Abstract

Purpose - This research examines current and prospective consumer perceptions, purchase intent and parent brand evaluation due to green brand – line and category extensions by marketers of established (non-green) brands for products with high versus low perceived environmental impact.

Design/Methodology/Approach - Response to online surveys by 602 pet-owners at social networking websites. The quasi-experiment considered perceived environmental impact of core product, parent-brand user status and green extension strategy (line versus category). Brand extension evaluation, purchase intent and parent brand evaluation were then measured.

Findings – Results suggest that consumers are more likely to purchase green extensions of products with high perceived environmental impact and that current consumers prefer green line extensions to green category extensions. Both have similar reciprocal impact on parent brand evaluation among current consumers.

Originality/Value – This paper examines managerial implications of line versus category extension strategies for green brand extensions of established brands.

Research Limitations/Implications – The data has external validity however it lacks the control possible in laboratory experiments. Future research should replicate the study in other product categories.

Practical Limitations – Managers of established brands should consider brand extensions of products associated with high environmental impact only.

Paper Type: Research Paper
Keywords: brand extension, categorization, environmental impact, green branding, perceived fit.
Introduction

The past decade has witnessed an explosion of commercial and organizational research activity related to sustainability and green initiatives. Research from the Natural Marketing Institute (NMI) estimates the market size of the environmentally-sustainable or green products to reach $420 billion by 2010 (Bonini and Oppenheim 2008). While environmental associations with existing brands has become a generally accepted way of enhancing brand equity and gaining competitive advantage (Montoro-Rios, Luque Martinez, and Rodriguez-Molina 2008), current research shows that a growing number of consumers are distrustful of firms “green-washing” efforts, including adding environmental claims or labels to existing products and overuse of such terms and descriptions as “environmentally friendly” and “natural” (Karna, Juslin, Ahoven, and Hansen 2001). A 2007 study by TerraChoice Environmental Marketing Inc, (“The Six Sins of Greenwashing”) examined 1,735 environmental product claims and found that all but one were misleading or false (Bonini and Oppenheim 2008).

As an increasing number of organizations aspire to “go green”, companies are challenged with distinguishing their products and services in an increasingly crowded green marketplace. Firms with established brands are increasingly leveraging the equity associated with their core products to launch green brand extensions, either as line extensions or category extensions. Green line extensions involve developing a sub-brand within the same product category through usage of eco-friendly ingredients to appeal to current customers’ desire to reduce their carbon footprint and target a new market segment, the environmentally-conscious consumer. Green category extensions involve using the parent brand to enter a different product category – that offers a natural or eco-
friendly alternative to satisfy the same functional need. This follows a long recognized practice among companies that have capitalized on their established brand names to aid the acceptance of the extension and to reduce the tremendous cost and risk of launching a new product (Aaker and Keller 1990). More than 85% of new product introductions in the fast moving consumer goods category are brand extensions (Kirmani, Sood, and Bridges 1999). Good brand extensions also revitalize and enhance the parent brand name (Aaker 1991).

Research in the brand management literature suggests that consumers respond favorably to high fit brand extensions rather than low-fit brand extension because of cognitive consistency (Aaker and Keller 1990), hence line extensions would be favored compared to concept or category extensions. While there are significant benefits in brand extension strategies, there can also be significant risks, resulting in a diluted or severely damaged brand image. There are several examples of well-known brands that have failed in their attempts to establish a stable and loyal customer base for their green-brand extensions (e.g. Home Depot’s Eco-options). Poor evaluations for green brand extensions may dilute and deteriorate the core brand thus damaging core brand equity. This may be especially true of environmentally-friendly products that may be perceived to be less potent compared to their non-green counterparts by consumers. Hence, it is imperative to examine how “greening” a product portfolio strategy affects a firm’s brand value.

Managers of established brands launch green brand extensions in response to growing consumer desire to reduce their carbon footprint and attract a new market composed of prospective consumers whose category needs are either met better by other non-green or pure-green competitors (users of rival brands) or are not met by existing
product offerings in the industry (non-users in the category), while enhancing core brand equity. A critical decision facing brand managers is whether to launch green line extensions to attract competitive users (new environmentally-friendly products in the same category, e.g., paper towel manufacturer introducing paper towels with high post-consumer recycled content) or green category extensions to attract non-users (new products in a new environmentally-friendly category, e.g., paper towel manufacturer introducing cloth towels). This research addresses this dilemma by understanding the impact of consumers’ relationship with parent brands on evaluation and purchase intention of green brand extensions and the reciprocal impact on parent brand equity.

The role of social network websites in the grassroots movement towards environmentally-sustainable marketplace have been widely documented (Eden-Harris 2009). Many firms are leveraging community portals at their own websites and social-networking websites to reach current and prospective consumers to publicize, advertise and collect market –research data to guide their new product launch decisions (Sinha and Thompson 2008). The increasing availability of information on consumer preferences and opinions at social-networking websites that go beyond mere demographics and the sophistication of the technology for capturing, tracking, processing and analyzing this information now make it possible for firms to pre-test their new product concepts with actual prospective and existing customers at very low cost. Sinha and Thompson (2008) investigate the adoption behavior of brand community participants for order of new product entry for focal and rival brands. This research will use data collected by an unidentified market research agency at social-networking websites to examine consumer
evaluations of green brand extension strategies. Specifically, we address the following questions:

1.) Do consumer perceptions of environmental impact of products influence purchase intentions of eco-friendly products introduced by well-known traditional brands?

