Assessing the Impact of (Overly) Socially Desirable Brand Attributes in Choice Conjoint Tasks

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ABSTRACT

This research assesses the effects of corporate social responsibility on choice behavior. The construct social responsibility is highly socially desirable by definition. As a result, choice tasks in such setting may be biased by social desirability. This paper unveils a data treatment on choice conjoint tasks that sorts out the respondents who are likely to be mostly affected by social desirability. In this research a survey with choice conjoint tasks is used to evaluate interaction effects of corporate social involvement on functional attributes. Choice on four different product categories is assessed in a 2^{15} within-subject design embedded in a 3x2x2 between-subject design. The main effects of corporate social involvement come out strong. The predicted interactions between social involvement and the functional attributes of the products seem to be affected by social desirability, leading to unclear results. The sub-samples resulting from the data manipulation, however, provide empirical support to the hypotheses on the interaction terms. This indicates the appropriateness of a model in which social involvement signals that the firm's arguments on its products' credence attributes are worth trusting. Nonetheless, the results with the full data prevent assertive conclusions.

1. Introduction

The issue of a firm's social involvement has been gaining increasing attention both in academic and managerial literature since Bowen's (1953) reference to the obligations of businessman to act accordingly to the values and objectives of society. In the last decades, however, the notion of social obligation has given way to a more strategic approach, turning the focus to business social responsiveness (Ackerman & Bauer, 1976) and to corporate social performance (Carroll, 1979; Wartick & Cochran, 1985; Wood, 1991).

On the managerial side, the same trend is observed. Examples of firms' programs with social involvement abound. Walmart "buys American." Its competitor Target Stores develops community involvement programs and contributes to local schools. The Home Depot helps relief efforts after natural disasters. McDonald's sponsors housing for families of children undergoing prolonged health treatment, and American Airlines provides the transportation. American Express supported the renovation of the Statue of Liberty. Virtually every company gets involved in at least some kind of the so-called socially responsible activities. Moreover, such activities are highly publicized. For instance, for every dollar obtained by American Express for Lady Liberty, it spent more than three dollars making sure potential customers learned of it (Reder 1995). In Brazil, the business magazine Exame (2004) has published its Guia de Boa Cidadania Corporativa for the fourth consecutive year. In 1998, it brought a front-page article on the subject (Exame, 1998). Large companies place social concerns in high consideration. Differentiation in social involvement is sought in undifferentiated markets. CTBC—Companhia de Telecomunicações do Brasil-Central positions itself as "The Citizen Firm," through a program of actions linked to the specific markets where it competes (CTBC 1998). Most recently, the toothpaste "Sorriso" devoted almost half of the printable area of its package to saying that "part of the sales price is donated to the rainforest preservation"—instead of dedicating such a valuable space to demonstrating the functional attributes of the product.

In spite of the strategic contents of the issue, however, studies on consumer reactions to a firm's social involvement are conspicuously rare (Marketing Science Institute 1992). Existing research effort concentrates on the firm's standpoint (e.g., ENGEMA, 2003). One possible reason for the lack of studies from

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the consumer side is the threat of social desirability bias. Consumer respondents tend to answer through a filter that makes them look good (Babbie, 1989). This is particularly true in the controlled settings of experimental research, where situation manipulation is present. In fact, social desirability is considered a demand characteristic, a well documented—and frequently hard to overcome—source of bias in experimental research (Aronson et al., 1990). As a result, social desirability may bias the measurement of consumer responses to attempts in assessing corporate social involvement effects. Social involvement is highly socially desirable *per se*, as society imposes its views on its members (Wilkie, 1994). Conventional ways of tackling the problem include employing measurement items that are neutral with respect to social desirability and the use of self-inventories (Nunnally, 1967). However, social involvement is both a non-neutral research variable with respect the social individual, but also it relates to a firm, not the respondent.

In spite of the difficulties, learning how social involvement affects consumer behavior may help managers define the importance of socially responsible actions and programs to their businesses. It may assist them in determining the amount of investment they may want to make in social involvement. Under the marketing perspective, the whole idea of engaging in socially relevant projects seems to aim at consumers, who can be viewed as a prime target for a firm's engagement on social actions. Therefore, looking at ways to overcome or reduce social desirability bias is in order in marketing research.

This research deals with the problem in a conjoint choice setting. The use of choice responses instead of attitudinal measurements (as suggested by Aronson et al., 1990) has a clear purpose of assessing behavioral responses instead of consumer cognitions, more prone to social desirability bias. As a matter of fact, the whole notion of social desirability arises from cognitive inferences made by consumers (Nunnally, 1967). However, the need to manipulate variable levels in choice tasks leads to a research setting similar to the experimental methods, in which the demand characteristic pops up. Moreover, even though a widely accepted method, mimicking actual choice with stated choice makes the behavioral measurement short of being actual. This enhances the probability of social desirability bias. Thus, social desirability bias in assessing social involvement effects is a natural concern, eventually impossible to overcome.

This paper presents a research aimed at evaluating second-order, interaction effects of a firm's social involvement on consumer behavior. As one may expect, social desirability bias hinders the assessment of these effects. An analytical approach is proposed to sort out part of sample, which suffers the problem, the most.

Next, I introduce a conceptual frame that proposes ways by which consumers assign values to social involvement. Hypotheses offered in this context. Then, an analytical model of a corporate social involvement affecting consumer choice is presented. The research method is described next. Data analysis is made and so are the results of the data treatment here proposed to progressively sort out respondents who suffer from high social desirability. A conclusion both on the data treatment and on the substantive contributions on social involvement finalizes the paper.

2. Conceptual Framework: The Value Consumers Assign to Social Involvement

The focus of this paper is on the impact of social involvement on consumers. Consumers are privileged stakeholders of organizations in a competitive environment. If they withdraw patronage in benefit of a competitor, the firm perishes. Any action of social involvement has to be paid for by consumers, unless it returns utility to investors, employees or other stakeholders who can affect capital accessibility or cost. Therefore, except for these cases, socially responsible actions have to be translated into some value to consumers. If society transfers its concerns to consumers, they will be willing to pay for the social involvement. In other words, the question is whether or not consumers can perceive social value in the products or services they purchase. If they do, a firm's social involvement may have a direct effect on consumer behavior. This direct effect—in which social involvement is a source of utility for consumers—can be better understood through the literature on the social values consumers place on products and services, reviewed next. An indirect effect, by which social involvement affects other utility sources may be predicted using the signaling theory, which is reviewed later in this section. The section ends with a summary of the values consumers may assign to social involvement, according to the perspective raised by the discussion on the models of corporate socially responsible behavior and the stakeholder framework.

