Communicating Product Sustainability: Consumer Responses to Sustainability Labeling in a Retail Laboratory Environment

Siqi Feng  
University of Arkansas, Fayetteville

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COMMUNICATING PRODUCT SUSTAINABILITY: CONSUMER RESPONSES TO SUSTAINABILITY LABELING IN A RETAIL LABORATORY ENVIRONMENT

By Siqi Feng
Sam M. Walton College of Business, Department of Marketing

Faculty Mentor: Dr. Scot Burton
Sam M. Walton College of Business, Department of Marketing

Abstract

In effort to enhance sustainable development, manufacturers and retailers have collaborated to develop a standardized sustainability index based on supply chain life cycle information. However, it is unclear whether this index will help consumers make more sustainable purchases. Research conducted in a retail laboratory addresses consumer attitudes, purchase intentions, and product choices with and without a credible standardized sustainability index, and with or without provision of background sustainability information. Results from a pilot study and two mixed design experiments indicate that, on average, consumers focus more on brand equity than on sustainability levels when they make brand choices. While the disclosure of credible information for brands within a product category affects brand-level sustainability perceptions, there are limited effects on brand purchase intentions and choices. Results also reveal a consumer misconception that nationally recognized brands are more sustainable. Implications of results are offered for producers, retailers, and public policy makers.
Over the past few decades, sustainability has become a mainstream topic worldwide. Although there is increasing consumer awareness of environmental factors, and more people claim to be concerned about the environment, there is still a relatively small number of consumers who are acting on that claim. When making daily purchases, consumers do not seem to be equipped or motivated enough (Young, Hwang, McDonald, & Oates, 2010) to choose sustainable products.

Many companies have established sustainability departments to incorporate sustainability throughout their business. The Sustainability Consortium (2013) is working with many corporate leaders in developing life-cycle assessments to better gauge the sustainability levels of their consumer-packaged goods. Despite these substantial efforts taken by companies, if consumers do not buy more sustainable products, it is likely that companies ultimately will lose their motivation to produce sustainable products. The current state of consumer consumption is not sustainable. Green marketing is needed to increase consumer knowledge and change consumer attitudes and behaviors toward the use of more sustainable products (Cherian & Jacob, 2012); this will be very important to the success of sustainable development.

This study was designed to determine whether consumer product attitudes, purchase intention, willingness to pay a price premium, and quality perception of products are affected by providing consumers with labels and information regarding the sustainability of the products offered at the retail store shelf. The answers to these questions may provide beneficial information to corporations, nongovernmental organizations, and consumers. In other words, all stakeholders will be able to gauge the potential results on consumer behavior by increasing the availability of sustainable information using labels associated with options in product categories.

**Literature Review**

Ajzen’s (1991) theory of planned behavior and Fisk’s (1973) theory of responsible consumption provide insights on the potential effects of labeling on consumer sustainability evaluation, purchase intentions, willingness to pay price premium, and quality perception of products with different sustainability ratings. Ajzen (1991) found that consumer choice behaviors are related to various motivational factors or incentives. Many factors, such as behavioral control, attitude, and social norms, influence purchase intentions, and ultimately, consumer behavior. Thus, he proposed the theory of planned behavior to explain consumer choice. According to this theory, product attributes, such as favorable (unfavorable) information about sustainability, can positively (negatively) affect brand attitudes and purchase intentions and ultimately the actual choice behavior for packaged good products. However, there are many diverse product attributes (e.g., brand awareness, perceived quality, effectiveness, price) that affect brand attitudes, and for many consumers sustainability may be a secondary consideration that has a minimal impact.

Additionally, the theory of responsible consumption suggests that consumers will use limited resources on earth logically and efficiently to support the world’s growing population (Fisk, 1973). Because there are scarce resources on earth, consumers need to be responsible in their consumption behavior so that they will not totally deplete available resources. This theory suggests that at least for some consumers, when provided with information about the importance of sustainability and the details of the sustainability levels communicated by labels, they will prefer sustainable products in their effort to live sustainable lives.

Accurate and reliable eco-labeling is at least potentially important in helping consumers make sustainable decisions by promoting more sustainable consumption. Labels are communication tools to inform buyers of the claims about the product made by the sellers.
Sustainability labeling has multiple functions that vary with the different stakeholders. For consumers, eco-labels provide information about the sustainability levels of products (de Boer, 2003). In regards to sustainability, accurate and objective labeling can be used to provide a type of quality assurance. However, research regarding eco-labels and how they have affected product choices and performance in the marketplace varies.

