

## Selected Antecedents of Consumer Attitude toward a Product in an Eco-Label Context

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### Abstract

Marketers' use of eco-labels—verifying the environmental friendliness of products—has steadily grown. Earlier studies have focused on the direct influence of eco-labels on consumer purchase intention for these products. Findings from that empirical work revealed that eco-labels can have a positive impact on purchase intention. Other investigations disclosed a positive relationship between consumer attitude toward the brand and purchase intention. Based on the foregoing research efforts, the purpose of the present work was to examine selected factors that may influence consumer attitude toward eco-labeled products. The following constructs were discerned to have that impact: recognition/awareness of eco-labels, perceived credibility of the eco-label, and current purchase behavior of eco-labeled products. Environmental attitude, though, was found to be unrelated to consumer attitude toward eco-labeled products. Implications and suggestions for future research are provided.

**Keywords:** eco-labels, environmental attitude, recognition/awareness of eco-labels, perceived credibility, purchase behavior, purchase intention

### 1. Introduction

Consumers have a cornucopia of products from which to choose. Concomitantly, marketers' promotion options—from traditional marketing tools to social media—afford them opportunity to barrage buyers with unremitting blandishments to purchase their offerings. The plethora of products combined with potentially intrusive marketing messages may well conduce to consumer confusion. After all, individuals' ability to process information is constrained (e.g., Tversky, 1972; Tversky & Kahneman, 1992). To facilitate information gathering and shopping, though, efficacious product *labels* can play a prominent role in reducing consumer confusion, as well as differentiating products and marketers (e.g., International Institute for Sustainable Development, 2013; Leek, Szmigin, & Baker, 2015). In addition to providing information, they also can attend to environmental-, social-, economic-, product attribute-, and health-related aspects (Zepeda et al., 2013).

Environmental consciousness and concerns of consumers have increased dramatically over the past sixty years (Gallastegui, 2002). Furthermore, consumers are becoming increasingly aware of the environmental impact of production processes throughout a product's life, which also includes consumption and disposition phases (e.g., Lai, Cheng, & Tang, 2010). Many consumers want to reduce their personal impact on the environment caused by their consumption of products (Thøgersen, 2000). Indeed, “sustainable consumption” has become a juggernaut and watchword for many consumers. Such consumption has been defined as “the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations” (Oslo Roundtable on Sustainable Production and Consumption, 1994).

One way for companies to assist consumers to be sustainable consumers is to provide *eco-labels* on products to verify environmental claims. Eco-labels have been defined “...as synonymous descriptors that refer to

information on a product that provide the environmental impacts associated with the production or use of the product” (Mei, Ling, & Piew, 2012, p. 254). Eco-labels identify products that harm the environment less than other products (Gallastegui, 2002). They do this by proffering information to a customer “...about the environmental quality of products, at the point of purchase, to enable them to choose products that are acceptable from an environmental point of view...[and] promote sustainability without compromising consumer freedom of choice...and reduce search costs” (Thorgersen, Haugaard, & Olsen, 2010, p. 1787).

Eco-labels are not a recent phenomenon. Their use became popular in the 1980s and early 1990s (Horne, 2009). For instance, the German *Blue Angel* and the Scandinavian *Nordic Swan* eco-labels were introduced in this time period and still belong to the best known labels today (OECD, 2008). More recently, eco-labels are again gaining augmented attention owing to such environmental developments as the increased scarcity of various fossil fuels and inimical climate change in general (Horne, 2009). Furthermore, governments are seeking to support and encourage sustainable lifestyles and consumption, thus enhancing consumers’ growing consciousness of their individual impact on the environment; such efforts abet the rising importance of eco-labels (OECD, 2008).

Eco-labeling can facilitate “green marketing,” which is “...an organization’s efforts at designing, promoting, pricing, and distributing products that will not harm the environment” (Singh & Bansal, 2012, p. 273). They foster product differentiation predicated on product characteristics (Orsato, 2009). Furthermore, among other things, they can assist consumers to make informed decisions, promote economic efficiency, pique development of markets, abet an organization’s continuous improvement (International Institute for Sustainable Development, 2013), as well as have a salutary financial impact on supply chains (Brecard et al., 2012; Chkanikova & Lehner, 2015).

As green marketing has evolved, some firms have engaged in “greenwashing”—a firm’s claim that its product is environmentally friendly but in reality it is not (Brecard et al., 2012). As such, Sonderskov and Daugbjerg (2011) aver that three conditions are requisite for green consumerism to be endemic. Individuals (1) possess a high degree of environmental awareness, (2) are inclined to purchase environmentally-friendly products despite their cost, and (3) have adequate information to discern whether a claim of environmental friendliness is valid. Eco-labels have the capacity to satisfy these foregoing requisites.