2.1 The Social Value Consumers Place on Products and Services

Consumers are members of society. When consumers look for and purchase goods that satisfy their needs, they take into consideration their social needs in addition to functional needs. In turn, social needs or motives reflect society's norms and values. For example, in choosing the make of a car, consumers do consider product reliability, safety, initial and usage costs, comfort, etc., but they also ponder society's perception of their purchase. Similarly, consumers' patronage of a store reflects not only the convenience of its product assortment, a particular location, ease of parking, etc., but also how society regards the patron for his or her choice. Working in the context of brand attitude, Mittal (1990) termed these two kinds of purchasing motives as *utilitarian* and *image* motives. A more appropriate terminology may be *functional* and *symbolic* motives. For two reasons: First, the image or symbol provided by a product or service can be regarded as a source of utility. Second, image is often employed in marketing as a construct that incorporates evaluations of functional aspects. Here the idea of image or symbolic motives relates "to one's need to manage favorably one's social and psychological environment" (Mittal, 1990: 209). Society imposes its norms on consumers. In turn, consumers seek products or services carrying benefits that represent "cultural symbols associated with the possession or consumption of an object" (Mittal, 1990: 210). Culture is the way society expresses its beliefs and values, and its impact on product choice has been studied and is well established in marketing (e.g., Hirschman, 1980; Solomon, 1983). In particular, McCracken (1986) proposed a model articulating how society shapes consumer goods to reflect its principles. Similarly, culture can shape the value of specific brands competing in markets. For instance, if "jeans" represent a particular category of goods that denote, say, rebelliousness, a specific brand can reflect more accurately these values.

Recent research in marketing has been concerned with consumers' perceptions of the value of alternatives offered in the marketplace. There seems to be agreement that the traditional view of value as 'quality for the price' does not encompass all the value a product may offer (e.g., Holbrook, 1994; Richins, 1994). In particular, the study by Richins (1994) found empirical evidence that a possession's value also accrues from its meaning to the consumer, either as an indicator of social relationships or as a reflection of personal identity. On the same track, Kleine, Kleine & Kernan (1993) showed that consumers purchase products or services for social reasons, given that consumers consume to build social identities.

The psychological study of motivation has also recognized the influence of society on the behavior of individuals. Feather (1990) studied the importance of individual values, including those acquired from society, in the choices and decisions that people make. His researches found significant evidence that individuals' behavior is related not only to the expectations people have about the outcomes of the behavior, but also to the subjective value of the outcome. As Feather says, values "express both motivational concerns and societal demands" (Feather, 1990: 157). Particularly, he sees an individual's moral and ethical principles as determined, at least in part, by an underlying social contract. Furthermore, moral judgments and associated values are viewed as depending upon a person's socialization experience.

All this literature suggests that consumers are affected by the society to which they belong. Consumers may be symbolically motivated (Mittal, 1990), culturally driven (Hirschman, 1980; McCracken, 1986), find value in the product or service's public meaning (Richins, 1994), or use products or services to build social identities (Kleine et al., 1993), or have subjective values determined by society (Feather, 1990). Regardless of the approach, research suggests that society does indeed shape consumers' needs, and therefore, their expectations of the benefits or values from the products or services they choose. A model presented by Sheth, Newman & Gross (1991) summarizes in a single construct—social value—the contributions of this large body of literature. Moreover, it associates the presence of social value with the choice of products and brands and recognizes that social value may influence choice by incrementally adding to functional and other values. However, the model relies on the presupposition that the values are independent, or that the way consumers perceive one value is not affected by the way they perceive another. The signaling theory, next, provides a mechanism by which a firm's social involvement not only adds social value to products and services but also affects the perception of functional values.

2.2 Signaling Theory and Social Involvement

When consumers are faced with the task of choosing a product or service, several possible sources of value in the alternatives may be considered. If consumers were able to gather perfect information about each source of value, no problem would exist. However, consumers do not always obtain perfect information. In particular, information on the functional value of products and services implies uncertainty for consumers. Furthermore, unlike emotional, social, conditional and epistemic values, functional values reside entirely in

what is being offered to the market by the firm, not in the consumer's affective state (emotional value) or association with social groups (social), nor in special circumstances (epistemic and conditional). This creates an information asymmetry between what consumers and firms know about the functional value of the product or service. The latter is much more likely to know more about the product or service quality and performance. Information economists have been studying the problem of information asymmetry (e.g., Grossman & Hart, 1983; Holmström, 1979; Milgrom, 1981; Sappington, 1983).

Asymmetry of information about the functional performance or quality of a product or service creates the possibility of opportunistic behavior by the party possessing more information. This happens when firms misrepresent the quality of a product or service (Hill & Jones, 1992). Competing firms try to communicate to consumers that their products or services have the desired level of quality. However, such a communication is qualified by its trustworthiness. Hence, there is a need for signals to convey information on trustworthiness. Trustworthiness or credibility does not necessarily refer to a reputation for high quality, but to "the willingness of a firm to deliver what it has promised" (Erdem, 1995: 10).

Social involvement can be regarded as a signal of shared values. When a firm engages in SRB, it is saying to consumers that it shares the same values they have as members of society, therefore, sending them a message that it is trustworthy and its claims are dependable. The notion that shared values are antecedents to trust has been addressed in the marketing literature (Dwyer, Schurr, & Oh, 1987; Heide & John, 1992; Morgan & Hunt, 1994). Firms need to convey to consumers signals that they are worthy of trust in their claims that the product or service fulfills consumers' expectations. In a situation of asymmetric information, consumers want to receive signals from the parties with privileged information—the firms—that they can be trusted in their claims (explicit or implicit) about the functional performance of their products or services. One source of trust can be the shared values that the social involvement communicates. In ancient times, when trade transactions were made among persons, trust was a very personal concept. Then, trust was a function of a sense of personal affinity between the parties, and this mutual affinity meant having a common set of beliefs or values. Therefore, if trust is desirable, the modern organization needs to create a link of affinity with the consumer. One way the organization has to create affinity is by showing that it shares the same values and beliefs as the consumer. To the extent that the consumer has social values, undergoing social involvement communicates that the firm has the same values and beliefs as the consumer.

