Effectiveness of Marketing Cues on Consumer Perceptions of Quality: The Moderating Roles of Brand Reputation and Third-Party Information

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ABSTRACT

Consumers usually infer unobservable product quality by processing multiple-quality cues in the environment. Prior research considering the simultaneous effects of marketing cues on consumer quality perceptions is sparse. Despite the growing importance of third-party information, research examining its simultaneous effects with marketing cues on consumers’ decision making is especially absent. This research, drawing on cue-diagnosticity, cue-consistency, and negativity bias theories, proposes and tests a conceptual framework to reveal interplays among various marketing- and nonmarketing-controlled product cues. The first study examines how two- and three-way interactions of high-scope (i.e., brand reputation) and low-scope marketing cues (i.e., price and warranty) affect consumer perceptions. The second study examines a set of interaction effects between third-party quality ratings and marketing cues (i.e., price and warranty) on consumers’ perceptions. Overall, the results reveal theoretical and managerial implications for processing multiple-quality cues in consumers’ inference-making behaviors and suggest that consumers generally aggregate perceptions in more complex ways than suggested in the prior literature when making global product quality evaluations. © 2012 Wiley Periodicals, Inc.

In markets where product quality is not easily observable, consumers generally make their purchase decisions while experiencing feelings of uncertainty (Erdem & Swait, 1998; Jacoby, Olson, & Haddock, 1971). To cope with such uncertainty and make inferences about product quality, consumers search for and process available product-related cues, which can be marketing controlled (e.g., price, advertising, branding) or nonmarketing controlled (e.g., third-party information). Existing literature most often presents the isolated effects of a select set of individual marketing cues, such as price (Rao & Monroe, 1989), advertising (Kirmani & Wright, 1989), warranty (Boulding & Kirmani, 1993), and brand reputation (Baek, Kim, & Yu, 2010; Erdem & Swait, 2004); such cues have all been researched to a great extent. However, these results are often equivocal as most prior research fails to consider the simultaneous effects of multiple cues in the environment (Purohit & Srivastava, 2001).

In addition to processing multiple marketing-controlled quality cues (e.g., brand, price and warranty), consumers seek out insights from nonmarketing-controlled cues such as third-party reviews or ratings (Jiang, Jones, & Javie, 2008). Similar to extrinsic marketing cues, the primary role of third-party product information is to reduce information asymmetry when the true product quality is not easily observable. This added layer of complexity to the evaluation process requires new research to better explain how all of these potentially competing quality cues may interact to form consumers’ overall product evaluations.

By eschewing the isolated approach, the current research examines simultaneous effects of multiple marketing cues on consumers’ quality perceptions. Prior research, with few exceptions, has avoided the observation that product cues seldom operate in solo (e.g., Dawar & Parker, 1994; Dodds, Monroe, & Grewal, 1991; Miyazaki, Grewal, & Goodstein, 2005; Richardson, Dick, & Jain, 1994). However, understanding how arrays of marketing cues affect quality perceptions is of increasing importance as consumers usually process one product cue in relation to another (e.g., price of a product along with brand name). Thus, the overall objective of this study is to develop and test a conceptual framework to understand how consumers combine and process various product cues to form perceptions of...
product quality. To achieve this objective, Study 1 examines how the valence of a high-scope cue (i.e., brand reputation) affects the diagnosticity of low-scope cues (i.e., price and warranty) in consumers’ quality perceptions; meanwhile, Study 2 examines how third-party ratings and traditional marketing cues (e.g., price and warranty) might interact to affect consumers’ quality inferences.

This research makes several contributions to current understandings of how consumers leverage quality cues to form product opinions. First, drawing on cue-diagnosticity theory, it provides a parsimonious conceptual framework to examine the simultaneous impact of high- and low-scope quality cues. Second, drawing on cue-consistency and negativity bias theories as complementary driving mechanisms, it analyzes three-way interactions not only among marketing-controlled cues, but also between nonmarketing- and marketing-controlled cues. Specifically, three-way interactions highlight potential biases in cue-diagnosticity and negativity bias mechanisms if they fail to account for each other’s implications. Third, this research examines third-party ratings as a popular yet under-researched product quality cue and its interplay with marketing cues in affecting consumers’ perceptions. Finally, it presents empirical evidence for the credibility and diagnosticity of brand reputation when presented with other marketing cues.

The remainder of the article is organized as follows. The next section discusses the hypothesis development, method, and results of Study 1, followed by the hypotheses, method, and results of Study 2. Finally, the discussion of the results along with their managerial implications is presented. Limitations and future research avenues conclude the paper.