A pharaonic amount of extant literature (subsequently discussed) has reconnoitered factors that influence consumer *use* of eco-labels, as well as the impact of those variables and eco-labels on *purchase intention* and *actual purchase behavior*. To date, however, minimal published empirical work has examined—in an *eco-labeling context*—antecedents that affect consumers’ *attitude* toward a product that is eco-labeled. Individuals’ attitudes, though, have a major impact on their purchase intention and behavior (e.g., Fishbein & Ajzen, 1975). Given the import of the attitude→behavior intention (and behavior) nexus—as well as the role marketers can play in affecting consumer attitude (e.g., Hawkins & Mothersbaugh, 2012)—the paucity of such research is surprising.

Therefore, the purpose of the present study was to examine selected factors that may be related to consumer attitude toward eco-labeled products. Independent variables of interest include consumers’ (1) recognition/awareness of eco-labels, (2) perceived source credibility of the eco-label, (3) purchase behavior of eco-labeled products, and (4) environmental attitude. Thus, the investigation considered the three major components of consumer behavior vis-à-vis eco-labels: cognitive (recognition/ awareness of eco-labels), affective (perceived source credibility of the eco-label), and conative (purchase behavior of eco-labeled products) (e.g., Hawkins & Mothersbaugh, 2012). Additionally, consumer environmental attitude—a variable found to be important in previous research (subsequently discussed)—was also explored. Although extant empiricism has reconnoitered the impact of the foregoing factors on either product attitude and/or purchase intention, the *concatenation* of these factors has yet to be investigated. Doing so should provide evidence regarding their *collective* influence on consumer product attitude.

## 2. Literature Review

As noted above, consumers are increasingly opting to purchase green products. Doing so is redolent of “sustainable consumption”: “the use of goods and services that respond to basic needs and bring a better quality of life, while minimizing the use of natural resources, toxic materials and emissions of waste and pollutants over the life cycle, so as not to jeopardize the needs of future generations” (Oslo Roundtable on Sustainable Production and Consumption, 1994). Nguyen et al. (2015) propound that it is the antipode of conspicuous consumption.

The cynosure of this study is on four factors that may influence consumer attitude toward an eco-labeled product— (1) consumer recognition/ awareness of eco-labels, (2) perceived source credibility of eco-labels, (3)

prior purchase behavior of eco-labeled products, and (4) overall environmental attitude. Extant work has found that consumers indicate that eco-labels influence their purchase decision (e.g., BMU, 2010; European Commission, 2009).

According to MacKenzie et al. (1986), one's attitude toward an advertisement (i.e., a marketing tool) has a positive, direct influence on his/her attitude toward the brand (i.e., product), which positively influences the intention to buy the particular product. Therefore, attitude toward eco-labeled products was chosen as the dependent variable because, as a marketing tool, eco-labels (à la advertising) may conceivably evoke a favorable attitude on the part of the consumer toward his/her attitude toward eco-labeled products.

### *2.1 Recognition/Awareness of Eco-Labels*

Eco-labels can assist customers to identify green products, as well as have an impact on their purchase decision (Gallastegui, 2002). As such, attending to eco-labels is a means of motivating consumers to buy environmentally-friendly products. Thøgersen (2002) suggests that the difference between the number of consumers who want to buy eco-labeled products and the number of consumers who purchase such products is traceable to the dramatic variation in recognition among eco-labels. With sufficient promotion of these labels, augmented awareness (or recognition) of eco-labels is likely.

According to Thøgersen (2000), eco-labels can be involved in the decision process if they are available and consumers pay attention to them. Familiarity of eco-labels is likely to be a sine qua non if consumers are to use eco-labels to acquire product information (Hanss & Bohm, 2012; Thøgersen, 2002). Indeed, Thøgersen, Haugaard, and Olesen (2010) observed that knowledge of and exposure to a new eco-label affects consumer adoption of the product. Similarly, Testa et al. (2015) found that consumers' awareness and knowledge of eco-labels influence their purchase decision. Being cognizant of eco-labels may well sensitize consumers to the significant impact green products, green marketing, and sustainable consumption might have on the environment—and concomitantly on long-run individual and societal welfare. Such awareness may induce consumers to develop a positive attitude toward offerings possessing eco-labels.

The foregoing disquisition leads to the following hypothesis:

*H1: The greater an individual's recognition/awareness of eco-labels, the more favorable will be his/her attitude toward eco-labeled products.*

### *2.2 Perceived Source Credibility of Eco-Labels*

Companies generally use eco-labels to verify their environmental claims and show that they are producing "sustainable products." Most studies dealing with *voluntary* eco-labels are based on label categories introduced by the International Standards Organization (Horne, 2009). They differentiate across *three types of labels*. Type I labels are certified by third-party organizations, such as non-governmental organizations (NGOs) (e.g., Forest Stewardship Council), but also include labels introduced or certified by the government. Type II labels are self-declared labels of producers, industries, or retailers and are usually not certified by an independent organization. Type III describes quantitative product life cycle reports and, therefore, includes no literal eco-labels (Horne, 2009).