Morgan & Hunt (1994) have found empirical evidence that shared values contribute to increase trust in industrial exchanges. They view shared values as "the extent to which partners have beliefs in common about what behaviors, goals, and policies are important or unimportant, appropriate or inappropriate, right or wrong" (Morgan & Hunt, 1994: 25). Researching inter-organizational exchanges, they have found that shared values significantly contribute to the development of trust. There is also empirical support for the idea that trust reduces uncertainty. For instance, Achrol & Stern (1988), studying decision-making in marketing channels, found that increasing trust among channel members can reduce uncertainty. In addition, Morgan & Hunt, found that "trust decreases a partner's decision-making uncertainty because the trusting partner has confidence that the trustworthy party can be relied on" (Morgan & Hunt, 1994: 26). If reduced uncertainty creates utility, the less observable the functional attribute of a product or service is, the more important the risk reducing signal will be. This implies that social involvement increases its value as a signal as one goes from a *search* attribute (accessible before purchase), to an *experience* attribute (learned from using or experiencing), to a *credence* attribute (rarely learned) (Erdem, Swait, & Louviere, 1994). In fact, comparing the brand equity of fast food restaurants and athletic shoes, Erdem et al. (1994) found that the latter have higher brand equity and attributed this to being an indication that the value of the signal of trustworthiness is lower for nondurable than for durable products.

3. Model of the Effects of a Firm's Social Involvement on Consumer Utility Formation

This introduces a model that depicts the effects of a firm's social involvement on consumer utility formation, based on the literature reviewed above. The model is presented below in Figure 1. What it basically suggests is that the firm's social involvement affects directly and indirectly the utility of a product for a consumer. Consumer utility accrues directly from the functional attributes of the product or service, its symbolic social value, and—negatively—its price. Indirect effects may result from social involvement moderating the functional attributes and price.

Figure 1 show that social involvement may affect directly or indirectly the utility of a product or service for a consumer. The direct effects happen when consumers find social involvement to be a source of utility in itself. Consumers' utility reflects the value consumers ascribe to the social action *per se*. Such value arises because they feel good about buying a product or service that is contributing to society, because society has enculturated its importance in the individual, or because of the symbolic social value it has (Seth et al., 1991). In any case, this means that the social involvement of a firm can be regarded as an additional attribute of the firm's product or service (of course, this notion extends to actions of social involvement directly linked to the product or service's brand). The direct effect of social involvement on utility can either be in addition to the utility from the functional value, or be of a non-compensatory nature. One way by which the latter case may happen is when consumers require a certain minimum level of social involvement by the firm in order even to consider buying a product, that is, to include the product in the consideration set. Indirectly, when the utility accrued from the functional attributes of a product is moderated by the firm's social involvement. The rationale for this proposition comes from the signaling theory. It regards social involvement as a signal that the firm shares the same values as consumers. Shared values enhance trust, thus reducing the uncertainty about an attribute's performance, whenever uncertainty about the performance is present. Such an effect on the utility may be captured by changes in the taste parameters representing the sensitivity to the functional attribute.

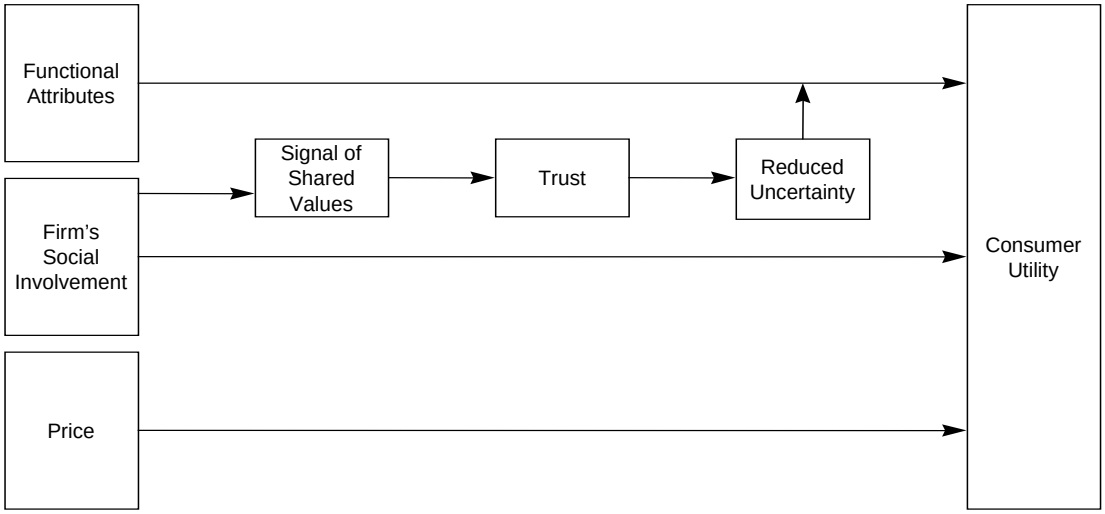

Figure 1. Consumer Utility Formation in the Presence of the Firm's Social Involvement

Any effect that a firm's social involvement may have on the consumer has to show up in his or her choice behavior. A model of choice behavior, which captures the proposed effects of social involvement, is presented in Figure 2. In this representation, observed variables are in boxes, while unobserved or latent variables are in ellipses. Consistent with the definition employed in this dissertation, social involvement is a latent variable. That is, the level of a firm's social involvement refers to how consumers perceive it. The utility and the consideration set are latent, known only to the consumer. Therefore, they cannot be observed, only inferred (through choice). In this model, the product or service's price and functional attributes, plus the choice behavior constitute the observables.

