco-friendly products, functional effects of eco-friendly products) were put in Level 1, moderating variables (environmental attitudes, environmental involvement) were put in Level 2, and an interaction term was additionally put in Level 3 to test the interaction effect between independent and moderating variables to conduct

a regression analysis on eco-friendly buying behavior. As suggested by Aiken & West (1991), in this study, an interaction term was created after mean centering the variables to reduce multicollinearity among variables, and estimated the regression equation of dependent variables.

The result of correlation analysis verified that there is generally a statistically significant correlation among variables.

4.1 Direct effects of personal values, sociocultural values, and values related to eco-friendly products on eco-friendly buying behavior

The results show that concern about safety and health ($\beta = .170, p < 0.05$), eco-friendly culture and trend ($\beta = .116, p < 0.1$), willingness to pay price premiums ($\beta = .612, p < 0.001$), functional effects of eco-friendly products ($\beta =$

<Table 1> Correlation analysis of key variables

	1	2	3	4	5	6	7	8	9	10	11
1. Safety and health	1										
2. Effectiveness	.377**	1									
3. Monitoring	.291**	.478**	1								
4. Culture and trend	.359**	.478**	.412**	1							
5. Media	.266**	.529**	.461**	.561**	1						
6. Price	.426**	.447**	.351**	.508**	.366**	1					
7. Design	.120	.017	.124	.232**	.167*	.100	1				
8. Function	.380**	.379**	.308**	.337**	.399**	.321**	.102	1			
9. Attitude	.329**	.499**	.361**	.317**	.494**	.267**	-.041	.408**	1		
10. Involvement	.351**	.526**	.368**	.405**	.461**	.480**	.064	.253**	.309**	1	
11. Purchase	.497**	.366**	.342**	.510**	.353**	.756**	.194**	.383**	.239**	.565**	1

* $p < 0.05$, ** $p < 0.01$

<Table 2> Validity & reliability analysis of personal values, sociocultural values related to eco-friendly products

Variables	Common Factor							
	Factor 1	Factor 2	Factor 3	Factor 4	Factor 5	Factor 6	Factor 7	Factor 8
Self-monitoring 1	.736	.207	.193	.250	-.006	.075	.115	.056
Self-monitoring 2	.850	.185	.043	-.037	.019	.032	.125	.138
Self-monitoring 3	.817	.150	.109	.007	.212	.203	-.045	-.027
Self-monitoring 4	.627	.061	.255	.165	.176	.008	-.041	.105
Perceived Consumer Effectiveness 1	.147	.660	.107	.223	.032	.230	-.168	.232
Perceived Consumer Effectiveness 2	.220	.844	.124	.029	.006	.041	-.077	.150
Perceived Consumer Effectiveness 3	.181	.641	.190	.109	.347	.052	.252	.181
Perceived Consumer Effectiveness 4	.152	.725	.279	.133	.254	.114	-.019	-.162
Media exposure 1	.201	.268	.737	.173	.250	.173	.040	.117
Media exposure 2	.136	.276	.815	.174	.119	.194	-.026	.134
Media exposure 3	.221	.071	.739	-.116	-.039	.061	.157	.193
Concern about Safety and Health 1	-.024	-.059	.083	.711	.341	.075	.176	-.229
Concern about Safety and Health 2	.134	.208	.064	.796	.148	.143	.064	.149
Concern about Safety and Health 3	.198	.216	.033	.728	-.004	.169	-.101	.272
Willingness to Pay Price Premiums 1	.155	.209	.088	.211	.844	.057	.063	.098
Willingness to Pay Price Premiums 2	.147	.116	.112	.130	.816	.182	-.044	.264
Functional Effects 1	.128	.203	.188	.185	.025	.840	.052	.010
Functional Effects 2	.100	.066	.123	.122	.193	.863	.037	.109
Design Excellence 1	.077	-.027	.048	-.005	.120	-.042	.863	.111
Design Excellence 2	.024	-.044	.072	.090	-.076	.110	.854	.042
Eco-friendly Culture and Trend 1	.097	.187	.277	.064	.217	.065	.166	.718
Eco-friendly Culture and Trend 2	.220	.136	.316	.225	.351	.123	.129	.605
Cronbach's α	0.823	0.816	0.811	0.701	0.872	0.800	0.729	0.728

.097, $p < 0.1$) have significant effects on eco-friendly buying behavior.