2.) Do customers differ in their purchase intention of green line extensions (perceived high fit with core product of parent brand) versus green category extensions (perceived low fit with core product of parent brand)?

3.) Do current and prospective customers of parent brand differ in their evaluation and purchase intentions of green line and category extensions?

4.) Do green line and category extensions differ in their reciprocal impact on parent brand evaluation?

CONCEPTUAL BACKGROUND AND HYPOTHESES

Categorization and Schema Processes

Prior research in the brand management literature suggests that consumer integration of brand extension knowledge, evaluation, and reciprocal impact on parent brand image can be explained by schema theory. A memory schema is a category in long-term memory containing information about a specific event, person or object (Fiske and Taylor 1995). Brand names as schemas contain brand attributes, associations, and brand-related experiences (Gurhan-Canli and Maheshwaran 1998). Brand extensions are construed as new schemata or changes in established schemata. Differences in perceived fit or quality between the parent brand and extension can harm parent brand image even for successful extensions or those not explicitly associated with negative information.
Hence how schema change occurs and its reciprocal effect on parent brand image is vital to understanding the returns on brand extension strategy.

Three different models of schema change have been used and tested in previous research, the sub-typing, bookkeeping and conversion model (Weber and Crocker 1983). The conversion model has received modest support in empirical studies of brand extensions, whereas the sub-typing and book-keeping models have received substantial support.

*The sub-typing model* suggests that extensions that deviate from conceptions of the parent brand (category extensions) will normally be stored in a separate cognitive category. Consequently, inconsistent (category) extensions will have no effect on the parent brand. Only extensions that are similar to the parent brand on major dimensions, or that deviate to a very small degree, will be assimilated into the parent brand category and affect evaluations of the parent brand.

*The book-keeping model* implies that all inconsistent extensions in terms of performance or parent brand concept will alter perceptions of the parent brand. Every new piece of information about the brand will be integrated into the associative network for the parent brand. Thus, the more inconsistent with the parent brand extensions are, the greater the changes in evaluations of the parent brand.

Specifically, findings suggest that sub-typing is more likely to occur under circumstances of low motivation to process information about extensions, whereas bookkeeping is more likely in high-motivation conditions (Gürhan-Canli and Maheswaran 1998). The role of motivation is highly relevant for understanding transfer effects of brand extensions on core brand equity.
Adoption Drivers of Eco-Friendly Products

Cleveland, Kalamas, and Laroche (2005) suggest that the degree to which consumers hold an internal locus of control influences pro-environmental decision-making and purchase of ecological products. Niva et al. (1998) and Laroche et al. (2001) found that though consumers may lack scientific knowledge on the causes and effects of environmental problems, they may well be prepared to make environmentally more benign choices for products associated with high environmental concerns if practical information is made available.

Most consumers believe that they can affect the state of environment by making more environmentally benign choices (Heiskanen and Timonen 1996). Hence, consumers will have higher motivations to adopt eco-friendly alternatives for products that are associated with high levels of environmental impact relative to those associated with low levels of environmental impact. Product categories associated with high levels of environmental concern investigated in prior academic and commercial research include detergents, paper towels, and cleaning products (Niva 1998). Hence,

\[ H1. \text{Purchase intentions will be higher for green brand extensions of products associated with high levels of environmental impact compared to those associated with low levels of environmental impact.} \]

Prior research suggests that consumers respond positively to environmentally conscious products such as The Body Shop range in the USA (Mirvis 1994) and green energy in Germany (Wustenhagen and Bilharz 2006). Kim et al. (1997) further found that ecologically concerned consumers responded more positively to fashion advertisements with an environmental message than to those without. Mathur and Mathur
(2000) support the view that consumers tend to respond more favorably to environmentally conscious images, the “green halo” effect. Marketers with well-known branded products launch green line extensions with the same functional form and usage attributes as their parent flagship counterparts but with eco-friendly (recycled or natural) ingredients (e.g., paper towel manufacturer introducing paper towels with high post-consumer recycled content as Kimberly-Clark launching Scott Naturals). In contrast, green category extensions (e.g., paper towel manufacturer introducing cloth towels) have a different set of usage and performance attributes relative to the flagship product.

Barriers to adoption of green product categories include inconvenience in use (cloth diapers), negative performance perceptions (e.g., CFL lightbulbs), and high prices relative to conventional product categories that serve the same functional need (Ginsberg and Bloom 2004). According to the 2007 GfK Roper Green Gauge study of more than 2000 Americans, fully 61 percent believe that green products perform worse than conventional alternatives on performance attributes (Bonini and Oppenheim 2008). Hence, green category extensions are likely to be perceived to be superior in environmental performance but inferior in functional performance to parent non-green products.