Adopting a random utility choice model, the potential aspects that may (and may not) be affected by social involvement can be investigated. In this framework, the decision of an individual can be portrayed as

$$\left[\begin{matrix} decision \\ protocol \end{matrix}\right]_{i \in C} U_i = \alpha_i + f(X_i|\beta) + \varepsilon_i \qquad (1)$$

where U_i is the alternative *i*'s utility for an individual, within a set C of alternatives being considered by this individual, α_i is an alternative-specific constant, X_i is a vector of the alternative's attributes, β is a vector of weights reflecting the sensitivity of the individual to the attributes, and ε_i is a random error term denoting unobserved effects, measurement errors, etc. Finally, the [*decision protocol*] reflects the decision rule being adopted by the individual to make her/his choice.

In this model, constraints of diverse kinds (such as physical accessibility of or psychological restrictions to an alternative) shape a consideration set *C* for an individual. Then, the individual assesses the utility of the alternatives *i* which s/he considers choosing and uses some decision protocol to make a choice. In principle, the choice behavior can be affected in one or more of the three instances (decision protocol definition, choice set formation, and utility composition—see, for instance, Gopinath, 1995). In order to narrow the scope of this research, the three instances are discussed below.

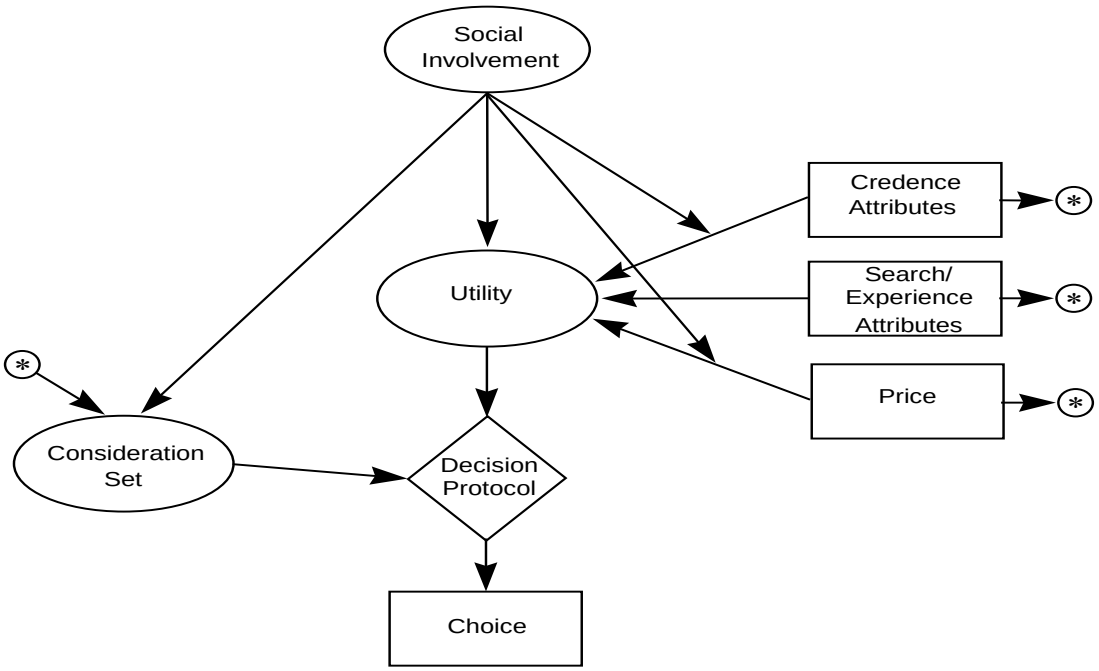

Figure 2. A Model of the Effects of Social Involvement on Consumer Choice

Decision Protocol: The decision protocol usually assumed in choice modeling is utility maximization. However, consumers may differ in the way they make their choices. Information gathering costs and other limitations, and varying processing abilities affect the way choice decisions are made. Hence, consumers may adopt rules other than utility maximization, such as dominance, satisfaction, and even random choice (Gopinath 1995). It is possible that social involvement affects the adoption of a specific decision protocol over another one. However, the selection of the decision protocol is probably more susceptible to the effects of personal constraints, such as those related to information acquisition and processing capability, than by characteristics of the alternatives, such as social involvement. Therefore, even recognizing the possible effects of social involvement on the selection of the decision protocol, this study assumes utility maximization as the decision protocol.

Consideration set: Social involvement may affect the consideration set formation. It is possible that an individual considers purchasing a product or service only if it is marketed by a firm with at least some level of social involvement. This way, the lack of social involvement may constrain a consumer's consideration set. Consumers may have thresholds below which they do not consider buying a product (Gopinath, 1995; Swait and Ben-Akiva, 1987). Hence,

H1: The more socially involved a firm is perceived, the higher the probability that its products are included in the consumer's consideration set.

Utility Composition: Social involvement can affect the consumer's utility in different ways. First, consumers may regard social involvement as a source of utility *per se*. They may value the firm's social involvement in a compensatory scheme. That is, social involvement acts as a separate attribute of the product or service, adding to the utility of its functional attributes. Support for this effect is provided by the product's symbolic and social value literature, as reviewed above. Moreover, previous research (Brown and Dacin, 1997) has found that a firm's social involvement affects the products' overall evaluation. Hence,

H2: The choice probability of a product is higher the higher the perception of the firm's social involvement.

Alternatively, the effect of social involvement can be one of reduction of the uncertainty in the expected future performance of a product or service's functional attributes. That is, whenever some uncertainty of performance is present, the consumer may differentially assess the functional attributes' capability of performance. A firm's social involvement may reduce the uncertainty about the product's performance in an uncertain attribute by adding trustworthiness to the claims the firm makes on the performance. One way by which this can happen is by letting the consumer perceive the firm as having beliefs similar to hers/his about what is appropriate or inappropriate, right or wrong. That is, the firm shares her/his values. Value sharing has been regarded as a process of "internalization," and hypothesized to affect attitudes and behaviors (Kelman, 1961). Shared values have been found to enhance trust (Morgan and Hunt, 1994). By engaging in actions of social involvement, firms signal to the consumers that they have values, hence that they have goals other than making profits at any cost. The ultimate outcome of a firm's social involvement is to bolster the firm's trustworthiness. Hence, the value consumers see in a functional attribute depends on the degree of certainty they have in its future performance. According to the degree of certainty consumers have in their performance, attributes can be classified into *search* attributes (the performance is assessable before the purchase), *experience* attributes (learned from some experiencing or consumption), and *credence* attributes (rarely, if ever, learned, e.g., Erdem, Swait and Louviere, 1994). The less assessable by consumers the attribute performance is, the more room there is for opportunistic behavior by firms. Therefore, more uncertainty is associated with credence than with search/experience attributes. Hence, the importance of social involvement as a signal of trustworthiness must be greater for credence than for search/experience attributes. That is, social involvement effects on the perception of the attributes via uncertainty reduction must be apparent for credence, but not for search/experience attributes. Consequently,

H3: A firm's social involvement has a moderating effect on the impact of credence attributes on a product or service utility (H3a) but not on the impact of search and experience attributes (H3b).