Eco-labels can have an impact on *label* source credibility owing to information asymmetry that exists between companies and consumers (e.g., Testa et al., 2015). As Atkinson and Rosenthal (2014, p. 34) aver: "Consumers face an information deficit in which they must assess products...based on incomplete, misleading, or otherwise imperfect information." The information incongruence emerges because organizations tend to have complete or better information than do its customers. Hoek, Roling, and Holdsworth (2012) and Sachdev (2011) found that consumers tend to be skeptical of and confused by information on labels. Depending on the *source* of the eco-label (e.g., government, NGO), the label may foster or reduce source credibility (e.g., Gertz, 2005; Horne, 2009; Langer et al., 2008; Sønderkov & Daugbjerg, 2011; Thøgersen, 2002).

Previous investigations have shown that perceived credibility of eco-labels is usually higher when the label was issued by the government or by third party organizations (e.g., AMR, 2014; Gertz, 2005; Horne, 2009; Langer et al., 2008; Thøgersen, 2002). Consumers may not trust self-declared labels of companies or industries, as buyers could have general mistrust toward these organizations because many consumers believe that "corporations have no morals or ethics at all" (Horne, 2009, p. 5). Even if the labeling scheme has not been introduced by the state (but by a third-party organization), citizens' trust in governmental institutions also increases confidence in a labeling scheme (Sønderkov & Daugbjerg, 2011). Koos (2010) concurs that a "generalized trust"—trusting in people and governmental institutions—can have a strong influence on consumer purchase decisions. Perhaps differences in organizations' perceived eco-label credibility could be partly a function of consumers' efforts to

divine rationales for an organization's introducing such labels (Starobin & Weinthal, 2010).

To ascertain the influence of different types of eco-labels on consumer purchase intention, Bybee (2010) examined believability of the information provided by the label, its persuasiveness, trust in companies' environmental claims, and effect of these factors on consumer functional and affective assessments. High perceptions pertained to those thinking that the company is able to produce environmentally-friendly products without sacrificing quality; low perceptions, with those thinking that producing environmentally-friendly products is associated with lower quality. In terms of trust and believability of the information provided by the eco-label, results revealed that trust is an important prerequisite for considering labels in the purchase decision. Additionally, the study showed that consumers with high perceptions of environmentally-friendly products showed positive affective and functional responses toward use of Type I eco-labels. Interestingly, Bybee (2010) also found that use of credible third-party certified labels was persuasive for consumers with high or low perceptions. Because the results showed that trust in the companies, as well as believability of the labels, elicits no emotional response by consumers with low perceptions, apparently existence of eco-labels increases the perceived functionality of the product. Credible labels are often seen as a sign of better functionality or quality of a product (Bybee, 2010).

Based on the preceding dialectic, the following hypothesis is offered:

*H2: The greater an individual's perceived credibility of the source issuing the eco-labels, the more favorable will be his/her attitude toward eco-labeled products.*

### *2.3 Prior Purchase Behavior of Eco-Labeled Products*

According to Thøgersen (2002), purchasing eco-labeled products is a behavioral category which is influenced by several independent factors. One of them could be consumers' creating "mental categories based on eco-labels, as they have been known to do based on (some) other product categories" in case environmental friendliness is perceived as an important product characteristic (Thøgersen, 2002, p. 85). Given that eco-labels usually are not restricted to particular product groups, "cross-boundary eco-categories" could emerge, which eventually might lead to more repeat purchases of eco-labeled products and to the transfer of positive experiences with those products to other products carrying the same label (Thøgersen, 2002).

Consumers inured to purchasing eco-labeled products are likely to be sensitized to potential sustainability of such products. Prior work has found that previous experience with eco-labels can facilitate learning and reduce perceived risk (Thøgersen, Haugaard, & Olesen, 2010). Also, Zepeda et al. (2013) discerned that past experience with eco-labels influences consumer response to eco-labeled products. Furthermore, one's loyalty to a product (ineluctably based on prior experience) can affect his/her reaction to green marketing (Testa et al., 2013).

Use of eco-labels as a marketing tool could be meaningful to evoke a positive attitude toward the eco-label. This, in turn, could lead to a more positive perception of the eco-labeled product or brand (e.g., Biehal et al. 1992; MacKenzie et al., 1986; Miniard et al., 1990). Seemingly, then, use of eco-labels as a marketing tool might lead to favorable attitude toward the label and eventually toward the eco-labeled product. Thus, if the purchase behavior of consumers already includes buying eco-labeled products, their attitude toward other products or brands carrying such labels may be positively affected:

*H3: The more often an individual purchases eco-labeled products, the more favorable will be his/her attitude toward eco-labeled products.*

### *2.4 Environmental Attitude/Concern*

Scholars have identified two types of sustainable consumers: simplifiers and global impact consumers. *Simplifiers* eschew a culture of consumption and do not derive happiness through ownership of possessions (Cherrier, 2009). They believe in sustainable, simplified, and reduced consumption-based lifestyles (e.g., green living). *Global impact* consumers focus on benefiting humanity at large. They are concerned about environmental waste, material inequality across nations, and societal issues (Iyer & Muncy, 2009). Global impact consumers oppose a hyper-consumption culture (Albinsson, Wolf, & Kopf, 2010).