Henion, Russell Gregory, Mona A. Clee (1981) found that consumers place ecological performance ahead of price and functional performance only for products associated with high levels of environmental concern. Given the higher motivation to engage in pro-environmental behavior when products have greater environmental impact, we hypothesize,
The Role of Perceived Fit on Brand Extension Evaluations

Prior research suggests that the influence of a brand name on evaluations of a brand extension depends on the brand equity and perceptions of how well the extension product “fits” or is perceived to be similar to the core brand category (Bottomley and Holden 2001). Many researchers have considered fit to be a key factor in moderating the impact of brand equity in brand extension strategy. According to categorization theory, the degree to which brand associations are transferred from a brand portfolio to extension brands depends on the level of congruency or perceived fit between the two (e.g., Boush and Loken, 1991). In addition, a favorable evaluation of an extension based on family brand equity will occur only when no cues differentiate a single extension from the family brand (Fry, 1967).

The perception of fit or congruency can be based on several dimensions – similarity, typicality, and relatedness; virtually any brand association, similarity (physical, functional and contextual), competence (attribute), or image (Batra et al. 1993). Hence, green line extensions (e.g., paper towels made with recycled fibers launched by well-known paper towel manufacturer – Scott Naturals) are likely be to perceived as having higher degree of fit compared to green category or concept extensions (e.g., recyclable cloth towels launched by well-known paper towel manufacturer). Previous research has relied on theories of cognitive categorization and schema change (e.g. Boush and Loken 1991; Gürhan-Canli & Maheswaran 1998) to understand how consumers
perceive and evaluate brand extensions and feedback effects on the parent brand. These theories suggest that two effects: i) attitudes and beliefs change in response to brand extensions that vary in terms of fit or congruence with the person’s existing category or scheme; and ii) these changes occur via the process of assimilation and accommodation (Park et al. 1991).

Prior research in the brand extension literature suggests that high fit extensions are evaluated more positively than low fit extensions (Park et al. 1991). However, given negative performance perceptions of green products in general, parent brand equity will play a bigger role in brand extension evaluation among current customers. Current consumers are more likely to be familiar with the parent brand and its flagship products, and are more likely to consider attributes favorable to the brand to evaluate a green brand extension.

It is important to note that familiarity with the parent brand, its associations, attributes, and quality are dynamically learned through product experience and by exposure to marketing communications for the brand. However, the strength of brand associations formed through product experience is higher than one formed through exposure to marketing communications alone (Woodside and Walser 2007). Further, the strength of brand associations grows following use of the brand over months and years (Keller 1993), hence behavioral loyalty through extended usage rather than attitudinal loyalty alone drives the categorization process. Hence,

\[ H3: \text{Current customers will evaluate green brand extensions more positively than prospective consumers.} \]

**Influence of Parent Brand User Status on Evaluation of Green Brand Extensions**
Brand equity can play a role in how information (e.g. attributes) about a brand extension is learned and encoded, then retrieved and used in decisions and choice. Prior studies indicate that current users of the flagship product of the parent brand have high familiarity with the flagship product, and they process and evaluate extension products differently from those who are less familiar. Kirmani, Sood and Bridges (1999) researched the ownership effects on brand extension in the line extension context. They proposed that owners have more favorable responses than nonowners to the brand extensions. Current users develop strong knowledge structures or schema about a brand as they become more familiar with the flagship product, and the relative degree of liking for the brand becomes well-established and stable (Park and Lessig 1981). As familiarity increases, the amount of cognitive effort needed to process product-relevant information decreases (Park and Lessig 1981). Assimilation occurs when a high degree of fit exists, the existing schema remains essentially unchanged when incorporating the new instance (Park et al. 1991). According to Meyer-Levy and Tybout (1989), a positive attitude is generated in the categorization process when consumers familiar with the brand encounter a line extension (with a high-fit to the core brand) even when the line extension is perceived to be inferior to the parent brand.

Category extensions carry more new information than line extensions because the brand is stretched out to a new product category (Gürhan-Canli and Maheswaran 1998). Accommodation has to occur since associations to the brand extension are very different from the parent brand (i.e., existing schema), thus requiring the cognitive schema to accommodate the revised change. Current consumers of a well-established brand are less likely to change the assessment of an extended product with low level of fit (a category
extension) as the effort involved in categorization increases relative to that of green line extensions.

Prior research in categorization theory as applied to brand extensions suggests that preexisting attitudes may be either unformed or weak for prospective consumers, making the categorization process more difficult for both types of extensions when consumers have low familiarity with flagship products of the parent brand (Meyer-Levy and Tybout 1989). Further, even if prospective consumers are familiar with the flagship product of the parent brand, they are likely to perceive them inferior to their chosen brand. Hence,

\[ \text{H4: Current customers of parent brand are likely to evaluate green line extensions more positively than green category extensions. There will be insignificant differences between prospective customers’ evaluations of green category extensions and green line extensions.} \]

Reciprocal Impact of Green Brand Extensions on Parent Brand

Successful brand extensions have positive spillover effects on parent brand equity and enhance parent brand image in three ways. First, brand extensions clarify brand meaning to consumers and define boundaries of the domain within which a brand competes (Keller 2003). Second, advertising for brand extensions has beneficial spillover effects on parent brand. Morrin (1999) found that consumer exposure to brand extensions and their advertising improved parent brand awareness in terms of recognition and recall. Third, successful or favorable brand extensions can renew interest and improve attitudes towards the parent brand (Keller 2003).
Research on brand extensions has suggested that parent brand equity can become "diluted" when consumer evaluation of an extension is unfavorable or it fails in the marketplace (Loken and Roedder John 1993). Further, irrespective of whether the extension is a success or a failure dilution may occur when attributes of an extension are seen as inconsistent or conflicting with corresponding attributes of the parent brand, which is more likely to occur for green category extensions. Category extensions may also obscure the identification of the brand with its original categories, reducing brand awareness and/or diluting the brand meaning thus decreasing evaluations of core brand associations for the parent brand (Loken and John 1993). However the subtyping model would suggest that unsuccessful extensions can negatively impact consumers' beliefs about the overall brand only for high fit or line extensions that are more similar to core products under the parent brand (Loken and Roedder John 1993).