For example, previous research demonstrates that even though 87% of consumers claim they are concerned about the environment, only one third actually engage in environmental purchases (Oppenheim & Bonini, 2008). One of the main reasons for these behaviors is based on their lack of trust in eco-labels and environmental claims made by companies. In a study conducted by Pricewaterhouse Cooper in 2009, only 16% of consumers reported trusting environmental claims. The remainder did not trust the intent of the companies when making environmental claims, and did not view the information offered by these companies to be credible or convincing (Bybee, 2010).

Additionally, the large number of eco-labels available in the market can be extremely confusing for consumers. Currently, there are over 430 eco-labels (“Ecolabel index,” 2012). This contributes to consumer confusion and questions regarding which products are truly sustainable (Seifert & Comas, 2012). Research conducted by the Natural Marketing Institute (2012) revealed that 51% of American consumers believe there are too many green certifications, while 75% believe it is difficult to assess the credibility of the labels. Additionally, 59% of American consumers want just one over-arching label across industries. This will provide them with a simple solution for determining the sustainability level of alternative products on the market, instead of attempting to learn about all of the eco-labels available, understanding their significance, and researching the credibility of the labels (Watanatada & Mak, 2011).

Additional research has considered consumer attitudes and behaviors when eco-labels are present. One study surveyed Swiss consumers to compare existing product attributes, such as the brand and price, to eco-labels in their importance in consumer buying decisions. This study showed differences in responses to products in the lighting and appliance sectors due to the varying degree of involvement for the purchases in these two product categories (Sammer & Wüstenhagen, 2006). Even though there is high consumer awareness for eco-labels, they may not be important enough to influence many purchasing decisions. That is, the labels may only affect behavior for the small segment of consumers who are the most environmentally aware. Their research has found that brand names and equity are important, especially in high involvement categories. In low involvement product categories, consumers seemed more willing to pay a price premium (Sammer & Wüstenhagen, 2006). As shown in this study, the importance of sustainability seems to differ across types of product categories.

In a Regeneration Consumer Study conducted in September and October 2012 by BBMG, GlobeScan, and SustainAbility, in which over 6,000 consumers were surveyed in six major international markets, results indicated that consumers in developing countries are more likely to agree that they need to consume in a sustainable fashion to contribute to a better environment for future generations than consumers in developed countries (GlobeScan, 2012). Likewise, consumers in less developed countries appeared more likely to adopt sustainable behaviors, as compared to those in more developed countries (GlobeScan, 2012). Additionally, research conducted in the United Kingdom and Greece, using Ajzen’s theory of planned behavior, suggests that the theory of planned behavior model appears to be more strongly supported in the United Kingdom than in Greece. The authors suggest that this theory might be more appropriate in more established markets (Kalafatis & Pollard, 1999). Studies conducted in
developing countries, such as Egypt, have illustrated that consumers are becoming increasingly aware of environmental issues. Although sustainability is not their priority, they do show positive attitudes towards the environment (Mostafa, 2007).

**Research Objectives**

Despite prior research, there are only a limited number of studies conducted in the United States that have examined consumer evaluations and choices for actual brands following the disclosure of objective, accurate sustainability ratings for different products in a category. Also, previous researchers have not explored the ability of consumers to accurately estimate the sustainability level of a product without a label when brand competitors on the shelf have sustainability labels present. To address these issues, this research project was conducted in a retail laboratory and examines the following specific questions regarding the effects of sustainability labeling:

1. For brands in a product category, how does the disclosure (versus the absence) of the sustainability levels affect consumer evaluations (sustainability perceptions, product quality), purchase intentions, and choices among the brands in the category?
2. How does the presence of a lesser or a greater sustainability level affect brands with lower versus higher levels of consumer familiarity and equity?
3. Does the presentation of information (disclosed via a newspaper article) emphasizing the importance of consumer sustainability moderate the influence of the presence of sustainability labeling?
4. What inferences do consumers draw about sustainability when brand level information is not disclosed? Are sustainability inferences related to the levels of brand familiarity and brand attitudes?

In contrast to most prior research examining the disclosure of brand level sustainability information, the two mixed design experimental studies are conducted in a retail store laboratory environment, with multiple brands offered on store shelves.

**Pilot Study**

A pilot survey was distributed to determine consumer present perceptions about specific brands used in these two experiments. There were 39 participants in this pilot study. Participants were asked about their overall brand attitude, familiarity, and sustainability perception of products for each of the three brands in two product categories (laundry detergent and dish soaps) that were used in these experiments. Each measure was assessed using a seven-point scale ranging from 1 (not at all) to 7 (very). For example, for the brand attitude for laundry detergent, participants were asked, “What is your overall attitude of each of the following brands of laundry detergent?”; the categories included Wisk, Era®, and Arm & Hammer® (with endpoints of very unfavorable and very favorable).