This effect does not necessarily require congruence of values. For example, even if the consumer is not touched by, say, environmental issues, s/he may regard social involvement as a signal that the environmentally concerned firm is more likely to deliver on its promises than one that does not show signs of having social values. Therefore, due to the conflicting signaling effects, no hypothesis regarding the triple interaction among social involvement, credence attributes, and personal values is offered.

4. The Analytical Model

One appropriate analytical tool for categorical data such as choice is the logit model. It models individual behavior and belongs to the class of models known as random utility models. The individual is assumed to always make the choice that maximizes her/his utility. However, the individual's utility is a latent, unobservable variable. The observer's observational deficiency leads to apparent inconsistencies in the observed choice behavior. These inconsistencies can be credited to non-observed attributes, consumer heterogeneity, measurement errors, and functional specification (Manski, 1977). Therefore, the observer can regard utility as a random variable. Specific assumptions about the probability distribution of the random component of the utility lead to the logit model.

From the random utility model's perspective, the probability that an individual n chooses an alternative i among a set of considered alternatives C_n is equal to the probability that the alternative's utility for this individual, U_{in}, is greater than or equal the utilities of all other alternatives j in the consideration set, or

$$Pr_n(i|C_n) = Pr_n(U_{in} \geq U_{jn}, \forall j \neq i; i, j \in C_n). \quad (2)$$

Assuming that the utility U_{jn} is composed of two independent components, an observable, deterministic term V_{jn}, and a random term ε_{jn}, the choice probability can be rewritten as

$$Pr_n(i|C_n) = Pr_n(V_{in} + \varepsilon_{in} \geq V_{jn} + \varepsilon_{jn}, \forall j \neq i; i, j \in C_n), \quad (3)$$

or

$$Pr_n(i|C_n) = Pr_n(V_{in} - V_{jn} \geq \varepsilon_{jn} - \varepsilon_{in}, \forall j \neq i; i, j \in C_n). \quad (4)$$

Expression (4) shows that the individual's choice probability of an alternative i depends on the differences between the observable components of the alternative's utilities, and the joint probability distribution of the random components. Assuming that the random components of the utility are

independently and identically Gumbel distributed with a scale parameter μ, it can be shown to be the multinomial logit model.

To grant computational tractability to the MNL the deterministic component V_{in} of the utility is assumed to have a functional form linear in the parameters. This assumption follows Lancaster's (1966) view of products as bundles of characteristics contributing to their utility.

Given these assumptions, the logit models can be used to estimate both the inclusion of the alternative in the consideration set and choice.

The inclusion of an alternative in the consideration set can be treated as a binomial variable logistically dependent on the functional attributes, price, firm's expertise, and social involvement. The probability of inclusion of a product or service in the consideration set of individual n is given by

$$Pr_n\ (i=1) = Pr_n\ (U_{1n} \geq U_{0n}) \quad (5)$$

$$i = \begin{cases} 1, & \text{if the product/service is not excluded from being considered} \\ 0, & \text{otherwise} \end{cases}$$

$$U_{in} = \alpha + \pi P_{in} + \beta Z_{in} + \delta SI_{in} + \varepsilon_{in}\ ,\ i = 0,\ 1 \quad (6)$$

where α is an attribute-independent constant,
P_{in} is the price of the product/service,
Z_{in} is a vector of the functional attributes of the product/service,
SI_{in} is the social involvement of the product/service, as perceived by n,
π is the price-sensitivity parameter,
β is a vector of weights for the functional attributes,
δ is the importance weight for the perceived social involvement, and
ε_{in} is a random term.

Hypothesis H1 predicts the significance of δ, the weight parameter for social involvement.

Choice, given the consideration set indicated by the respondent, can be modeled as an MNL. The probability that alternative i is chosen by consumer n is given by

$$Pr_n(i \mid C_n) = Pr_n(U_{in} \geq U_{jn}\ ,\ \forall j \neq i;\ i,\ j \in C_n) \quad (7)$$

$$U_{in} = \alpha_i + \pi P_{in} + \beta^s Z^s_{in} + \beta^c Z^c_{in} + \delta SI_{in} + \kappa(SI_{in} * P_{in}) + \mu^s(SI_{in} * Z^s_{in}) + \mu^c(SI_{in} * Z^c_{in}) + \varepsilon_{in} \quad (8)$$

where α_i is an alternative-specific constants,
P_{in} is the price of the alternative i for individual n,
Z^s_{in} is a vector of the functional search/experience attributes of i,
Z^c_{in} is a vector of the functional credence attributes of i,
SI_{in} is the social involvement of the firm marketing i, as perceived by n,
π is the price-sensitivity parameter,
β^s is a vector of weights for the functional search/experience attributes,
β^c is a vector of weights for the functional credence attributes,
δ is the importance weight for the perceived firm's social involvement,
κ is the importance weight for the interaction between the perceived social involvement and the price of the alternative,
μ^s is the vector of importance weights for the interaction between the perceived social involvement and the search/experience attributes of i,
μ^c is the vector of importance weights for the interaction between the perceived social involvement and the credence attributes of i, and
ε_{in} is a random term.

Hypothesis H2 posits a significant positive parameter for social involvement (δ). Hypotheses H3a and H3b can be tested by comparing nested models formed by constraining to zero the parameters for the interaction terms between social involvement and the functional attributes (respectively μ^s and μ^c).