Thøgersen (2000) argues that, sustainable consumers pay attention to eco-labels and consider them in their purchase decisions if protecting the environment is one of their personal goals, which can be achieved by buying eco-labeled products. Bybee (2010) found that consumers with high perceptions of environmentally friendly products showed positive emotional responses to use of credible (Type I) eco-labels that were issued by a third-party organization or government. Such personal values of consumers imply a "pro-environmental attitude" (Thøgersen, 2000), or concern for the environment (Aman et al., 2012).

Conflicting findings have been found between one's environmental attitude and one's environmental (green) department (see succinct review by Testa et al., 2015). Nonetheless, a cogent argument can be made that the two are positively related. Per Hartmann and Apaolaza-Ibanez (2012, p. 1255).

Behavioral effects of consumer's...general environmental attitudes suggest that values and environmental concern are principal determinants of environmentally sound consumption....Consumers engage in conservation behavior because they are intrinsically concerned about the environment and society [à la global impact sustainable consumers].

Also, consumers' environmental awareness is likely to foster pro-environmental behavior on the part of consumers (Brecard et al., 2012; Mei, Ling, & Piew, 2012; Singh & Bansal, 2012). The foregoing argument infers that environmental concerns of consumers could increase the attitude toward the brand or product carrying an eco-label:

*H4: The stronger an individual's environmental concerns, the more favorable will be his/her attitude toward eco-labeled products.*

### **3. Methodology**

#### *3.1 Sample*

A survey was completed by business students enrolled in a medium-sized public university in the United States. Questionnaires were disseminated to respondents in the spring of 2012 in selected classes; respondents completed the surveys during class time. Virtually all respondents were traditional-aged students (18-22 years old) working at least part-time. Admittedly, students are not necessarily especially desirable respondents in some venues of consumer research. They can be apposite, however, in at least two contexts. First, a student sample is appropriate when testing theory (Calder, Philips, & Tybout, 1981; Peterson, 2001). The current investigation explored variable linkages predicated on underlying theoretical principles. Second, it is appropriate when there is a good fit between the research questions asked and the research method used (Cooper & Pullig, 2013; Henry, 2008). Students participating in the study were professionally oriented and somewhat cosmopolitan, thus affording them potential opportunity to have been exposed to an elephantine array of products in various product categories. Additionally, some research has found that younger, more educated, and more urban individuals tend to view eco-labels more favorably than their counterparts (Sonderskov & Daugbjerg, 2010)—attributes possessed by study participants.

#### *3.2 Survey Instrument*

In order to test study hypotheses, a questionnaire was developed and pretested. Items were taken or adapted from extant scales. Most measures were assessed using a 7-point, Likert-type of scale, anchored by 1 (e.g., "strongly disagree") and 7 (e.g., "strongly agree"). To facilitate respondents' experiencing a germane context during questionnaire completion, they were initially presented with an aided and an unaided question about their awareness of the existence of eco-labels. These were utilized to prime subjects apropos of the study.

Principal components factor analysis was conducted to reveal interrelationships among items used for measuring the constructs. Only factors with an eigenvalue greater than 1.0 were used, as essentially only those factors "can be considered as stable" (Diekhoff, 1992, p. 337). Furthermore, varimax rotation was employed to maximize "the variance of the squared factor loadings associated with each factor" (Diekhoff, 1992, p. 348).

#### *3.3 Attitude toward Eco-Labeled Products*

To assess the dependent variable—attitude toward products having an eco-label—items from MacKenzie et al. (1986), the BMU (2010) survey, and the eurobarometer survey (European Commission, 2009) were adapted. Six items tapped consumers' attitude toward eco-labeled products vis-à-vis products without the label. Per MacKenzie et al. (1986), the attitude could be favorable or unfavorable. Factor analysis reduced the number of germane items to four. The factor explained 72.6% of item variation; scale reliability (Cronbach's  $\alpha$ ) was 0.87.

#### *3.4 Recognition/Awareness of Eco-Labels*

Recognition/awareness of eco-labels referred to consumer recognition/awareness of such labels noted in advertisements, in general, and through promotions at the point of sale. Six questions were derived from the eurobarometer survey (European Commission, 2009). Factor analysis reduced the number of germane items to four. The factor explained 70.7% of the variance; scale reliability was 0.86.

#### *3.5 Perceived Source Credibility of Eco-Labels*

Perceived source credibility is comprised of trust in and perceived expertise of those organizations (Hawkins &

Mothersbaugh, 2012). In the present study, interest was on assessing consumers' perceived credibility of the different organizations issuing eco-labels. Items focused on non-governmental environmental organizations, other independent bodies, governmental eco-labeling organizations, and producers/retailers developing veridical eco-labels. These four kinds of organizations were chosen because scholars have observed that perceived trust in and perceived expertise of these organizations differs (Eisend, 2004; Horne, 2009; Langer et al., 2008; Starobin & Weinthal, 2010; Thøgersen, 2002). Eight items tapped the construct (Hawkins & Mothersbaugh, 2012). Factor analysis led to five germane items being subsumed under one factor. That factor explained 63.2% of the variation, and scale reliability was 0.85.