The result on personal values of consumers, however, seemed questionable as there may be multicollinearity among independent variables because too many independent variables of personal values were included. To solve this problem, the tolerance and VIF (Variance Inflation Factor) among independent variables

were compared. Higher multicollinearity indicated lower tolerance (maximum value 1) and higher VIF (maximum value 10) (Kim, 2007). The result showed that tolerance was higher than 0.305 and VIF was lower than 4.019, thereby showing no multicollinearity issue among independent variables.

Hypothesis 1 predicted that personal values of consumers have positive effects on eco-

<Table 3> Validity & reliability analysis of environmental attitudes, involvement and eco-friendly buying behavior

Variables	Common Factor		
	Factor 1	Factor 2	Factor 3
Environmental Attitude 1	.839	.147	.119
Environmental Attitude 2	.880	.069	.136
Environmental Attitude 3	.908	.077	.106
Environmental Attitude 4	.857	.065	.073
Eco-friendly buying behavior 1	.069	.804	.361
Eco-friendly buying behavior 2	.113	.801	.163
Eco-friendly buying behavior 3	.120	.878	.263
Eco-friendly buying behavior 4	.086	.877	.231
Environmental Involvement 1	.362	.191	.741
Environmental Involvement 2	.119	.240	.865
Environmental Involvement 3	.134	.326	.870
Environmental Involvement 4	-.021	.275	.859
Cronbach's α	.907	.906	.908

friendly buying behavior. Concern about safety and health ($\beta=.170$, $p < 0.05$) turned out to have significant positive effects on eco-friendly buying behavior, thereby supporting Hypothesis 1-1. This seems to reflect true feelings of consumers, as they now prioritize safety and health as personal values that affect their lives most directly and greatly. Also, this is a clear reflection of how consumers doubt and worry about safety of food and its effects on their health. It can be assumed that this result is due to the fact that people with high perceived consumer effectiveness think that they are already making enough contributions to the society.

Hypothesis 2 predicted that sociocultural values have positive effects on eco-friendly buying behavior. More specifically, eco-friendly culture

and trend ($\beta=.116$, $p < 0.1$) had significant positive effects under $p < 0.1$, thereby marginally supporting Hypothesis 2-1. Media exposure did not show significant effects on eco-friendly buying behavior, which may be due to the fact that consumers do not feel the influence of conventional media such as documentaries or broadcasting programs due to the changes in the media environment into SNS (Social Networking Service).

Hypothesis 3 predicted that values related to eco-friendly products have positive effects on eco-friendly buying behavior. More specifically, willingness to pay price premiums ($\beta=.612$, $p < 0.001$) and functional effects of eco-friendly products ($\beta=.097$, $p < 0.1$) had significant positive effects under $p < 0.1$, thereby marginally supporting Hypothesis 3-1 and 3-3.

The results above suggest that higher concern about safety and health, higher effects of eco-friendly culture and trend, higher willingness to pay price premiums for eco-friendly products, and higher perception on functional effects of eco-friendly products indicate higher possibility of eco-friendly buying behavior.

4.2 Moderating effects of environmental attitudes and involvement regarding the effects of personal values, sociocultural values and values related to eco-friendly products on eco-friendly buying behavior

To examine whether there are moderating effects of environmental attitudes and involvement regarding the effects of personal values, sociocultural values and values related to eco-friendly products on eco-friendly buying behavior, a hierarchical regression analysis was conducted as suggested by Aiken & West (1991). Environmental involvement showed significant positive predictability for eco-friendly buying behavior ($\beta = .274$, $p < 0.001$), but environmental attitudes did not significantly predict eco-friendly buying behavior. The form of interaction was examined according to the method proposed by Aiken & West (1991) to examine the specific interaction between eco-friendly buying behavior and environmental attitudes. Hypotheses 4, 5 and 6 predicted that personal values, sociocultural values, and values

related to eco-friendly products will have a positive effect on eco-friendly buying behavior if environmental attitudes are stronger.