The quality of an extension provides new information to consumers, which they likely evaluate against a reference level determined—among other things—by their quality associations for the parent brand. Consequently, an extension of better quality than the parent brand should enhance or at least not change the quality associations of the parent brand, which in turn should either enhance or not change (due to ceiling effects) parent brand image. However, an extension of lower quality may dilute the quality associations of the parent brand and thus damage the parent brand’s image (Boush and Loken 1991). Current consumers of the parent brand are likely to have stronger core brand associations than prospective customers. In contrast, prospective customers have stronger preferences and associations for competing brands, which may include an eco-
friendly brand whose associations or attributes may be similar to those of green category extensions rather than green line extensions. Hence we hypothesize,

\[
H5a: \text{Current customers will have more positive attitudes towards the parent brand for green line extensions than green category extensions.}
\]

\[
H5b: \text{Prospective customers will have more positive attitudes towards the parent brand for green category extensions than green line extensions.}
\]

**Social Networks and the Green Consumer**

Research on organizations in many industries like electronics and agriculture that have implemented environmentally “clean” process technology found that social networks have a significant positive impact on implementation success (Johnston and Linton 2000). These studies suggest that social capital at the individual level affects environmentally friendly practices. Social capital represents the social connectedness of the individual. An individual with higher social capital is likely to be more socially responsible. They are also more likely to have better exposure and access to information about the importance of environmentally friendly practices.

Muniz and O’Guinn (2001) found that membership and partnership in social networks engenders a sense of loyalty among members. The hope is that this loyalty will benefit the company by increasing the likelihood that members will purchase the company’s products in the future and develop a sense of “oppositional loyalty”. This oppositional loyalty leads members of the community to take an adversarial view of competing brands. Such oppositional loyalty may benefit companies by reducing the likelihood that members will purchase products from competing brands.
In the consumer context, Laroche et al. (2001) found that ecologically conscious consumers reported that security and collectivism as implied by cooperation, helpfulness, and consideration of goals of the group relative to the individual, were important principles guiding their lives. Sinha and Thompson (2008) use the number of posts made by users as a measure of participation. Hence, consumers that are more active in social networking websites, contribute more posts are more likely to adopt green brand extensions relative to consumers that are lurkers or contribute fewer messages to the social network websites.

\[
H6. \text{The number of messages posted by a consumer will be positively associated with intention to purchase green brand extensions.}
\]

A schematic representation of conceptual framework is in Fig. 1. In the next section, we present empirical data to test our hypotheses.

**EMPIRICAL CONTEXT AND METHOD**

The data for our study comes from a market research agency (unidentified for competitive reasons) that collects primary data online and offline for firms and agreed to share their data for academic purposes. This was an exploratory study for a leading marketer of pet products and accessories in the US, Europe and Australia. The pet industry, worth about $40 billion in the United States alone, is in a growth spurt, up 65 percent since 2000. Pet products are branching out as never before in new directions mirroring pet owners’ attitudes, perceptions, and even addiction to technology – line a $200 RFID Snif tag that picks up codes during walks and lets pet owners communicate online (Upson 2008). The growth in social networking websites for pet owners has been
widely reported in the commercial media (Newsweek 2006). Some sites include Dogster: 180,000 members, Catster.com: 76,000 members, Hamsterster.com: under 15,000 members, Petster.com: 11,000 members. Many pet product companies take part in multiple social networks where they seek to influence, monitor, and shape their key stakeholders- pet owners’ attitudes and behaviors.

The market research firm invited pet owners at multiple social networking websites to participate in an online survey at its website. Recognizing the international membership base of the network sites, only participants from the US, Canada, Australia and certain European countries (where the marketer’s products are sold) were directed to the study we describe in the next sections.

Study Design

In deference to research documenting the threats to external validity of brand extension research (Klink and Smith 2001), the design of the study examined green line and category extensions for real, well-known brand names (instead of fictitious ones), to test respondents’ evaluations of green line extensions based on their familiarity and perceptions of the firm’s current product portfolio. Since the firm’s products were sold under different brand names in different countries, the survey questionnaire displayed brand names applicable to the country as detected by the consumers’ IP address. At the time the study was conducted, the marketer did not have any green brand in the market and there were few widely-marketed green pet products.