### 3.6 Purchase Behavior of Eco-Labeled Products

Items from previous work (BMU, 2010; European Commission, 2009; Soyez et al., 2012) were adapted that assayed current purchases of eco-labeled products. Factor analysis of nine items reduced the number to four. The factor explained 59.7% of the variance; scale reliability was 0.77.

### 3.7 Environmental Attitude

Environmental attitude of consumers was operationalized with items addressing their attitude toward environmental issues in general (Thøgersen, 2000), as well as beliefs about effectiveness of consumer actions taken to protect the environment (Thøgersen, 2000; European Commission, 2009; BMU, 2010). Twelve items were factor analyzed, reducing the number of germane items to nine. The factor explained 60.7% of the variance; scale reliability was 0.91.

## 4. Results

Multiple regression analysis was conducted for hypothesis testing. Prior to doing so, *factor scores for each case* were computed. In order to test the four hypotheses, factor scores for the four independent variables were regressed on the factor scores representing the dependent variable. Using factor scores can reduce multicollinearity among independent variables. As Rummel (1970) states: "...factor analysis can be employed to reduce...[the correlated predictor variables]...to a set of uncorrelated variables" and then used as input into subsequent analyses.

When the four independent variables were regressed on attitude toward eco-labeled products, three of the four were found to be significantly ( $p < .05$ ) related to the dependent variable. Specifically, recognition/awareness of eco-labeled products (.237), perceived source credibility (.205), and purchase behavior of eco-labeled products (.278) were positively associated with consumer attitude toward eco-labeled products. These findings confirmed H1, H2, and H3, respectively. Unexpectedly, environmental attitude was ascertained to be unrelated ( $p > .05$ ) to attitude toward eco-labeled products; therefore, H4 was rejected. The regression model explained 36.2% of the variance in attitude toward eco-labeled products (Tables 1 and 2).

Table 1. ANOVA

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	94.278	4	23.570	35.600	.000
Residual	166.181	251	.662		
Total	260.459	255			

Table 2. Coefficients of multiple regression I

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.008	.051		-.149	.882
Recognition of eco-labels	.239	.061	.237	3.920	.000
Perceived Source Credibility	.205	.060	.205	3.393	.001
Purchase Behavior	.284	.056	.278	5.059	.000
Environmental Attitude	.112	.066	.112	1.698	.091

Because the first regression analysis revealed that there was no significant relationship between environmental attitude and attitude toward eco-labeled products, a more parsimonious regression analysis was performed. It replicated the initial analysis, save for the omission of environmental attitude. Findings of that undertaking

further corroborated results from the earlier regression and thus provided additional support for H1, H2, and H3; the model explained 35.1% of the variance in attitude toward eco-labeled products (Tables 3 and 4). Accordingly, consumers' attitude toward eco-labeled products was positively associated with recognition/awareness of eco-labeled products, perceived source credibility of eco-labels, and purchase behavior of eco-labeled products.

Table 3. ANOVA II

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	91.960	3	30.653	46.785	.000
Residual	169.696	259	.655		
Total	261.655	262			

Table 4. Coefficients of multiple regression II

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta		
(Constant)	-.003	.050		-.053	.958
Recognition of eco-labels	.283	.053	.285	5.367	.000
Perceived Source Credibility	.251	.055	.251	4.538	.000
Purchase Behavior	.276	.054	.276	5.082	.000

## 5. Discussion and Implications

The results of this study support Thøgersen's (2002) work that recognition of eco-labels is an important prerequisite for considering them in the purchase decision. As such, high recognition of eco-labels leads to a more favorable attitude toward eco-labeled products. Given the positive relationship between consumer attitude toward the brand and consumer intention to purchase the brand (e.g., MacKenzie et al., 1986), study findings support Thøgersen (2002). Therefore, manufacturers, as well as retailers, could invest in enhanced and more frequent promotions of eco-labels in order to increase consumers' recognition of them, which conceivably might lead to augmented purchase intention.

Several studies state that credibility and trustworthiness of eco-labels are especially crucial in the purchase decision of eco-labeled offerings (e.g., Moussa & Touzani, 2008; Sønderskov & Daugbjerg, 2011; Soyez et al., 2012; Thøgersen, 2002; Thøgersen, 2000). Furthermore, credibility of eco-labels seemingly is dependent on the motives and environmental claims of the sources involved in the labeling scheme (Eisend, 2004; Horne, 2009; Langer et al., 2008; Starobin & Weinthal, 2010; Thøgersen, 2002). Therefore, perceived credibility of the sources issuing eco-labels might not only influence credibility of the label itself, but it may also have a direct influence on consumer attitude toward eco-labeled products. Study results support this conjecture. Because perceived source credibility of an eco-label is a function of the trust in and the expertise of the organizations issuing eco-labels (Hawkins et al., 2001), such organizations should essay to verify and promote their expertise in developing meaningful eco-labels and eco-labeled offerings for consumers. Organizations may even wish to develop labeling schemes that emulate those used for kosher labels (Starobin & Weinthal, 2010).