As a result, environmental attitudes did show significant moderating effects in the relationship between eco-friendly buying behavior and two of the personal values: concern about safety and health, and self-monitoring. However there was no moderating effect of environmental attitudes regarding sociocultural values and values related to eco-friendly products on eco-friendly buying behavior. The reason why there was no moderating effect of environmental attitudes regarding the effects of personal values, sociocultural values and values related to eco-friendly products on eco-friendly buying behavior may be because environmental attitudes can be extensive and too general about humans and environment. Moreover, since anyone thinks that the current environmental conditions are serious and that the environment must be protected, it seems that environmental attitudes failed to serve as a moderating variable.

The interaction effects between eco-friendly buying behavior and environmental involvement were measured. Hypotheses 7, 8 and 9 predicted that personal values, sociocultural values, and values related to eco-friendly products will have a positive effect on eco-friendly buying behavior if environmental involvement is higher. To more closely examine the patterns of interaction among variables with significant results, this study divides the groups into one

with higher level of environmental attitude and involvement than the average (+1SD) and one with lower level (-1SD).

As for moderating effects of environmental attitudes, significant positive effects on eco-friendly buying behavior ($\beta=.132$, $p < 0.05$) were shown when the interaction term of concern about safety and health, and environmental attitudes was included, thereby supporting Hypothesis 4-1. Groups with high environmental attitudes and low environmental attitudes both showed positive relationship with concern about safety and health; and the group with high environmental attitudes showed more eco-friendly buying behavior compared to the group with low environmental attitude.

Also, when the interaction term of self-monitoring and environmental attitudes was included, there were significant negative effects on eco-friendly buying behavior ($\beta=-.099$, $p < .01$), which was different from the predicted hypothesis, thereby rejecting Hypothesis 4-3. Groups with high environmental attitudes and low environmental attitudes both had positive relationship between self-monitoring and eco-friendly buying behavior, and the group with high environmental attitudes showed more eco-friendly buying behavior.

As for moderating effects of environmental involvement, the authors found that when the interaction term of perceived consumer effectiveness and environmental involvement was included, there were significant negative

effects on eco-friendly buying behavior ($\beta=-.120$, $p < 0.05$), which was different from the predicted hypothesis, thereby rejecting Hypothesis 7-2. It was shown that eco-friendly buying behaviors are more frequently found in the group with high environmental involvement than the group with low environmental involvement; but the relationship between perceived consumer effectiveness and eco-friendly buying behavior in the two groups turned out to be opposite.

On the other hand, when the interaction term of self-monitoring and environmental involvement was included, there were significant positive effects on eco-friendly buying behavior ($\beta=.096$, $p < 0.1$), thereby marginally supporting Hypothesis 7-3. The group with high environmental involvement shows more eco-friendly buying behavior compared to the group with low environmental involvement. However, the two groups showed opposite relationships between self-monitoring and eco-friendly buying behavior. In other words, higher self-monitoring indicates decreased eco-friendly buying behavior in the group with low environmental involvement, whereas higher self-monitoring indicates increased eco-friendly buying behavior in the group with high environmental involvement.

The authors discovered that when the interaction term of eco-friendly culture and trend and environmental involvement was included, there were significant negative effects on eco-friendly buying behavior ($\beta=-.153$, $p < 0.05$), which was different from the predicted

hypothesis, thereby rejecting Hypothesis 8-1. Eco-friendly buying behavior appears more frequently in the group with high environmental involvement if the level of eco-friendly culture and trend was low. Yet, the two groups showed opposite relationships between the effects of eco-friendly culture and trend, and eco-friendly buying behavior. In other words, higher eco-friendly culture and trend indicates increased eco-friendly buying behavior in the group with

low environmental involvement, whereas higher eco-friendly culture and trend indicates decreased eco-friendly buying behavior in the group with high environmental involvement.

It was also found that when the interaction term of media exposure and environmental involvement was included, there were significant positive effects on eco-friendly buying behavior ($\beta = .137, p < 0.1$), thereby marginally supporting Hypothesis 8-2. Eco-friendly buying behaviors