The firm was exploring introduction of eco-friendly products in its product portfolio. Given lack of prior research on pet products to drive apriori selection of product categories, pretests conducted with 85 pet-owners that were not in the final
sample was used to categorize product categories into those with high vs. low environmental impact. Two product categories were dropped because of insufficient responses. Data for four products was included in the sample, pet waste bags and pet bedding (both high impact), dog chews and dog/cat toothpaste (both low impact on environment). These products were selected since they are frequently bought by most pet-owners as research indicates that consumers are more likely to consider environmental alternatives for frequently purchased goods (Montoro-Rios, Luque Martinez, and Rodriguez-Molina 2008)

*Survey Instrument and Measures*

Usable survey and parsed clickstream data for 602 respondents who completed the survey in Oct. 2006 was made available for this study. The online survey had four steps. Step 1 involved collection of demographic information of the pet owner and pets, number of purchases per year of each of the four product categories under consideration, for product categories purchased, the brand bought most frequently, parent brand evaluation (only after the most frequent brand question was answered), and number of posts at social-networking websites in the past 6 months. Each respondent was allocated to one of four product categories based on the product category most frequently purchased (relative to general population) and randomly allocated to a brand extension condition.

Step 2 contained questions on three previously-used scales measuring: *Environmental knowledge*. The extent of respondents’ environmental knowledge about the environmental effects of pet products was measured by three seven-point bipolar scales used in a previous study (Kim and Damhorst, 1999): “novice” versus “expert” “informed” versus “uninformed” and “know very little” versus “know very much”.
Scores on the three scales were summed and averaged. The possible summated scores for the three scales ranged from 4 to 19 (α=0.94). The mean of the actual self-assessed scores was 4.97 (σ = 3.66). Most respondents claimed moderate knowledge of the environmental effects of pet products, but less than one-fourth of respondents achieved an average summated score of over 6 for this measure.

*Perceived environmental impact of product.* An overall measure of perceived environmental impact of the product was measured using two 7-point scales, i.e., high impact/low impact and severe/mild with (α=0.87).

*Brand Familiarity.* This is a 7-point scale measuring parent brand familiarity where 1=not at all, and 7=very.

In Step 3, participants were exposed to descriptions of a green brand extension type (line or category extension). The line extension was displayed as having same usage characteristics as the core product currently sold with recyclable or natural ingredients. The category extension was a natural alternative with usage restrictions and requirements. We collected measures for manipulation checks and dependent variables.

*Perceived fit between brand extension and parent brand.* Consumers at the site were asked to rate the brand extension (line or category) on similarity in form (physical, functional and contextual), competence (attribute) and image to core product using the 7-point scales proposed in Batra et al. (1993).

*Brand Extension Evaluation.* Brand extension evaluation was measured by summing three-item, 7-point semantic differential scales (α=0.91) adapted from Pryor and Brodie (1998). The semantic differential scales were anchored with the polar adjective “extremely” followed by likeable/not likeable, good/bad, and high quality/poor quality.
**Purchase Intent.** Purchase intent was conceptualized as the probability of trying the brand when it becomes available. It was measured using two 7-point scales, i.e., likely/unlikely and probable/improbable (MacKenzie et al. 1986) with (α=0.94).

**Change in Parent Brand Evaluation.** To measure the respondents’ evaluation of original brand, the authors used the scales of Pryor and Brodie (1998). The respondents were asked to evaluate the parent brand in Step 1 and Step 4 using three 7-point bipolar scales (desirability: 1=undesirable, 7=desirable; favorability: 1=unfavorable, 7=favorable; and quality: 1=low quality, 7=high quality). Differences in parent brand evaluation for pre- and post- exposure to green brand extension were used in the analyses.

**Data Analysis and Results**

**Sample and Descriptive Statistics**

The sample consisted of 602 current pet-owners with a mean age of 33.7 as shown in Table 1. Female respondents comprised 59% of the sample, and on average, have significantly more pets than male respondents (M_F=2.86 vs. M_M=1.24, t=3.1, p<0.05), and post more messages on social networking websites than males (M_F=11.14 vs. M_M=4.1, t=7.4, p<0.01). Respondents are more likely to be homeowners, married, have greater household incomes, and higher levels of education. With regard to gender, men reported significantly higher environmental knowledge compared to women (M_F=2.78 vs. M_M=4.94, t=2.4, p<0.05).

<table>
<thead>
<tr>
<th>Variables</th>
<th>Means (or %), Range</th>
<th>Std. dev.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Respondent Profile (n=602)</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Female (%)</td>
<td></td>
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<tr>
<td>-------------------------</td>
<td>------------</td>
<td>----------</td>
</tr>
<tr>
<td>Age (years)</td>
<td>33.7</td>
<td>10.12</td>
</tr>
<tr>
<td>Household Income per member (US$)</td>
<td>16,456</td>
<td>9,893</td>
</tr>
<tr>
<td>Years of education</td>
<td>15.4</td>
<td>6.1</td>
</tr>
<tr>
<td>Home ownership (%)</td>
<td>54</td>
<td></td>
</tr>
<tr>
<td>Number of current pets</td>
<td>1.59</td>
<td>1.02</td>
</tr>
<tr>
<td>Annual pet-related expenditure (US$)</td>
<td>968.42</td>
<td>1509.4</td>
</tr>
<tr>
<td>No. of posts at social network websites in last 6 months</td>
<td>9.79</td>
<td>6.15</td>
</tr>
</tbody>
</table>

Men reported significantly higher usage of the parent brand compared to women (M_F=31% vs. M_M=44%, z=3.1, p<0.05). Male and female respondents did not differ significantly in their ratings of high environmental impact of pet waste bags (M_F=6.36 vs. M_M=5.84, t=1.07, p>0.05), pet bedding (M_F=4.91 vs. M_M=4.52, t=0.87, p>0.05), and low environmental impact of pet toothpaste (M_F=1.47 vs. M_M=2.11, t=1.24, p>0.05) and dog chews (M_F=2.94 vs. M_M=3.18, t=2.61, p>0.05).