The analysis revealed a positive relationship between current purchase behavior of eco-labeled products and attitude toward eco-labeled products. This finding could be an indication of the existence of "cross-boundary eco-categories," which could emerge because eco-labels are usually not restricted to one product group (Thøgersen, 2002). These categories can lead to increased repeat purchases and transfer of positive experiences with one group of products carrying a particular eco-label to other product groups carrying the same label (Thøgersen, 2002). Thus, companies within the same industry, as well as from other industries, may consider developing eco-labels with credibly perceived, eco-label issuing organizations. Doing so may foster sharing costs among partners, which eventually could conduce to cost savings for all firms involved. Also, the mutual eco-label could lead to a win-win situation for the parties involved, because satisfied customers in one industry might transfer their positive experiences to products of the other label partners and vice versa.

Environmental attitude in this research was descried to have no significant effect on attitude toward eco-labeled products. Hence, this result is not compatible with that of Thøgersen (2000) who espied that "pro-environmental attitude" is a decisive factor for involving eco-labels in the purchase decision. A possible explanation for the absence of a relationship in the present investigation between consumer environmental attitude and attitude

toward eco-labeled products may be found in the nature of the sample. According to Thøgersen (2002), eco-labels are considered in the purchase decision if the consumer perceives environmental friendliness is an important product characteristic. In the present study, respondents were students who most likely had lower incomes relative to the general population. Because many eco-labeled products are more expensive than conventional products, restricted budgets might be a reason for respondents' not regarding environmental friendliness to be an important product characteristic in the purchase decision. Indeed, more than 60% of respondents indicated that price and quality were very important in their purchase decision. In contrast, only 17% reported that environmental friendliness of a product was very important in their purchase decision.

## 6. Limitations and Future Research

This study has some limitations which could provide avenues for future research in the area. Survey data were gathered solely from business students. Therefore, findings may not be generalizable to the entire population. If subjects in future research also include persons already having significant purchasing power, the impact of environmental attitude on attitude toward eco-labeled products might be different from that observed here. After all, such individuals are less likely to be as chary about their expenditures as a traditional-aged university student who most likely possesses a lower budget. Furthermore, this study did not focus on demographic differences of respondents. Knowledge of these differences (if they exist) could enable marketers to distinguish better across those target groups seeking environmentally-friendly products.

Survey results concerning consumer awareness of and familiarity with particular eco-labels disclosed that 90% of respondents recognized the Energy Star label when presented to them. However, analysis revealed a considerable gap between recognition of the Energy Star label and labels that had the second highest (Rainforest Alliance Certified label, 25.3%) and third highest (Green Seal, 22%) respondent recognition. Hence, future research could examine factors that affect consumer awareness of eco-labels, as well as the influence of a particular label on attitude toward eco-labeled products.

Moreover, research has revealed a significant, positive influence of a consumer's current purchase behavior of eco-labeled products on attitude toward eco-labeled products. A possible reason that this relationship was found may well be existence of a "cross-boundary eco-category" (Thøgersen, 2002). So, future research that considers such purchase behavior as the dependent variable may offer enhanced clarity about consumer attitude toward eco-labeled products.

## References

- Albinsson, P. A., Wolf, M., & Kopf, D. A. (n. d.). Anti-consumption in East Germany: consumer resistance to hyperconsumption. *J. Cons Beh.*, 9(6), 412-425.
- Aman, A. H. L., Harun, A., & Hussein, Z. (2012). The Influence of environmental Knowledge and Concern on Green Purchase Intention and the Role of Attitude as a Mediating Variable. *British Journal of Arts and Social Sciences*, 7, 145-167.
- AMR. (2014). Attitude and Awareness Study. Retrieved from <https://www.msc.org/documentation/presentation-msc/etude-reconnaissance-label-msc/etude-reconnaissance-label-resultats-france-2014>
- Atkinson, L., & Rosenthal, S. (2014). Signaling the Green Sell: The Influence of Eco-Label Source, Argument Specificity, and Product Innovation on Consumer Trust. *Journal of Advertising*, 43(1), 33-45. <http://dx.doi.org/10.1080/00913367.2013.834803>
- Biehal, G., Stephens, D., & Curlo, E. (1992). Attitude toward the Ad and Brand Choice. *Journal of Advertising*, 21(3), 19-36. <http://dx.doi.org/10.1080/00913367.1992.10673373>
- Breard, D., Lucas, S., Pichot, N., & Salladarre, F. (2012). Consumer Preferences for Eco, Health and Fair Trade Labels: An Application to Seafood Product in France. *Journal of Agricultural & Food Industrial Organization*, 10(1), 1-30. <http://dx.doi.org/10.1515/1542-0485.1360>
- Bybee, J. R. (2010). Summary Brief: An Investigation into Consumer Assessments of Eco-Labels. *Society for Marketing Advances Proceedings*, 41-42.
- Calder, B. J., Lynn, W. P., & Alice, M. T. (1981). Designing research for application. *Journal of Consumer Research*, 8(September), 197-207. <http://dx.doi.org/10.1086/208856>
- Cherrier, H. (2009). Anti-consumption discourses and consumer-resistant identities. *J Bus Res*, 62(2), 181-190. <http://dx.doi.org/10.1016/j.jbusres.2008.01.025>