<Table 4> Regression analysis results of eco-friendly buying behavior

Level	Variable	Standardized β	SE	F	R ²
1	Concern about safety and health	.170**	.051	42.127***	.638
	Perceived consumer effectiveness	-.077	.072		
	Self-monitoring	.030	.072		
	Eco-friendly culture and trend	.116*	.064		
	Media influence	-.005	.067		
	Willingness to pay price premiums	.612***	.057		
	Design excellence of eco-friendly products	.074	.041		
	Functional effects of eco-friendly products	.097*	.059		
2	Environmental attitudes	-.029	.071	41.089***	.685
	Environmental involvement	.274***	.057		
3	Safety & health x attitude	.132**	.055	18.313***	.733
	Effectiveness x attitude	-.051	.074		
	Self-monitoring x attitude	-.099*	.062		
	Cultural trend x attitude	.107	.074		
	Media x attitude	-.028	.068		
	Price x attitude	.103	.070		
	Design x attitude	-.024	.062		
	Functional effects x attitude	-.074	.068		
	Safety & health x involvement	.053	.037		
	Effectiveness x involvement	-.120**	.054		
	Self-monitoring x involvement	.096*	.057		
	Cultural trend x involvement	-.153**	.052		
	Media x involvement	.137*	.061		
	Price x involvement	-.050	.045		
	Design x involvement	-.067	.032		
	Functional effects x involvement	-.055	.047		

N=200 *p < 0.1, **p < 0.05, ***p < 0.001

were more frequently found in the group with high environmental involvement than the group with low environmental involvement; but the relationship between media exposure and eco-friendly buying behavior in the two groups turned out to be opposite. In other words, higher media exposure indicates increased eco-friendly buying behavior in the group with low environmental involvement, whereas higher media exposure indicates decreased eco-friendly buying behavior in the group with high environmental involvement.

Resultingly, both environmental attitude and involvement did not show any influence on values related to eco-friendly products, whereas they showed varying influence on personal values and sociocultural values as above. Self-monitoring, especially, showed interaction effect on both environmental attitude and involvement, thereby confirming that it is the most closely related variable.

V. Results

First, as a result of deducting factors affecting eco-friendly buying behavior of consumers through a qualitative analysis, this study came up with personal values (concern about safety and health, perceived consumer effectiveness, self-monitoring), sociocultural values (eco-friendly culture and trend, media exposure), and values

related to eco-friendly products (willingness to pay price premiums, design excellence of eco-friendly products, functional effects of eco-friendly products). This shows that personal values, sociocultural values, and values related to eco-friendly products need to be considered when firms and governments establish environment-related strategies and policies to induce eco-friendly buying behavior from the consumers.

Second, after conducting a quantitative analysis based on the qualitative research results, the authors found that concern about safety and health among personal values of consumers had significant effects on eco-friendly buying behavior. Such results indicate that consumers are more likely to participate in eco-friendly buying behavior if they have greater concern about safety and health. In other words, since they are highly likely to buy eco-friendly products due to their concern about safety and health of themselves and future generations, business marketers and policy makers must consider consumer values like safety and health that are valued by consumers in order to establish efficient strategies and policies regarding eco-friendly buying behavior.

Third, eco-friendly culture and trend among sociocultural values turned out to have significant effects on eco-friendly buying behavior. Recently, culture and trends related to eco-friendliness are widespread in our society. The results of this study also seem to reflect such social context.

Therefore, business marketers and policy makers need to determine the socially prevalent eco-friendly culture and trend and adequately convey them to consumers in order to effectively promote eco-friendly buying behavior. For example, a campaign that can spread eco-friendly culture and trend, or public advertisements on eco-friendly consumption through social media and other channels can speak to consumers and induce them to practice eco-friendly buying behavior.

Fourth, willingness to pay price premiums and functional effects of eco-friendly products among values related to eco-friendly products turned out to have significant effects on eco-friendly buying behavior. Thus, business marketers must effectively convey information to consumers about how eco-friendly products positively affect the environment, and utilize the packages of such products to provide product information. Persons in charge of public policies need to establish policies and revise laws so that the provision of functional descriptions of eco-friendly products becomes mandatory and the strict supervision is maintained to earn trust from the consumers.

Fifth, results suggested that both environmental attitudes and environmental involvement do not have any influence on values related to eco-friendly products, whereas they do show significant positive predictability on personal values and sociocultural values. Among personal values, self-monitoring was one of the variables

that was most closely related to environmental attitudes and involvement. Therefore, when conducting environmental policies, effects of such policies are likely to grow if the message on the public interest is well delivered towards consumers with high self-monitoring.