Data checks

As we expected, respondents indicated perceived fit was significantly higher for line extensions compared to category extensions (M =2.9 vs. 4.3, p<0.001), suggesting that our interpretation of green line and category extensions as exemplars of high and low-fit brand extensions are valid. However, there is a difference among current and prospective consumers in perceived difference of fit for the two extensions. Unlike prospective consumers, current customers perceive the difference in fit to be significantly larger (1.9 vs. 0.4, p<0.01). This is supported by further analysis, current customers indicated they were more familiar with the parent brand (M=6.21) than prospective respondents (M=3.47), and this difference is significant (t=2.97, p<0.05). Thus, prospective consumers have weak schema associated with core brand, and do not
perceive differences between green line and category extensions. Further, the standard
deviations associated with the fit measures for prospective consumers are much higher
than that of current consumers, suggesting that prospective customers have more
difficulty in comparing the green brand extensions to the core brand schema. Familiarity
with parent brand did not significantly vary across perceived environmental impact of
product groups for any product category (M = 4.76 vs. M=3.47, t=1.56, p>0.05).

The manipulation checks for perceived environmental impact was conducted
using a median split categorize scores as high or low. We find that the mean score for
high environmental impact products – pet waste bags and pet bedding was 5.4 (s.d.=0.39)
which was significantly higher than that of pet chews and pet toothpaste, 1.3 (s.d.=0.84),
\( p<0.05 \).

*Hypothesis tests.*

Table 2 presents the cell means and standard deviations. Initial 2x2x2 ANOVA
analyses revealed no significant main or interaction effects of product categories for each
of the dependent variables. Consequently, we pooled data for the product category
replicates in each perceived environmental impact group for the reminder of our analyses.
Test results of equality of regression slopes across the independent variables revealed that
environmental knowledge and number of posts at social network websites can be used as
a covariate but the variance explained in the dependent variables was low (i.e., below 3
percent). A three-way multivariate analysis of variance (MANOVA) was conducted to
determine the effect of perceived environmental impact of product category, parent brand
user status, and brand extension type on brand extension evaluation, brand extension
purchase intent, and parent brand evaluation. Since our dependent variables are correlated
we use MANOVA instead of several univariate ANOVAs to test our other hypotheses to avoid inflating Type I error. We report significant effects in Table 3. There were significant multivariate main effects for perceived environmental impact of product category (Wilks’ Lambda=0.835, F(3,592)=18.725) and brand extension type (Wilks’ Lambda=0.967, F(3,592)=3.259) both p<0.01, but not for parent brand user status. These main effects need to be viewed with caution since several two-way interaction effects were found.

Table 2: Brand Extension Evaluation
Means and Standard Deviation

<table>
<thead>
<tr>
<th>Perceived Environmental Impact</th>
<th>Brand Extension Strategy</th>
<th>Parent Brand User Status</th>
<th>Brand extension evaluation</th>
<th>Brand extension purchase intent</th>
<th>Parent brand evaluation change</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>Line</td>
<td>Current</td>
<td>5.29 (1.11)</td>
<td>3.83 (0.28)</td>
<td>2.64 (1.21)</td>
<td>70</td>
</tr>
<tr>
<td>High</td>
<td>Line</td>
<td>Prospective</td>
<td>1.87 (1.06)</td>
<td>2.77 (0.18)</td>
<td>1.69 (0.93)</td>
<td>81</td>
</tr>
<tr>
<td>High</td>
<td>Category</td>
<td>Current</td>
<td>3.46 (0.13)</td>
<td>2.26 (0.11)</td>
<td>1.99 (1.45)</td>
<td>78</td>
</tr>
<tr>
<td>High</td>
<td>Category</td>
<td>Prospective</td>
<td>4.91 (1.28)</td>
<td>3.32 (0.09)</td>
<td>3.05 (1.04)</td>
<td>68</td>
</tr>
<tr>
<td>Low</td>
<td>Line</td>
<td>Current</td>
<td>2.18 (0.13)</td>
<td>2.55 (0.21)</td>
<td>2.34 (0.19)</td>
<td>86</td>
</tr>
<tr>
<td>Low</td>
<td>Line</td>
<td>Prospective</td>
<td>1.24 (0.1)</td>
<td>0.64 (0.19)</td>
<td>0.51 (0.21)</td>
<td>64</td>
</tr>
<tr>
<td>Low</td>
<td>Category</td>
<td>Current</td>
<td>1.46 (0.13)</td>
<td>1.26 (0.11)</td>
<td>2.87 (1.35)</td>
<td>72</td>
</tr>
<tr>
<td>Low</td>
<td>Category</td>
<td>Prospective</td>
<td>1.51 (0.28)</td>
<td>1.32 (0.09)</td>
<td>1.31 (1.24)</td>
<td>83</td>
</tr>
</tbody>
</table>