As shown in Table 1, for the category of laundry detergents, the differences in brand attitude, familiarity, and sustainability level for the more recognized brand and other two brands are statistically significant ($F$-values from 5.56 to 19.14, $p < 0.01$ for all). Brand attitude, familiarity, and sustainability level perceptions were significantly higher for Arm & Hammer in the laundry detergent category. Also, the differences between the sustainability level perceptions for all of the laundry detergents are statistically significant. The results were similar to that for dish soaps, where there is a statistically significant difference between the more recognized brand (Dawn) and other two brands, for which evaluations are similar. While the perceptions of the sustainability level of Dawn ($M=5.03$) are stronger than the other brands ($F=13.6, p < .01$),
its objective level is lower than Method or Mrs. Meyers, based on GoodGuide (2013) sustainability ratings.

Table 1
Pilot Study Results: Mean Levels for Attitude and Familiarity of Target Brands Used in Experiments 1 and 2

<table>
<thead>
<tr>
<th>Laundry Detergents:</th>
<th>Wisk</th>
<th>Era</th>
<th>Arm &amp; Hammer</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand Attitude</td>
<td>3.46</td>
<td>3.38</td>
<td>4.41</td>
<td>19.14***</td>
</tr>
<tr>
<td>Familiarity</td>
<td>2.11</td>
<td>2</td>
<td>4.87</td>
<td>56.62***</td>
</tr>
<tr>
<td>Sustainability level</td>
<td>3.56</td>
<td>3.26</td>
<td>4.26</td>
<td>5.56***</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Dish Soaps:</th>
<th>Dawn</th>
<th>Mrs. Meyer's</th>
<th>Method</th>
<th>F-Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brand Attitude</td>
<td>6.03</td>
<td>3.38</td>
<td>3.64</td>
<td>65.12***</td>
</tr>
<tr>
<td>Familiarity</td>
<td>6.36</td>
<td>2.05</td>
<td>2.28</td>
<td>109.23***</td>
</tr>
<tr>
<td>Sustainability level</td>
<td>5.03</td>
<td>3.64</td>
<td>3.61</td>
<td>13.6***</td>
</tr>
</tbody>
</table>

Note. Means in the table are based on a 7-point scale.
***p<.01

The correlations between attitude, familiarity, and sustainability level for consumers are positive and statistically significant for all the brands, with the exception of Era, for relationships between attitude and familiarity and familiarity and sustainability level. As shown in Table 1, given no information, brands with a more favorable attitude and greater familiarity are perceived to have higher sustainability levels.

**Experiment 1: Laundry Detergent**

The purpose of experiment 1 is to examine the influence of the sustainability disclosure on consumer attitudes, purchase intentions, and choices for laundry detergents. For the three brands examined in this experiment, the brand with the highest level of awareness (Arm & Hammer) also had the most favorable level of sustainability based on GoodGuide (2013) ratings.

**Methodology**

**Study design.** This research project was part of a larger study conducted in the Walton College retail lab. Participants were asked to examine products and to make evaluations and choices from laundry detergents on the retail shelves. The study was a 3 (brand-level sustainability rating: low vs. moderate vs. high) x 2 [brand-level disclosure: absent (control vs. present)] x 2 [sustainability information provision: absent (control vs. present)] mixed experimental design. The sustainability indices used were based on GoodGuide ratings for the selected brands. Participants in the study were shown laundry detergents designed to match a real retail environment using actual brands (e.g., Wisk, Era, Arm & Hammer). In the brand-level sustainability label present condition, each brand of laundry detergents has a different sustainability rating (e.g., Wisk=3.7, Era=5.4, and Arm & Hammer=7.0), as found in the GoodGuide. The participants in the disclosure present condition saw sustainability labels for each of the laundry detergent brands, while participants in the absent condition did not see
sustainability labels for any of the products. Furthermore, for the second between subjects factor, the sustainability information manipulation, participants read an article about the standardized sustainability index and the importance of sustainability in the information present condition (see Appendix A). In the sustainability information control condition, they read an article about identity theft that was unrelated to sustainability.