5. Method

The data were collected via a mail survey. The questionnaire comprised a series of conjoint stated choice tasks. Respondents faced sixteen choice scenarios in a single product category. In each scenario, they were

prompted to make a choice from a set of three existing brands. Each choice task represented a scenario unique in the levels of the product's price and four functional attributes.

Airlines, computers, health care plans, and mattresses were the four out of twenty-five product categories selected after pretests. The pretested categories had existing brands which would not have strong *a priori* social involvement and expertise image differences. In each category, three brands were picked such that *a)* they should not significantly differ in terms of their existing social involvement and expertise images; *b)* they should be similarly rated by expert consumer evaluation sources; and *c)* their market shares should be similar.

Sampling Details: The data collection was accomplished via a mail survey with conjoint choice tasks. Each questionnaire dealt with one of the four selected categories. A total of 5,800 questionnaires were mailed to a random sample of households in Central and North Florida. The number of respondents was 660 (response rate of 11.4%). Of the returned questionnaires, 593 were usable (21 arrived late, and 36 were discarded due to multiple choices made), 165 corresponding to airlines, 124 to computers, 153 to health care plans, and 151 to mattresses.

Questionnaire Structure: The questionnaire presented the social involvement profiles of three choice alternatives (brands). Respondents were asked to state their choices and considered alternatives under different attributes' scenarios. Manipulation check for social involvement was performed. The questionnaire also got information on demographics and personal values.

Company Profiles: The manipulation of the level of social involvement was between-subjects. Respondents were told that an independent publication rated the companies. Social involvement was presented as "the company's activities to protect the environment, donate money to charities, have employees volunteer for community programs," plus some category-specific type of social involvement, such as "donating transportation to needy people requiring travel for medical reasons" (in the airline category). Each of the three companies were rated either as "the company is average" (manipulation for low), or "the company is exceptionally good" (for high). To grant realism, the three alternatives were real companies, similar in size and overall quality (as rated by the *Consumer Reports* magazine). Company expertise was manipulated in a similar fashion.

Of the sixty-four possible combinations of the three companies described as high or low in social involvement and expertise, eight are enough to contrast the main effect of brand and the two variables of interest, using a fractional factorial design (Hahn and Shapiro, 1966). From the eight potential sets, each respondent was presented with a single set of three firms' profiles. In each category, this corresponds to a 3x2x2 between-subject design (three brands, two levels of social involvement, and two levels of expertise). Of the usable questionnaires, the cell with the largest number of questionnaires had n=31 elements (in one of the airlines questionnaire versions), and the one with the smallest had n=10 (in one of the computer versions).

Choice Tasks: In the questionnaire, the choice tasks or scenarios were presented after the companies' profiles. Across scenarios, the three alternatives varied in terms of two levels of price and four functional attributes. Dollar figures of the prices had one of two values, fifteen to twenty percent apart. The two levels of the functional attributes were "just meets industry standards" (manipulations for low), and "much better than industry standards" (high).

With three firms varying in two levels of price and four functional attributes, the choice tasks represented a 2^{15} within-subject design. A fractional factorial design with sixteen contrasts can estimate the main effect of price and the functional attributes varying across the three brands (Hahn and Shapiro, 1966).

Since the within-subject design is embedded in the between-subject design, the full design in each category is $3x2x2x2^{15}$. Interactions among the variables inside the within and between-subject designs cannot be assessed with the design selected, but the parameters of the interaction terms between variables in each of the designs can be estimated (e.g., between social involvement and the functional attributes).

Measures: The dependent variable for the consideration set formation model is the stated consideration or non-consideration of each of the alternatives. For the choice model, the dependent variable is the stated choice among the three alternatives and the "none" option.

The explanatory variables social involvement, price, and functional attributes are the manipulated variables. The social involvement (and expertise) manipulations were checked through four and six-item scales developed in the pretest, measured on 7-point scales anchored by strongly disagree—strongly agree. The four items measuring perceived social involvement have adequate internal reliability (Cronbach's α ranging from 0.85 to 0.88 across the four categories).

6. Results

Consideration Set Model Estimation: The consideration of an alternative can be treated as a binomial variable—an alternative is either considered or not considered. Furthermore, in the choice setting employed in this research, the consideration of each of the three alternatives can be treated as a separate decision (this involves assuming that the consideration decision for a product is independent over preferences for other alternatives, what may not be realistic, but leads to consistent, though inefficient parameter estimates). Assuming consideration decisions to be independent across choice scenarios has similar effects on the parameter estimates. In this research, the decision of the inclusion of a brand in (or, alternatively, the exclusion of a brand from) the consideration set is a function of its utility to the consumer. To assess the role of the variables of interest, the utility is modeled as a linear function of price, the four investigated functional attributes and the firm's social involvement (SI, hereafter). In addition, to check whether they play a role in the consideration set formation, all the possible interaction terms were estimated in the initial estimation.

After empirically supported simplifications (parameter equality across brands and exclusion of non-significant interaction terms supported by log-likelihood and χ^2 tests) on the most complete model, the models estimated for the four categories are presented on Table 1. The four estimated models have McFadden's ρ^2 (AIC) around 0.4. This is a goodness-of-fit statistic similar to the coefficient of determination in regression, with a correction for the degrees of freedom comparable to the Akaike Information Criterion (AIC). The level of the goodness-of-fit measure of the estimated models is in the reasonable-to-good range (Intelligent Marketing Systems, Inc. 1994).

Table 1: Consideration Set Formation Models

	Category			
Variable	**airlines**	**computers**	**health plans**	**mattresses**
Consideration constant	1.72***	1.81***	1.51***	1.77***
brand A	0.24***	0.29***	0.21***	0.09
brand B	0.09	0.00	0.17**	-0.04
brand C	0	0	0	0
Price	-0.36***	-0.09**	-0.16***	-0.24***
Attribute 1	0.05*	0.29***	0.22***	0.22***
Attribute 2	0.15***	0.50***	0.27***	0.34***
Attribute 3	0.21***	0.38***	0.52***	0.38***
Attribute 4	0.40***	0.19***	0.22***	0.25***
social involvement for brand A	0.08	0.49***	0.29***	0.39***
social involvement for brand B	0.18***	0.29***	0.17***	0.33***
social involvement for brand C	0.13**	0.10	0.37***	0.20***
McFadden's ρ^2 (AIC)	**0.393**	**0.427**	**0.380**	**0.384**
number of decision sets	**7764**	**6018**	**7368**	**7218**

*** $p<0.01$ ** $p<0.05$ * $p<0.10$

The results strongly support H1 across the four categories. Only in two out of twelve cases SI is not a predictor of the inclusion of a brand in the consideration set. Price and all functional attributes have highly significant parameters (except for the "leg room" attribute in airlines, which is marginally significant).