H1 examines the main effect of perceived environmental impact of product category on brand extension purchase intent. We found that for purchase intent of green brand extensions was higher in product categories perceived to have high levels of
environmental impact relative to those with low levels of environmental impact (M = 3.27 vs. 1.51, F(1,594)=4.395, p<0.01). There was a significant univariate main effect of perceived environmental impact on brand extension purchase intent hence H1 was supported. Analyses of variances (ANOVA) on each dependent variable conducted as follow-up tests to the MANOVA indicated that perceived environmental impact had a significant effect on brand extension evaluation (F(1,594)=2.721) and parent brand evaluation (F(1,594)=4.101) all p values <0.01. Brand extension evaluation and parent brand evaluation scores were significantly higher for products with high levels of environmental impact compared to those with lower levels of environmental impact.

Table 3.
Multivariate and Univariate MANOVA Results (p<0.01)

<table>
<thead>
<tr>
<th>Source</th>
<th>Multivariate F (df)</th>
<th>Univariate F</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Main effects</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Perceived environmental impact of product category</td>
<td>18.725 (3, 592)</td>
<td></td>
</tr>
<tr>
<td>Brand extension evaluation</td>
<td>4.395 (1,594)</td>
<td></td>
</tr>
<tr>
<td>Brand extension purchase intent</td>
<td>2.721 (1,594)</td>
<td></td>
</tr>
<tr>
<td>Parent brand evaluation</td>
<td>4.101 (1,594)</td>
<td></td>
</tr>
<tr>
<td>Parent Brand User Status</td>
<td>3.25 (3, 592)</td>
<td></td>
</tr>
<tr>
<td>Parent brand evaluation</td>
<td>6.753 (1, 594)</td>
<td></td>
</tr>
<tr>
<td>Green Brand Extension Strategy</td>
<td>0.528 (6, 592)*</td>
<td></td>
</tr>
<tr>
<td><strong>Interactions</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Parent Brand User Status X Green Brand Extension Strategy</td>
<td>7.426 (3, 1084)</td>
<td></td>
</tr>
<tr>
<td>Brand extension evaluation</td>
<td>2.707 (1, 594)</td>
<td></td>
</tr>
<tr>
<td>Parent brand evaluation</td>
<td>5.12 (1, 594)</td>
<td></td>
</tr>
<tr>
<td>Perceived environmental impact of product category X Green Brand Extension Strategy</td>
<td>3.427 (6, 1084)</td>
<td></td>
</tr>
<tr>
<td>Brand extension evaluation</td>
<td>3.959 (2, 594)</td>
<td></td>
</tr>
</tbody>
</table>
The main effect of green brand extension type on brand extension evaluation, purchase intent and parent brand evaluation was not significant, Wilks’ Lambda=0.989, F(6,592)= 0.528, p>0.05. However the perceived environmental impact of product category and green brand extension type interaction was significant, Wilks’ Lambda=0.932, F(6,1084)= 3.427, p<0.01. Follow-up univariate ANOVA shows that the interaction effect is significant for the brand extension evaluation only F(2, 594)=3.959, p<0.01. Pairwise contrasts indicate that for product categories with high environmental impact, mean brand extension evaluation scores for green category extensions (4.13) are significantly higher than those for green line extensions (3.45) thus providing support for H2, p<0.001. For product categories with low environmental impact, the difference in brand extension evaluation scores for green category extensions and green line extensions (M=1.78 vs. 1.49, p>0.05) was insignificant.

The ANOVA for parent brand evaluation (F(1,594)=6.753, p<0.01) due to parent brand user status was significant; however the effects on brand extension evaluation and brand extension purchase intent were insignificant at p<0.1. Current users did not evaluate green brand extensions more positively than prospective customers, thus rejecting H3. We found a significant 2-way multivariate interaction effect of parent brand user status and green brand extension type, F(3,1084)=7.426, p<0.01. Follow-up univariate ANOVA shows that the interaction effect is significant for brand extension evaluation (F(1,594)=2.707, p<0.01) and parent brand evaluation (F(1,594)= 5.12, p<0.01). Brand extension evaluation scores were significantly higher for green category extensions relative to green line extensions for prospective customers (3.04 vs. 1.59),
however current customers rated green line extensions significantly higher than green category extensions (3.57 vs. 2.5), p<0.01 thus supporting $H4$.

**Table 4. Hypotheses Results**

<table>
<thead>
<tr>
<th>Hypothesis</th>
<th>Test Result</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>H1</em>. Purchase intentions will be higher for green brand extensions of products associated high levels of environmental impact compared to those associated with low levels of environmental impact.</td>
<td>Supported</td>
</tr>
<tr>
<td><em>H2</em>. Green category extensions will be evaluated more positively than green line extensions for products associated with high levels of environmental impact.</td>
<td>Supported</td>
</tr>
<tr>
<td><em>H3</em>: Current customers will evaluate green brand extensions more positively than prospective consumers.</td>
<td>Not supported</td>
</tr>
<tr>
<td><em>H4</em>: Current customers are likely to evaluate green line extensions more positively than green category extensions.</td>
<td>H4 supported</td>
</tr>
<tr>
<td><em>H5</em>: Parent brand user status will moderate the impact of green brand extension strategy (line versus category) on parent brand evaluation. Current consumers will have more positive attitudes towards the parent brand for green line extensions rather than green category extensions while prospective customers will have more positive attitudes towards the parent brand for green category extensions rather than green line extensions.</td>
<td>H5 partially supported</td>
</tr>
<tr>
<td><em>H6</em>. The number of messages posted by a consumer will be positively associated with intention to purchase green brand extensions.</td>
<td>Not supported</td>
</tr>
</tbody>
</table>