**Procedures and participants.** The population from which participants were recruited was college students enrolled in Walton College of Business courses at the University of Arkansas. The participants were recruited by professors who, in return, provided course credit for participation in marketing research studies. For this part of the study, there were a total of 213 participants ($M_{age} = 20.83$, 114 females and 109 males). Due to the increasing focus in higher education on the subject of sustainability, it was predicted that the awareness of participants would be relatively high. This generation potentially can influence the generation before them and the generation to follow. That is, if this group can engage in sustainable behaviors, there is likely to be a ripple effect on the creation of a more sustainable society. The participants in the study were randomly assigned to experimental conditions in the study. The University of Arkansas Institutional Review Board (IRB) approval was obtained prior to collection of the data.

Before entering the retail lab, study participants read a “*USA Today*” article constructed as part of the study and embedded between two newspaper advertisements not related to the study. The control group read an article regarding identity theft, while the experimental group read information regarding the importance of sustainable consumption and the standardized sustainability index. Copies of both of the articles are provided in Appendix A. Then, participants were escorted to the retail store laboratory where they spent approximately 15 minutes examining laundry detergents and answering questions. During this portion of data collection, participants were asked to go through the product evaluation and selection process and answer survey questions regarding their choices and evaluations. In the control group, the products were presented as currently found on the market (i.e., without Sustainability Index scores). For the sustainability disclosure treatment group, the Sustainability Index score was provided for all of the brands. The Sustainability Index scores of the products were presented as ‘shelf talkers’ next to the products. (The lab set-up for the experiment is presented in Appendix B.) After the participants identified the products they were going to purchase, they were queried about their evaluation of product sustainability, purchase intentions, willingness to pay price premium and quality perception for all of the products in the laundry detergent category. When the participants finished examining the products, they were escorted to a computer lab, where they engaged in a follow-up computer-based survey that took approximately five minutes to complete.

**Measures.** All of the dependent variables were measured when participants were in the retail lab examining the products on the shelves. Participants were first asked which laundry detergent they would choose (“Which one laundry detergent would YOU be most likely to purchase?”). Then, a seven-point Likert scale was used to assess purchase intentions (“Assuming you were going to buy a laundry detergent, would you be more likely or less likely to purchase this product?”) with the endpoints of 1 (less likely) to 7 (more likely) (Kozup, Creyer, & Burton, 2003). Participant willingness to pay a price premium was measured by responses to the statement, “The price of this laundry detergent would have to go up quite a bit before I would switch to another laundry detergent” [endpoints of 1 (strongly disagree) to 7 (strongly agree)]. The perception of sustainability level was gauged by having participants rate the sustainability
for each laundry detergent using endpoints of 1 (not sustainable at all) to 7 (very sustainable). Multiple items were used to assess participant perceived quality for the brands [“Compared to other laundry detergents, what is the quality of this detergent in terms of getting your clothes clean?” with endpoints of 1 (much lower than average quality) to 7 (much higher than average quality); 1 (not effective at all) to 7 (very effective); and 1 (poor performance) to 7 (excellent performance)] (Boulding & Kirmani, 1993). These measures were only assessed for the products with the lowest and highest brand-level sustainability labels.

The quality items were combined into a single measure score with an acceptable level of reliability (coefficient α’s > .90). Thus, measures in the study allowed an assessment of participant product choices, as well as repeated measures of product evaluations for two brands offered in the same product category. Following responses to questions completed in the retail lab, participants were escorted to a nearby computer lab where they completed a web-based survey that included questions for manipulation checks, demographic questions, and questions used to identify any possible demand artifacts. Data collected in the retail lab and the computer lab were merged, and subsequently analyzed using SPSS 20.0 software.

Results

The manipulation checks were successful and there were no major problems with demand effects. The choice results are shown in Figure 1. The difference between consumers’ purchasing choices in the brand-level sustainability label absent vs. present condition was not statistically significant (Pearson $\chi^2 = 1.83, p = 0.40$). However, for the product with a lower brand-level sustainability label, the purchase choice decreased by 5.8 percent when the label was present. For the brand with the high brand-level sustainability label, choice increased by 3.2 percent.

![Figure 1](Image)

**Figure 1.** Purchase Choice in Brand-Level Sustainability Disclosure Present And Absent Conditions

For the effects on product evaluation and purchase intentions, a mixed design analysis of variance was performed. Results are shown in Table 2. All of the main effects for the experimental independent variables for the dependent measure of sustainability evaluation are statistically significant. Also, all of the dependent measures are significant for the brand-level sustainability label experimental condition. For sustainability evaluation, the two-way interaction
for brand sustainability level and the presence of the sustainability label is significant ($F = 42.96$, $p < 0.01$). The plot of means is shown in Figure 2. When the objectively low sustainability level for the Wisk brand is disclosed, its evaluation is reduced, relative to the no label control. For the more well known brand, which also had a more favorable sustainability level (Arm & Hammer), adding the disclosure modestly increased perception.