STUDY 1: EFFECTS OF BRAND REPUTATION, WARRANTY, AND PRICE ON PERCEIVED QUALITY

Hypothesis Development

In markets where the true quality of a product is not readily observable, consumers often rely on product cues to evaluate quality (e.g., Kirmani & Rao, 2000; Rao & Monroe, 1989). During this evaluation process, consumers are usually faced with multiple product cues (e.g., brand name, price, warranty). According to cue-diagnosticity theory, consumers prioritize cues based on their diagnosticity in differentiating between product alternatives (Slovic & Lichtenstein, 1971; Skowronski & Carlton, 1987). Diagnosticity refers to perceived reliability of a cue in distinguishing between alternative categorizations of products (e.g., high quality vs. low quality). For instance, when exposed to multiple-quality cues, consumers tend to rank their relative importance based on their ability to discern between a high-quality and low-quality product. In these situations, cues deemed to be more diagnostic are ranked higher and used more often in driving the purchase decision than less diagnostic cues (Purohit & Srivastava, 2001).

The purpose of Study 1 is to build a conceptual framework and provide empirical evidence for the cue-prioritization process by leveraging the diagnosticity of a product cue as the theoretical mechanism to explain why a specific cue has more impact on quality perceptions than another one. More specifically, this study builds upon previous research that categorizes product cues as high- and low-scope cues according to their diagnosticity level (Gidron, Koehler, & Tversky, 1993). High-scope cue valence is established over time. Thus, considerable effort and investment are necessary to change the valence of a high-scope cue whereas low-scope cues are transitory in nature and their valence can be changed quickly and inexpensively. Furthermore, consumers perceive high-scope cues to be stable, credible, and diagnostic as they lead to a more accurate categorization of products. Conversely, consumers perceive low-scope cues as ambiguous and less diagnostic as firms can easily use them to send false signals about a product (Hoch & Deighton, 1989).

As a starting point for classifying quality cues as high scope versus low scope, prior research in marketing has provided preliminary evidence for the diagnosticity of several cues (e.g., Purohit & Srivastava, 2001). This study focuses on three popular marketing cues—namely, warranty, price, and brand reputation. Each marketing cue is defined and evidence is provided to support their classification as either a high- or low-scope cue.

A product warranty is a guarantee, provided by the manufacturer, to fix product-related problems in a given period of time (Srivastava & Mitra, 1998). Warranties signal a manufacturer’s confidence in product quality and provide consumers with an assurance of quality to increase their confidence in the product (Erevelles, 1993; Kirmani & Rao, 2000; Shimp & Bearden, 1982). Similar to warranty, price is quality cue that is directly controlled by the manufacturer. Although both of these cues can provide some diagnostic value to consumers when evaluating quality, they cannot be separated from the source from which they are sent. More specifically, because manufacturers have complete control over warranty and price of their products, both of these cues can be changed quickly and easily. As a result, consumers are well aware that manufacturers can leverage both price and warranty as false signals to mislead consumers. For example, if a low-quality manufacturer offers a high warranty and absorbs higher costs of warranty fulfillment by charging a higher price that is still lower than that of a high-quality manufacturer, warranties will not be very diagnostic for distinguishing a high-quality from a low-quality product (e.g., Boulding & Kirmani, 1993; Erdem & Swait, 1998). Due to the potential for gamesmanship on the part of the manufacturer, consumers may deem
both warranty and price as having low diagnosticity, thereby making them low-scope cues.

Unlike warranty and price, substantial time and investment are necessary to build a high-reputation brand; hence, firms cannot be as opportunistic in manipulating brand reputation as a false signal of product quality. Brand reputation represents the embodiment of the cumulative effect of all past and present marketing activities (e.g., Wernerfelt, 1988). It is also a product cue that consumers frequently use to cope with uncertainty in their decision making (e.g., Baek Kim, & Yu, 2010; Dodds, Monroe, & Grewal, 1991; Gammoh, Voss, & Chakraborty, 2006; Washburn, Till, & Priluck, 2004). Thus, the stable and credible nature of brand reputation makes it highly diagnostic and, consequently, a high-scope cue. According to the cue-diagnosticity theory, brand reputation is likely to play a more dominant role in consumers’ quality perceptions relative to other cues that are considered to be low scope (e.g., Boulding & Kirmani, 1993).

When assessing the quality of a product, consumers usually do not assess these cues in isolation. Rather, most consumers are simultaneously exposed to multiple cues with varying levels of diagnosticity, and they need to make sense of these cues to develop quality perceptions. In these instances, an examination of the interaction among cues is necessary. Although ample research has investigated the main effects of product cues, limited research has explored the complexity of the interplay among those cues and, more specifically, interactions between high- and low-scope cues. For instance, Purohit and Srivastava (2001) found that a good (bad) reputation does not only have a direct effect on quality perception, but also has an indirect effect through an increase (decrease) in the diagnosticity of the low-scope cues. Previous research has also demonstrated that consumers tend to perceive price information as being more diagnostic in their quality evaluations when presented with a consistent brand cue than when the brand cue is absent or inconsistent (Brucks, Zeithaml, & Naylor, 2000). Another study found a significant interaction between price and brand name such that, under a strong brand name, a higher price results in a higher perceived quality than does the lower price cue (Miyazaki, Grewal, & Goodstein, 2005). Similarly, for warranty cue, Srivastava and Mitra (1998) showed that firm reputation influences the extent to which customers use warranty cues in inferring product quality. Boulding and Kirmani’s (1993) results support that a better warranty leads to higher perceptions of quality when the warrantor reputation is high (vs. low).