The main effect of parent brand user status on post-extension parent brand evaluation indicates that current users rate the parent brand higher after exposure to green extension information regardless of whether it was a line or category extension. However, the significance of interaction effect of parent brand user status and green brand extension type, F(3,1084)=7.426, p<0.01 adds more nuances to the interpretation. The difference in parent brand evaluation scores for green category and line extensions were insignificant for current customers (3.45 vs. 3.92), not providing support for $H5$. In contrast, for prospective users, parent brand evaluations were significantly higher for
green category extensions relative to green line extensions (3.09 vs. 1.16), p<0.001 thus providing partial support for H5. It is also important to note that parent brand evaluations by current consumers are insignificantly higher than that for prospective consumers.

We found that though the number of posts by a consumer is positively associated with intent to purchase green brand extensions it is not statistically significant, hence H6 is rejected. Since this data is based on a consumer’s recollection of message posting incidents, the data may be subject to measurement biases. The results of the hypothesis tests are summarized in Table 4 below.

CONCLUSION

The study shows that consumer evaluations of new green products introduced by firms with established brand names differ based on consumers’ perception of the environmental impact of the core product category and their parent brand user status. If the effectiveness of green brand extensions in building revenues and brand equity for the brand family is an important issue, firms have to recognize that returns from green brand extension strategies is contingent upon, and is higher for products perceived to have high environmental impact by their customer base. This suggests that for many product categories ‘sustainable’ and ‘green’ imply alternative ways of doing established things and represent options, not imperatives.

The study proves the ability of the categorization theory to explain how consumers integrate new information on green brand extensions in their existing schema for the brand. It also highlights how the outcome of this process differs across consumers based on their relationship with the core product. From an information economics view,
consumer-based brand equity is the value of a brand as a credible signal of a product’s position in the marketplace (Erdem and Swait 1998). Green line extensions are evaluated more positively by current consumers since it enhances the original brand schema through additional positive brand associations. However, it does not extend to green category extensions, since the positive schema enhancement due to superior environmental performance is negated by negative associations due to usage (especially, inconvenience) attributes inconsistent with those of the core product. Further, despite the low evaluations of green category extensions by current customers, reciprocal effect on parent brand evaluation is positive due to environmental associations.

Brand associations among prospective consumers are weak to begin with and more malleable. Since line extension attributes with high fit to core products are less preferred to begin with among competitive and non-category users, category extension associations inconsistent with the core product may actually draw some new customers to the brand as indicated by empirical data on brand extension purchase intent. The financial implication of launching a line versus category green extension strategy is more nuanced.

Our empirical analyses indicate that firms with established brands considering green brand extensions leverage the growing interest in environmental sustainability marketplace, have to redefine how value will be provided. Returns from green line extensions will be higher among current customers however firms risk cannibalization of core product sales. Hence category leaders with large market shares, with large proportion of current customers relative to competing brands in the marketplace, will gain more from launching green line extensions than smaller brands. Green line
extensions as product development strategy will help these firms gain a larger share of customer wallet.

Niche players with small proportion of users in the marketplace will gain more by launching green category extensions. These firms have to recognize nonusers of the category are attractive prospective customers of green category extensions. Green category extensions as diversifications increase the brand franchise by attracting new customers with new products and services. Since most prospective consumers are attracted by low-fit brand extensions, preference for the core products in the brand is likely to build slowly over time, if ever.

The empirical context in this study has external validity since it uses data collected from real consumers at actual social network websites and real brand names in the marketplace. While this quasi-experimental design has real-world generalizability, the use of a specialized product category (i.e., pet products) may limit its applicability to the general population. Researchers have found pet owners to be more environmentally conscious compared to non-owners (Cavanaugh, Leonard and Scammon 2008). However, environmental knowledge did not account for significant variation in dependent variables. Despite expectations of high environmental consciousness within this sample, purchase intentions for green brand extensions in our sample did not exceed 3.83 on the 7-point scale. Hence, this sample can be thought as representing the average eco-friendly consumer.

The burgeoning recognition that the environmentally sustainable marketing strategies intersects with the growing need by consumers to engage in environmentally responsible consumption requires firms to examine the impact of green brand extension
strategy not only on their current customer base but also on prospective customers that are key to margin expansions. Future research should replicate the study in other broad product categories where brand switching is more common. The role of price in adoption of green products has been explored in academic and commercial research. Prior research on consumers who are willing to pay more for eco-friendly products (Laroche, Bergeron and Barbaro-Forleo 2001) needs to be extended in the context of green brand extensions. The use of targeted promotions and rewards to attract various groups of prospective consumers is a topic of importance to managers. The competition between green brand extensions and green brands (that do not have any non-green counterparts) presents another area of exploration.

REFERENCES