Table 2
Effects of Brand-Level Sustainability Label and Sustainability Knowledge on Dependent Measures

<table>
<thead>
<tr>
<th>Main Effects:</th>
<th>Sustainability Evaluation</th>
<th>Product Quality</th>
<th>Purchase Intention</th>
<th>Price Premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability Level (SLEV)</td>
<td>419.1***</td>
<td>191.6***</td>
<td>271.0***</td>
<td>90.8***</td>
</tr>
<tr>
<td>Sustainability Knowledge (SK)</td>
<td>4.02**</td>
<td>0.01</td>
<td>1.19</td>
<td>1.78</td>
</tr>
<tr>
<td>Sustainability Label (SLAB)</td>
<td>14.04***</td>
<td>2.82*</td>
<td>0</td>
<td>0.36</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Interaction Effects:</th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>SLEV x SK</td>
<td>1.04</td>
<td>0.01</td>
<td>4.49**</td>
<td>3.13*</td>
</tr>
<tr>
<td>SLEV x SLAB</td>
<td>42.96***</td>
<td>1.03</td>
<td>1.96</td>
<td>0.51</td>
</tr>
<tr>
<td>SK x SLAB</td>
<td>7.61***</td>
<td>0.5</td>
<td>1.65</td>
<td>0.62</td>
</tr>
</tbody>
</table>

***$p<.01$, **$p<.05$, *$p<.10$.

Figure 2. Brand Sustainability Level and Presence of the Sustainability Label Interaction Effects on Sustainability Perception
The interaction for sustainability knowledge and sustainability label on the sustainability evaluation also is significant ($F=7.61, p < 0.01$). In addition, for purchase intention, the two-way interaction of brand sustainability level and sustainability knowledge was statistically significant ($F=4.49, p < .05$). The plot of means is shown in Figure 3. When the information on sustainability is provided in the article, the purchase intentions of the low sustainability brand (Wisk) decreases, but there is little effect for the more sustainable brand (Arm & Hammer). The interaction of sustainability level and sustainability knowledge did not reach statistical significance ($F=3.13, p < 0.10$), and all of the three-way interactions for this experiment were not significant.

![Figure 3. Brand Sustainability Level and Presence of the Sustainability Label Interaction Effects on Purchase Intention](image)

The laundry detergents used in Experiment 1 showed interesting results related to brand level sustainability. Arm & Hammer has the highest brand equity as well as the highest sustainability level of the brands selected. The disclosure of actual brand level sustainability has positive influence on consumer evaluation of product sustainability, but a lesser effect on purchase intention and choices of the brands of laundry detergents. As shown in Figures 2 and 3, the sustainability disclosure appeared to have a more negative influence on low sustainability brand (Wisk) than on the higher sustainability brand (Arm & Hammer).

Not surprisingly, the presence of brand level sustainability had the strongest influence on consumer sustainability perceptions. The pattern of results is consistent with the larger literature showing the stronger influence of negative (than positive) information (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001). The presence of a less favorable sustainability level seems to hurt brands with a lower level of consumer familiarity and equity, while a more favorable
sustainability level only marginally helped the brands with a higher level of consumer familiarity and equity.

**Experiment 2: Dish Soap**

In a voluntary labeling environment, some brands may not include a sustainability level disclosure on the label. When some brands include sustainability information but others do not, what will consumers infer about the brand that does not include a sustainability level? The purpose of Experiment 2 is to extend findings from Experiment 1 by examining consumer inferences and responses when one product label in the dish soap category does not include a sustainability level. Thus, a main component of this study is to assess what consumers infer about the sustainability of a product when there is no sustainability information present for only that one product.

**Methodology**

**Study design.** This experimental method is very similar to Experiment 1. In addition, the research also took place in the retail lab. This research project was part of a larger retail shopping study that asked participants to examine products and to make evaluations and choices from the retail shelves. The study was a 3 (brand-level sustainability rating: low vs. moderate vs. high) x 3 [brand-level disclosure: absent (control), partially present, fully present] x 2 [sustainability knowledge: absent (control) vs. present] mixed experimental design. The sustainability indices used were actual GoodGuide ratings that matched the selected brands. In this experiment, participants in the study were shown dishwashing soaps using the real brands of Dawn, Mrs. Meyer’s, and Method. In the brand-level sustainability label present condition, each brand of dishwashing soap has a different sustainability rating (Dawn=5.0; Mrs. Meyer’s=7.6; Method=8.5; see Appendix B). Please note that in this study, the most familiar brand with the most favorable consumer attitude has the lowest sustainability rating (shown in GoodGuide). The participants in the full disclosure present examined sustainability labels for all of the dishwashing soaps. In the partial disclosure condition, the brand Mrs. Meyer’s was the only brand presented without any sustainability levels. The participants in the absent condition did not examine sustainability labels for any of the brands. As in the first experiment, for sustainability information provision, in the present condition participants read an article about the standardized sustainability index, while in the absent condition they read an article about identity theft. Both articles are provided in Appendix A.