- Chkanikova, O., & Lehner, M. (2015). Private Eco-Labels and Green Market Development: Towards New Forms of Sustainability Governance in the Food Retailing. *Journal of Cleaner Production*, 107, 74-84. <http://dx.doi.org/10.1016/j.jclepro.2014.05.055>
- Cooper, M., & Chris, P. (2013). I'm number one! Does narcissism impair ethical judgment even for the highly religious? *Journal of Business Ethics*, 112(1), 167-176. <http://dx.doi.org/10.1007/s10551-012-1239-0>
- Diekhoff, G. (1992). *Statistics for the Social and Behavioral Sciences: Univariate, Bivariate, Multivariate*. Dubuque, IA: WCB Publishers.
- Eisend, M. (2004). Is it Still Worth to be Credible? A Meta-Analysis of Temporal Patterns of Source Credibility Effects in Marketing. *Advances in Consumer Research*, 31, 352-357.
- European Commission. (2009). Eurobarometer-Europeans' attitudes towards the issue of sustainable consumption and production. European Commission 2009.
- Fishbein, M., & Ajzen, I. (1975). *Belief, Attitude, Intention, and Behavior: An Introduction to Theory and Research*. Reading, MA: Addison-Wesley.
- Gallastegui, I. (2002). The use of eco-labels: A review of the literature. *European Environment: The Journal of European Environmental Policy*, 12(6), 316.
- Gertz, R. (2005). Eco-labelling-A case for deregulation. *Law, Probability and Risk*, 4, 127-141. <http://dx.doi.org/10.1093/lpr/mgi010>
- Hanss, D., & Bohm, G. (2012). Sustainability Seen from the Perspective of Consumers. *International Journal of Consumer Studies*, 36, 678-687. <http://dx.doi.org/10.1111/j.1470-6431.2011.01045.x>
- Hartmann, P., & Apaolaza-Ibanez, V. (2012). Consumer Attitude and Purchase Intention toward Green Energy Brands: The Roles of Psychological Benefits and Environmental Concern. *Journal of Business Research*, 65, 1254-1263. <http://dx.doi.org/10.1016/j.jbusres.2011.11.001>
- Hawkins, D., & Mothersbaugh, D. (2012). *Consumer Behavior: Building Marketing Strategy* (12th ed.). New York, NY: McGraw-Hill/Irwin.
- Henry, P. J. (2008). Student sampling as a theoretical problem. *Psychological Inquiry*, 19, 114-136. <http://dx.doi.org/10.1080/10478400802049951>
- Hoek, J., Roling, N., & Holdsworth, D. (2012). Ethical Claims and Labelling: An Analysis of Consumers' Beliefs and Choice Behaviours. *Journal of Marketing Management*, 29(7-8), 772-792. <http://dx.doi.org/10.1080/0267257X.2012.715430>
- Homer, P. M. (1990). The Mediating Role of Attitude toward the Ad: Some Additional Evidence. *Journal of Marketing Research*, 27(1), 78-86. <http://dx.doi.org/10.2307/3172553>
- Horne, R. E. (2009). Limits to labels: The role of eco-labels in the assessment of product sustainability and routes to sustainable consumption. *International Journal of Consumer Studies*, 33(2), 175-182. <http://dx.doi.org/10.1111/j.1470-6431.2009.00752.x>
- International Institute for Sustainable Development. (2013). *Business and Sustainable Development: A Global Guide*. Retrieved from [http://www.iisd.org/business/markets/eco\\_label\\_benefits.aspx](http://www.iisd.org/business/markets/eco_label_benefits.aspx)
- Iyer, R., & Muncy, J. A. (2009). Purpose and object of anti-consumption. *J Bus Res*, 62(2), 160-168. <http://dx.doi.org/10.1016/j.jbusres.2008.01.023>
- Koos, S. (2011). Varieties of Environmental Labelling, Market Structures, and Sustainable Consumption across Europe: A Comparative Analysis of Organizational and Market Supply Determinants of Environmental-Labelled Goods. *Journal of Consumer Policy*, 34(1), 127-151. <http://dx.doi.org/10.1007/s10603-010-9153-2>
- Lai, K., Cheng, T. C. E., & Tang, A. K. Y. (2010). Green Retailing: Factors for Success. *California Management Review*, 52(2), 6-31. <http://dx.doi.org/10.1525/cm.2010.52.2.6>
- Langer, A., Eisend, M., & Kuss, A. (2008). The Impact of Eco-Labels on Consumers: Less Information, More Confusion? *European Advances in Consumer Research*, 8, 334-335.
- Leek, S., Szmigin, I., & Baker, E. (2015). Consumer confusion and front of pack (FoP) nutritional labels. *Journal of Consumer Behaviour*, 14(1), 49-61. <http://dx.doi.org/10.1362/147539215x14267608004087>
- MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The Role of Attitude toward the Ad as a Mediator of