Hence, all have a role in determining the consideration probability of a brand. As one can expect, price has a negative effect and functional attributes have a positive effect on consideration. The effect of social involvement on consideration set formation is positive for all brands and of similar magnitude as the functional attributes.

Choice Model Estimation: An individual's choice probability of a brand is assumed to be a function of the utility accrued by the brand relative to the utility accrued by each of the other alternatives. The alternatives include the three brands, plus a "none of the alternatives" option. The utility is modeled as a function of price, four functional attributes, expertise, social involvement, the interaction terms of expertise and social involvement with price and the attributes, and the interaction terms of social involvement with the individual's personal values. In order to avoid biased estimates of the utility function parameters (Swait and Ben-Akiva, 1987), the individual's choice of a brand is modeled conditional on the brand's inclusion in the self-reported consideration set, assuming that the self-reported is the "true" choice set. That is, in each choice scenario, only the alternatives stated to have been considered by the respondent are included in the log-likelihood function constructed for the estimation of the parameters.

Table 2 presents the models estimated taking into consideration the empirical support for the equality across brands for some variables. To save space, only the parameters related to social involvement are presented. The estimated models in the four categories have McFadden's ρ^2 (AIC) varying from 0.31 (computers) to 0.44 (airlines), which are in the reasonable-to-good range (Intelligent Marketing Systems, Inc. 1994).

Price and functional attribute parameters (not shown in Table 2) are significant (with a single exception) and all in the expected direction. That is, in all categories and for all three brands the price decreases and the functional attributes increase the utility and, hence, the probability of choice, as one would expect. The same is true for expertise and social involvement. For all brands in the categories in the study, having a high level of SI increases the brand's choice probability. Within each category, the magnitude of the effect for being "exceptionally good" on social involvement (as opposed to "average") is similar to being "much better than industry standards" (as opposed to "just meets standards") on the functional attributes. In comparing the effect-size of social involvement with price, one finds that their magnitudes are also similar across brands, in three of the categories. The exception is the airline category, in which the negative effect of price on the utility is about twice as large as the positive effect of social involvement. This result may be due to the fact that among the categories in this study, category "airlines" is the one with the lowest prices. Overall, H2 is supported.

Table 2: Choice Models

	Category			
Variable	**airlines**	**computers**	**health plans**	**mattresses**
social involvement for brand A	0.42***	0.24***	0.14**	0.33***
social involvement for brand B	0.29***	0.38***	0.45***	0.52***
social involvement for brand C	0.32***	0.29***	0.38***	0.26***
social involvement*price	0.05	0.03	0.08**	0.10***
social involvement*attribute 1	-0.12***	-0.04	-0.10***	-0.09***
social involvement*attribute 2	-0.01	-0.08**	-0.11***	-0.09**
social involvement*attribute 3	-0.00	-0.05	-0.04	-0.08**
social involvement*attribute 4	-0.11***	-0.04	-0.10***	-0.05
McFadden's ρ^2 (AIC)	**0.443**	**0.309**	**0.348**	**0.335**
Number of choice sets	**2581**	**1978**	**2414**	**2368**

*** p<0.01 ** p<0.05 * p<0.10

The interaction of social involvement with price is significant just for two of the categories—health plans and mattresses. As in the case of expertise, the interactions of social involvement with the attributes are significant for some of the attributes in each category, and not for others. On the other hand, there is a definite pattern in the direction of the interaction effects. The presence of high social involvement reduces the importance weight of the price and functional attributes. The contribution of price to utility is negative, but the interactions of price with expertise and social involvement have positive parameters in all but one non-significant case (price with expertise, for airlines). Hence, the presence of high social involvement reduces the overall effect of price on the utility function. Similarly, functional attributes contribute

positively to the composition of the utility, while the interaction terms of each of the attributes with social involvement have negative parameter estimates. That is, the importance of the attribute is smaller when the alternative is high in social involvement. This is the opposite direction from what H3 hypothesizes.

One possible explanation for the direction of these effects may be the strength of manipulation of expertise and social involvement. In the survey, these two characteristics were ostensibly presented as being provided by an independent source, as opposed to company-reported information about the price and attribute levels. Therefore, some of the respondents may have placed great importance in this information. That is, the salience of social involvement and expertise may have resulted in lesser importance given to price and attributes. Moreover, this effect may have countered and even hindered an effect in the opposite direction, which would result from uncertainty reduction regarding attribute performance.

Given that the present model does not allow for taste variations, the estimated parameters represent an average among respondents who mainly used the independently provided information (that is, information on social involvement), and the ones who placed lesser importance on it. Unconstraining the model to allow for random coefficients does not seem feasible, given the size of the available sample. One way of shedding some light on the issue is trying to exclude respondents whose responses were driven fundamentally by social involvement or expertise and estimating models with reduced databases.

Here, the prime variable of interest is social involvement. Each respondent faced sixteen choice tasks. The strictest criterion that defines respondents driven by social involvement implies in retaining only respondents who did not choose any highly socially involved alternative. This is equivalent to excluding of the sample any respondent who made at least one choice of a high socially involved alternative, among the sixteen choices made. The second strictest criterion would retain those who made up to one choice of a highly socially involved alternative—and exclude all those who chose two or more, among the sixteen choices. The next less stringent criterion retains those who chose a socially involved alternative up to three times, and so on. Figure 3 shows the plots, for the category mattresses, of the parameter estimates, and their respective p-values, for the interaction terms of social involvement with each of the functional attributes, as one goes from a very strict exclusion criterion—retaining respondents who chose a maximum of two highly socially involved alternatives—to no exclusion at all—i.e., retaining respondents who chose up to sixteen highly socially involved alternatives (that is, all the respondents). The parameter estimates are plotted as bar graphs. Similar plots may be drawn for the other three categories, and are omitted here for space and parsimony reasons.