**Procedures and participants.** The participants in this experiment were drawn from the same sample population as Experiment 1. For this study, the mean age was 21 years and 51% of the 213 participants were female. All participants were randomly assigned to experimental conditions in the study. The procedures used for examining the dish soaps on the retail shelf were the same as those used in Experiment 1. In this study, the sustainability information manipulation did not affect the dependent variables and is therefore dropped from further discussion.

The primary difference from Experiment 1 occurred when participants were only shown partial information, with the sustainability index number missing for one brand (as shown in Appendix B). As shown in the pilot test, this brand (Mrs. Meyers) had a relatively low level of familiarity and a weak brand attitude, but its actual sustainability level, based on the GoodGuide, was favorable. After the participants had identified the products they were going to purchase, they were queried about their evaluation of product sustainability, purchase intentions, willingness to pay a price premium and quality perception for all of the products in the dish soap
category. When participants finished examining the products, they were escorted to a computer lab, where they completed a follow-up computer-based survey similar to Experiment 1.

**Measures.** As in Experiment 1, all of the dependent variables for this experiment were measured when participants were in the retail lab examining the products on the retail shelves. They were first asked which dish soap they would choose (“Which one dish soap would you be most likely to purchase?”). Then, the same seven-point Likert scale was used to assess purchase intentions (Kozup, et al. 2003), participant willingness to pay a price premium, and perception of sustainability level. Two questions were asked regarding the perceived quality of the dish soap (1 much lower than average quality to 7 much higher than average quality) (Boulding & Kirmani, 1993) and (1 not effective at all to 7 very effective). These measures were assessed for all of the brands of dish soap. Participants were also provided with a text box to enter a sustainability rating on a scale of 1-10 for the middle brand-level sustainability label product, Mrs. Meyers (for which no information was provided for two of the three label conditions). This allowed researchers to gather data on participant estimates for this product for each of the absent, partial, and fully present disclosure conditions. After this phase, participants were also asked to complete a web-based survey that included questions that expose possible demand artifacts, assess the manipulations, and provide demographic information.

**Results**

Data from Experiment 2 were analyzed using 2 x 3 mixed analyses of variance; results are shown in Table 3. The main effects of the brand sustainability level on sustainability evaluation and purchase intention were statistically significant. For the two-way interactions, the interactions between brand sustainability level and the sustainability level were statistically significant for sustainability evaluation (F=7.74, p < 0.01), while they were not significant for purchase intention. Plots are shown for each of the dependent variables in Figures 4 and 5; as you will see, the pattern is intriguing. For example, as shown in Figure 4, the addition of the label has clear effects on the sustainability evaluation with the familiar brands with relatively lower objective sustainability level (Dawn) decreasing, and the less familiar brand (with stronger objective sustainability levels) benefitting from the information. However, the purchase intention plot in Figure 5 indicates a totally different pattern. The relatively low level of objective sustainability does not diminish the purchase intention for the higher familiarity and higher equity brand (Dawn), while demonstrating little positive effect for the objectively higher sustainability brand.

<table>
<thead>
<tr>
<th>Main Effects:</th>
<th>Sustainability Evaluation</th>
<th>Purchase Intention</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sustainability Level (SLEV)</td>
<td>20.56***</td>
<td>104.83***</td>
</tr>
<tr>
<td>Sustainability Label (SLAB)</td>
<td>2.26</td>
<td>0.08</td>
</tr>
<tr>
<td>Interaction Effects:</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SLEV x SLAB</td>
<td>7.74***</td>
<td>1.87</td>
</tr>
</tbody>
</table>

***p<.01, **p<.05, *p<.10.
In the partial disclosure condition, Mrs. Meyer’s is the only product without brand sustainability label information. When participants were asked to evaluate the sustainability level of Mrs. Meyer’s, its sustainability evaluation score decreased significantly, as shown in the partial condition ($M=3.84$) in Table 4, as compared to the evaluations when all of the labels were present or absent for the category. Thus, a negative inference is made in the partial
disclosure condition. However, when all the labels were present for the product category, the score for Mrs. Meyers increased significantly ($p < .05$).