Sixth, interaction between eco-friendly buying behavior and environmental attitudes was carefully examined. As a result, when the interaction term of concern about safety and health, and environmental attitude was included, there were significant positive effects on eco-friendly buying behavior. On the other hand, when the interaction term of self-monitoring and environmental attitude was included, there were significant negative effects on eco-friendly buying behavior. As for concern about safety and health, the group with high environmental attitude showed more eco-friendly buying behavior compared to the group with low environmental attitude. Moreover, self-monitoring had positive relationship in both the groups with high and low environmental attitudes, and eco-friendly buying behavior occurred more frequently in the group with high environmental attitudes than the group with low environmental attitudes.

Seventh, interaction between eco-friendly buying behavior and environmental involvement was carefully studied. As a result, when the interaction term of self-monitoring and environmental involvement was included, and when the interaction term of media influence

and environmental involvement was included, there were significant positive effects on eco-friendly buying behavior. On the other hand, when the interaction term of perceived consumer effectiveness and environmental involvement was included, and when the interaction term of eco-friendly culture and trend, and environmental involvement was included, there were significant negative effects on eco-friendly buying behavior.

As for media influence, higher media exposure indicates increased eco-friendly buying behavior in the group with low environmental involvement, whereas higher media exposure indicates decreased eco-friendly buying behavior in the group with high environmental involvement. This result may be due to the fact that consumers that are already concerned about the environment and perceive its great importance tend to have much knowledge and purchase experience in eco-friendly products. Thus, when eco-friendly culture and trend are popular throughout the society and many people perceive and practice eco-friendly consumption through the media, they rather consider such behaviors as a cliché as all the others also do them. Accordingly, business marketers and policy makers need to divide consumers into groups and approach each group with unique strategies and policies. For example, new and intensified knowledge of eco-friendly buying behavior should be used when approaching a consumer group who already have eco-friendly mind, yet basic knowledge of eco-friendly buying behavior

should be used when approaching a consumer group with no eco-friendly mind.

As for perceived consumer effectiveness, eco-friendly buying behavior is more frequently found in the group with high environmental involvement than the group with low environmental involvement; but the relationship between perceived consumer effectiveness and eco-friendly buying behavior in the two groups turned out to be opposite. This may be because for consumers that are already concerned about the environment and are aware of its importance, the excessive burden that their efforts can help the environment may have rather resulted in failure to practice eco-friendly buying behavior. In addition, as for eco-friendly culture and trend, eco-friendly buying behaviors are more frequently found in the group with high environmental involvement than the group with low environmental involvement.

This study provides not only the theoretical methodologies for eco-friendly buying behavior, but also qualitative information on values that consumers of both products and policies want, which will support future establishments of environment policies. Therefore, governments and business marketers can improve the efficiency of environment policies and activate eco-friendly buying behavior by stimulating the values that consumers actually want, rather than simply demanding eco-friendly buying behavior which has its limitation in practice. Also, custom-built strategies for each case can

result in reduced cost and increased participation from the consumers.

VI. Discussions

This study holds significance for it comprehensively put together existing studies on eco-friendly consumption which have remained fragmentary. It expands the scope of research on eco-friendly consumption and can become the groundwork for further studies. Based on the results given from this study, more detailed and thorough research can be conducted in the future.

Previous studies on eco-friendly buying behavior only partially substantiated studies on demographic features, self, and knowledge or attitude towards the environment. However, these variables are not enough to explain the eco-friendly buying behavior in reality. Therefore, this study is meaningful in that it offers overall analysis on factors that affect eco-friendly buying behavior, such as consumers' personal values, sociocultural values, and values related to eco-friendly products. Also, this study contributes by empirically researching eco-friendly buying behavior through quantitative research based on results given from qualitative research.

As a result, it is expected that consumers who care about health and safety are more

likely to actively commit eco-friendly buying behavior than consumers who do not. This reflects the need to revise existing strategies which convince the consumers only with moral and altruistic goal. Persuading the consumers that eco-friendly buying behavior is closely related to individual's value and that it is necessary for one's interest and aim would be more successful. Moreover, it was shown that eco-friendly consumers are affected by eco-friendly culture and trend, and they consider the price and functional effects of eco-friendly products. When it comes to conducting marketing communications, therefore, strategies could be based on results from this research on environmental attitude and environmental involvement.

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