- Advertising Effectiveness: A Test of Competing Explanations. *Journal of Marketing Research*, 23(2), 130-143. <http://dx.doi.org/10.2307/3151660>
- Mei, O. J., Ling, K. C., & Piew, T. H. (2012). The Antecedents of Green Purchase Intention among Malaysian Consumers. *Asian Social Science*, 8(13), 248-263. <http://dx.doi.org/10.5539/ass.v8n13p246>
- Miniard, P. W., Bhatla, S., & Rose, R. L. (1990). On the Formation and Relationship of Ad and Brand Attitudes: An Experimental and Causal Analysis. *Journal of Marketing Research*, 27(3), 290-303. <http://dx.doi.org/10.2307/3172587>
- Moussa, S., & Touzani, M. (2008). The perceived credibility of quality labels: A scale validation with refinement. *International Journal of Consumer Studies*, 32(5), 526-533. <http://dx.doi.org/10.1111/j.1470-6431.2008.00713.x>
- Nguyen, T., Ngamsiriudom, W., Pelton, L., & Dubinsky, A. (2015). Interrelationships among Facets of Self, Motivation, and Conspicuous and Sustainable Consumption Behaviour. *Int. Journal of Business Science and Applied Management*, 10(2), 16-31.
- Orsato, R. (2009). *Sustainable Strategies: When Does It Pay to be Green?* Basingstoke, Hampshire, UK: Palgrave Macmillan. <http://dx.doi.org/10.1057/9780230236851>
- Oslo roundtable on sustainable production and consumption (1994). Retrieved from <http://www.iisd.ca/consume/oslo004.html>
- Peterson, R. A. (2001). On the use of college students in social science research: Insights from a second-order meta-analysis. *Journal of Consumer Research*, 28(3), 450-461. <http://dx.doi.org/10.1086/323732>
- Rummel, R. J. (1970). *Applied Factor Analysis*. Evanston, IL: Northwestern University Press.
- Sachdev, S. (2011). Eco-Friendly Products and Consumer Perception. *International Journal of Multidisciplinary Research*, 1(5), 279-287.
- Singh, A. K., & Bansal, M. (2012). Green Marketing: A Study of Consumer Attitude and Environmental Concern. *The Indian Journal of Commerce*, 65(2), 273-283.
- Sønderskov, K. M., & Daugbjerg, C. (2011). The state and consumer confidence in eco-labeling: Organic labeling in Denmark, Sweden, The United Kingdom and The United States. *Agric Hum Values*, 28, 507-517. <http://dx.doi.org/10.1007/s10460-010-9295-5>
- Soyez, K., Francis, J. N. P., & Smirnova, M. M. (2012). How individual, product and situational determinants affect the intention to buy and organic food buying behavior. *International Journal of Marketing*, 51(1), 27-35.
- Starobin, S., & Weinthal, E. (2010). The Search for Credible Information in Social and Environmental Global Governance: The Kosher Label. *Business & Politics*, 12(3), 1-35. <http://dx.doi.org/10.2202/1469-3569.1322>
- Sustainable Products Corporation. (n. d.). *What are Sustainable Products?* Retrieved from <http://www.sustainableproducts.com/susproddef.html>
- Terra, C. (2007). The Six Sins of Greenwashing: A Study of Environmental Claims in North American Consumer Markets. Retrieved from <http://sinsofgreenwashing.org/findings/greenwashing-report-2007/>
- Testa, F., Iraldo, F., Vaccari, A., & Ferrai, E. (2015). Why Eco-Labels Can Be Effective Marketing Tools: Evidence from a Study on Italian Consumers. *Business Strategy and the Environment*, 24, 252-262. <http://dx.doi.org/10.1002/bse.1821>
- Thøgersen, J. (2000). Psychological Determinants of Paying Attention to Eco-Labels in Purchase Decisions: Model Development and Multinational Validation. *Journal of Consumer Policy*, 23(3), 285-313.
- Thøgersen, J. (2002). Promoting "Green" Consumer Behavior with Eco-Labels. In Thomas Dietz, Paul C. Stern (Eds.), *New Tools for Environmental Protection-Education, Information and Voluntary Measures* (pp. 83-104). <http://dx.doi.org/10.1023/A:1007122319675>
- Thøgersen, J., Haugaard, P., & Olsen, A. (2010). Consumer Responses to Ecolabels. *European Journal of Marketing*, 44(11/12), 1787-1810. <http://dx.doi.org/10.1108/03090561011079882>
- Tversky, A. (1972). Elimination by aspects: A theory of choice. *Psychological Review*, 79(4), 281-299. <http://dx.doi.org/10.1037/h0032955>
- Tversky, A., & Kahneman, D. (1992). Advances in prospect theory: Cumulative representation of uncertainty.

*Journal of Risk and Uncertainty*, 5, 297-323. <http://dx.doi.org/10.1007/BF00122574>

Zepeda, L., Sirieix, L., Pizarro, A., Corderre, F., & Rodier, F. (2013). A Conceptual Framework for Analyzing Consumers' Food Labels in France, Quebec, Spain and the US. *International Journal of Consumer Studies*, 37, 605-616. <http://dx.doi.org/10.1111/ijcs.12041>

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