**Table 4**  
*Sustainability Inferences when Information is Not Disclosed for a Brand*

<table>
<thead>
<tr>
<th>Sustainability Label Condition</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control</td>
<td>4.44$^a$</td>
</tr>
<tr>
<td>Partial</td>
<td>3.84$^b$</td>
</tr>
<tr>
<td>Full</td>
<td>4.91$^a$</td>
</tr>
</tbody>
</table>

*Note.* In the control condition, no sustainability information was disclosed, in the partial condition it was disclosed for two of the three brands, and in the full condition information was offered for all brands on the retail shelf. The sustainability information for the non-disclosed brand (Mrs. Meyers) in the partial condition is favorable (rating=7.5 out of 10). Means are based on 7-point scales; different letters indicate significant differences at $p < .05$.

**Discussion**

Experiment 2 differs from Experiment 1 in that the product with the high brand familiarity and equity (Dawn) had a relatively low level of sustainability. The disclosure in this case only influenced consumer evaluations of the product sustainability level; purchase intentions and choice for this brand were unaffected by the disclosure of sustainability level. Thus, for this brand with a higher level of consumer familiarity and equity, the presence of a relatively less favorable sustainability level did not lower purchase intention. This result shows that while the disclosure of brand level sustainability information can affect consumer evaluations of the products, it does not necessarily impact consumer purchase intentions or choices. In other words, brand awareness and equity has the dominant influence on consumer purchase intentions and choice.

This experiment also provides some insight into consumer inferences regarding brands that do not offer sustainability information in a voluntary disclosure environment for the dish soaps. In the partial disclosure condition, consumers infer a significantly lower sustainability level for Mrs. Meyer’s, which is the only brand not offering sustainability information. This lower sustainability evaluation may be because consumers believe this brand must not be sustainable, since the producer chose not to share its sustainability information. However, effects may also be related to the placement of the products. Mrs. Meyer’s was placed to the left of Dawn and Method, which had progressively higher brand sustainability levels. Consumers could have inferred that because the Mrs. Meyer’s product was placed to the left of those two brands, its sustainability score was lower. The evaluation for Mrs. Meyer’s was much higher in the full disclosure condition. This suggests in a voluntary labeling environment, consumers will have lower sustainability evaluations for the producers that choose not to disclose their sustainability level.

In addition, although Mrs. Meyer’s had lower sustainability evaluations in the partial condition, its sustainability ratings in the partial and full disclosure condition did not seem to affect consumer purchase intentions. This concurs with the findings in both experiments that a lower/higher sustainability level often may have little influence on consumer purchase intentions and choices.
General Discussion

Even though in the 2012 survey, 57% of consumers in the developed nations who were polled agreed that consumers should consume sustainably in order to improve the environment (GlobeScan, 2012), the results of my two experiments do not offer consistent support that this reported attitude extends to purchase intentions and choices at the retailers’ shelf.

The pilot study results appear to closely correspond with the experimental results in explaining the major effects that initial brand familiarity and attitudes have on consumer purchasing intentions. While there are some effects of the disclosure on intentions in the first experiment, in general, across the brands in the laundry detergent and dish soap product categories, the disclosure of actual sustainability levels seemed to have limited effects on purchase intention and choice. However, in contrast, the disclosure did influence consumer sustainability perceptions. This result suggests that, at least initially, there may be limited effects of retailers or producers providing brand level sustainability to consumers.

For the sustainability evaluation of brands with high brand equity, the presence of a relatively lower sustainability level did not have a substantial negative effect on purchase intention. However, the presence of a higher sustainability did marginally help the higher equity brand. The most substantial effect on purchase intentions was for the brand with a lower level of consumer familiarity and equity; results in Experiment 1 show that a poor sustainability level tended to lower intentions and thus have a negative effect on the brand. This pattern of findings is consistent with much of the literature in marketing and psychology on the asymmetry of information, indicating that negative information has stronger effects than does positive information (Baumeister et al., 2001).

Although there are a number of limitations to these experiments, results provide several potential implications for producers and marketers of sustainable products, particularly the brands with low equity. These producers should focus more on advertising the brand in conjunction with the product sustainability level, because sustainability alone often will not affect consumer attitude and purchase intention for the product.

The presentation of information related to the sustainability index and sustainability only showed an effect in the first experiment. While increasing consumer awareness for the importance of sustainability is very important, one news article is probably not enough to sway an average consumer’s attention and use of the information in forming evaluations and in making choices. In building sustainability awareness, related stakeholders need to find the appropriate communication vehicle and level of information provided to consumers.