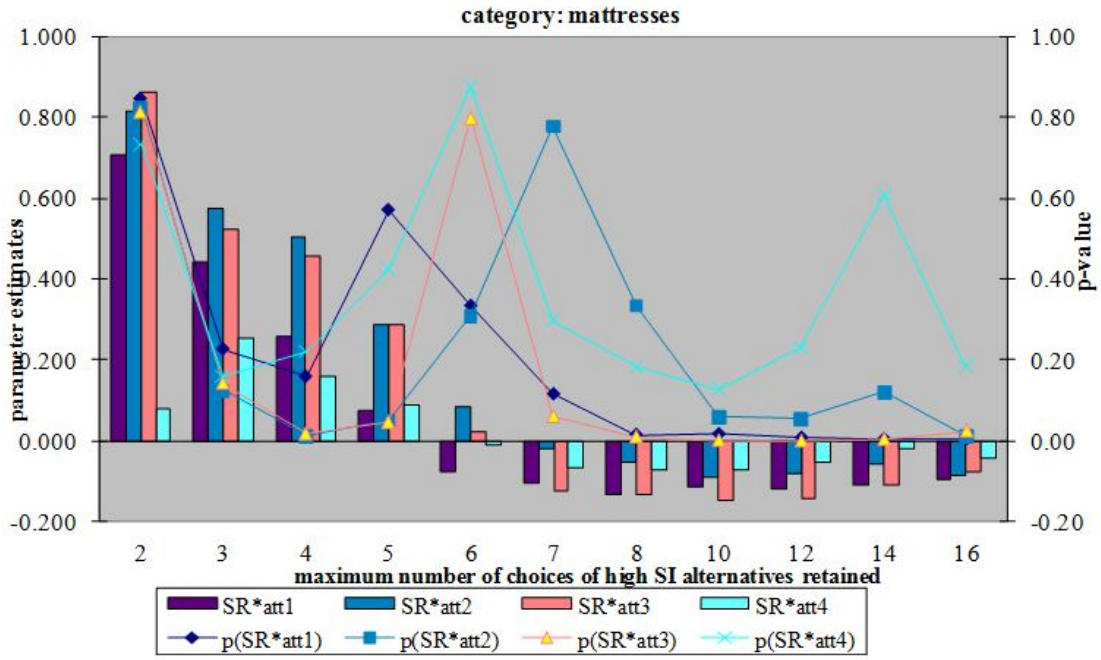

Figure 3. SI*attribute parameters and p-values in constrained datasets for mattresses

In the general plotting pattern that emerges across the four categories, the interaction parameter estimates are positive when the sample is more strictly restricted and decrease as the exclusion criterion becomes more and more lenient, to become negative estimates after a certain point. This is a strong indication that respondents who are faced with socially involved alternatives, but whose decision is not driven emphatically by this characteristic, may in fact weight the functional attributes more when the alternative is high in social involvement.

Also plotted in the graph on Figure 3 are the p-values of the parameter estimates. Again, a general pattern rises. Under highly restrictive exclusion criteria, the p-values tend to be high, probably due to insufficient data points. As the exclusion criterion becomes more lenient, more data points are incorporated in the sample. When that happens, p-values decrease to under the 5% level in some cases. Next, in the region in which the parameter estimates are close to zero, the p-values become high again (in this region, it is possible that an averaging effect balances respondents who weight only social responsibility and those who do not). At subsequently less strict exclusion criteria, the p-values tend to decrease again, given the increasing sample size (and, possibly, the predominance of respondents who placed a great deal of importance on social involvement).

Doing the same treatment with the parameter for the interaction of social involvement with price, a different pattern results when the same reduced data sets is plotted. Here, no matter how constrained the data set is, the interaction parameters are always positive. Furthermore, the p-values have an overall decreasing trend as the sample size increases.

One final aspect to be investigated is the role of the credence level of the functional attributes. The model proposed in this research predicts that the interaction between social involvement and the functional attributes depends on the credence level of the attribute. This can be tested by expanding the model to incorporate the triple-way interaction term, using as measures of attribute credence level the ratings of the confidence in functional attribute information reported by manufacturers or providers. When this is done, the inclusion of the four triple-way interaction terms (one for each attribute) does not increase the log-likelihoods to the point of offsetting the loss of degrees of freedom. In the four categories, the likelihood ratio test-statistics have the values 2.7, 0.4, 4.9, and 6.5 ($\chi^2_{0.05}(4 \text{ d.f.}) = 9.5$). This is due to the lack of credence level discrimination across the attributes used in this research, a fact that was confirmed in the manipulation checks, as the relative stated confidence level across attributes varies quite much over respondents.

7. Conclusion

In this research, the estimation results were presented both for the consideration and the choice models. In the consideration models, the main effects of price and attributes are significant and in the direction one would expect. Social involvement significantly predicts consideration for most of the brands in the four categories. They are all in the expected direction.

In the choice models, the main effects of price, attributes, and social involvement are also all highly significant, in the expected direction. The interaction terms of social involvement with price and attributes are not all significant. However, they present a pattern across all brands that suggests that the presence of social involvement reduces the importance consumers give to price and attributes in the utility formation. One possible explanation for such an unexpected result lays in social desirability, meaning that the strength of the manipulation of social involvement may have hindered the expected results. Conjoint tasks allow for a data treatment in which respondents who attributed great importance to these variables, as identified by the choice of a large number of alternatives high in these characteristics, were excluded from the sample. The results suggest that social involvement may indeed interact with the attributes by increasing the importance consumers give to them. This is not observed for the interaction of social involvement with price.

This is evidence that sorting out respondents who gave too much emphasis to the social involvement attribute may reduce the social desirability bias in the resulting sub-samples. This can be done in conjoint choice tasks, where a respondent answers in a substantial number of within subject tasks and, therefore,

may have his/her patter of response assessed. This method of dealing with the problem does not intend to close the issue, but both add to existing ways of doing it and to highlight that social desirability is indeed a major problem in studying inherent socially desirable attributes.

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