In an environment with voluntary sustainability disclosures, the choice not to disclose the sustainability information can harm consumer evaluations of product sustainability. Certainly, brands with favorable levels should consider providing the information to improve the sustainability evaluation of their products. However, product manufacturers and marketers must keep in mind that even when the consumer had an unfavorable initial perception of sustainability that was later affected by a favorable sustainability disclosure, in Experiment 2 consumer sustainability perception had a limited influence on their purchase intentions and choices for a brand with a low level of consumer familiarity. In other words, a favorable sustainability level will not overcome low awareness or a weak initial brand attitude.

While some procedures in this research study attempt to address a number of threats to external validity by using actual brands and a retail store lab environment, there are other limitations to generalizability. Specifically, the retail lab still differs from actual retail...
environments in which there are many product options in a category, various types of promotions, and other situational and market variables that may impact evaluations and choices. Also, price information was not provided for the product options used in these experiments. Thus, while these limitations restrict our ability to generalize the findings, they do offer opportunities for additional research.

There are a number of other areas of opportunity for future research. While not discussed in this thesis, the qualitative results regarding participant stated reasons for their choices show that some participants have different perceptions of what is an acceptable sustainability level for brands. Thus, a future research topic could focus on determining acceptable sustainability levels for national brands and how and why these perceptions of acceptability differ across consumers (Cho, Burton, & Soster, 2012). Also, the information manipulation in my experiments demonstrated mixed results. Future research may address the most effective types and levels of public service information or promotion that may have the strongest influence on consumer behavior regarding the sustainability of their choices in a retail environment.

Conclusion

In these studies with actual brands that vary in levels of familiarity and consumer equity, sustainability labeling had a limited influence on consumer purchase intentions. It seems likely that typical consumers will often be more likely to make their purchase decisions based on their attitude or familiarity with the brand rather than sustainability of the product. While consumers may be becoming increasingly concerned about the environment, the effects of brand level sustainability ratings are not necessarily reflected in consumer purchase intentions and choices when familiarity and brand equity constructs are considered in evaluations.
References


Appendix A

Sustainability Information Manipulation

**USA Today article used for control condition**

![USA Today Article](image)

The FTC estimates that as many as 9 million Americans have their identities stolen each year. Identity theft occurs when someone uses your personally identifying information, like your name, Social Security number, or credit card number without your permission, to commit fraud or other crimes. The FTC estimates that as many as 9 million Americans have their identities stolen each year. In fact, you or someone you know may have experienced some form of identity theft.

While some identity theft victims can resolve their problems quickly, others spend hundreds of dollars and many days repairing damage to their good name and credit record. You may not find out about the theft until you review your credit report or a credit card statement and notice charges you didn’t make—or until you’re contacted by a debt collector.

Thieves may open new credit card accounts in your name. When they use the cards and don’t pay the bills, the delinquent accounts appear on your credit report. They may change the billing address on your credit card so that you no longer receive bills, and then run up charges on your account. Because your bills are now sent to a different address, it may be some time before you realize there’s a problem.

The best way to find out if your identity was stolen is to monitor your accounts and bank statements each month, and check your credit report on a regular basis.
USA Today article about sustainability index

Standardized Sustainability Index

12:59 p.m. EST January 26, 2013

Consumers can play an essential role in sustainable development by purchasing sustainable products.

In the first half of the 21st century, the human population and power to influence Earth’s climate and biology are expected to surge. Increasing consumption levels are thought to be associated with many direct and indirect consequences, including issues related to consumer health, food supplies, natural disasters (e.g., drought, wildfires, storm severity, flooding), water availability, and changes to various biological systems. For several decades, scientists, economists, and other experts have been trying to design strategies for meshing human activities with the limits of the planet and the needs of future generations. This concept, called sustainable development or sustainability, has become a goal of the United Nations, World Bank and a growing list of corporations.

Consumers can help drive sustainable production and play an essential role in sustainable development by purchasing sustainable products. There are a growing number of “eco-labels” providing information regarding the environmental impacts of products and services to help consumers make decisions. However, with over 400 eco-labels, consumers are often confused about what the environmental standards or certifications mean, therefore complicating their decision in making sustainable purchases. Recently, manufacturers and retailers are working together on a standardized index using a common language for product evaluation to provide consumers with transparency of the products they purchase. This standardized index, ranging in values from 1 to 10 to indicate overall sustainability performance, makes it easier for consumers to evaluate products’ environmental impacts, and ultimately promote sustainable development.
Appendix B

Retail Lab Examples of Sustainability Disclosure Conditions

Control condition, no sustainability labels
Full sustainability label disclosure

Experiment 2: Partial sustainability label disclosure