The current study specifically examines how the valence of a high-scope cue (i.e., brand reputation) affects the diagnosticity and the usage of low-scope cues to infer about product quality. Although high-scope cues are more distinct and less dependent on the existence and valence of other available cues in the environment, the diagnosticity of low-scope cues depends on the existence and valence of high-scope cues. Prior research suggests that a high-scope cue can facilitate or impede a low-scope cue by changing its diagnosticity (Purohit & Srivastava, 2001). The positive (negative) implications suggested by high-scope cues transmit over to the low-scope cues, making them more (less) diagnostic. For example, if a firm has high reputation, it is less likely to send a false signal through low-scope cues, thereby making low-scope cues more diagnostic. Otherwise, it will deteriorate its reputation, upset its customers, and incur costs due to the false signal. However, if a firm has low reputation, it is more likely to send false signals because—unlike a high-reputation firm—it does not have much to lose by upsetting consumers with false information. Thus, it is posited that low-scope cues (i.e., price and warranty) become more (less) diagnostic from a consumer’s point of view when the high-scope cue (i.e., brand reputation) is positive (negative).

**H1:** Brand reputation moderates the effect of warranty on quality perception such that, under high (vs. low) reputation, the effect of a stronger (vs. weaker) warranty is higher on perceived quality.

**H2:** Brand reputation moderates the effect of price on quality perception such that, under high (vs. low) reputation, the effect of a higher (vs. lower) price is higher on perceived quality.

This research, in addition to investigating these two-way interactions, extends the literature by accounting for a more complex set of relationships among product cues. Specifically, H1 and H2 contend that the diagnosticity of brand reputation is the primary mechanism driving its interaction with low-scope cues on quality perceptions. However, when considering the interplay between three different product cues with varying valences, relationships may be more complex than what can simply be explained by cue-diagnosticity theory. Prior research has indicated that tenets from both negativity bias and cue-consistency theory can be adopted as complementary mechanisms to cue-diagnosticity theory to explain a three-way interaction among price, warranty, and brand reputation.

Cue-consistency theory suggests that multiple sources of information are more useful when they provide corroborating information than when they offer disparate information (Maheswaran & Chaiken, 1991). As an extension to this theory, negativity bias theory suggests that in situations where cues offer conflicting information, consumers weigh the negative information more heavily than the positive information in their inference because negative cues can be viewed as more salient and useful (e.g., Ahluwalia, 2002; Anderson, 1965; Herr, Kardes, & Kim, 1991). Consistent with these theoretical frameworks, previous research has shown that, when two cues are consistent (i.e., high price–high warranty), their effect will be stronger than
that of inconsistent cue pairs (i.e., high price–low warranty or low price–high warranty); when cues are inconsistent, the more negative cue becomes more salient and dominates consumers’ evaluation (Miyazaki, Grewal, & Goodstein, 2005). Thus, it is posited that low-scope cues interact to have a stronger effect on quality perceptions when these cues are consistent and they are paired with a positive valence high-scope cue (i.e., brand reputation). However, in line with negativity bias theory, when low-scope cues provide inconsistent information, the more negative cue dominates consumer perceptions and, as a result, the effect of inconsistent pairs will not be significantly different from the low price–low warranty pair.

H3a: Under high brand reputation, the interaction effect of price and warranty on quality perception is stronger when they provide consistent (i.e., high price–strong warranty) versus inconsistent (i.e., high price–weak warranty or low price–strong warranty) information. However, the interaction effect of inconsistent pairs will not be significantly different from the interaction of low price–weak warranty pair.

Unique perspectives offered by cue-diagnosticity and negativity bias theories create the potential for diverging predictions. It is possible for hypotheses based on cue-diagnosticity theory to be biased if they fail to account for the valence of the information provided by the cues; likewise, negativity bias theory can become biased if it does not explicitly account for the diagnosticity of the information provided. For instance, as proposed in H1 and H2, it is expected that a positive, high-scope cue could offset the effects of negative, low-scope cues. In these situations, cue-diagnosticity and negativity bias theories are at odds, and it is likely that effects of each theory are contingent on one another. In this vein, it is argued that the negativity bias effect is contingent on the diagnosticity of the cues involved. Thus, in addition to H3b, it is posited that, if a high-scope cue (i.e., brand reputation) has negative valence, negativity bias dominates consumers’ evaluations and the negativity of the high-scope cue attenuates the interaction effect of low-scope cues, regardless of their valence.

H3b: Under low brand reputation, the interaction effect of price and warranty on quality perception is not significantly different among consistent or inconsistent cue pairs (regardless of their valence).

**Method**

**Design and Participants.** A 2 (low/high brand reputation) × 2 (weak/strong warranty) × 2 (low/high price) between-subjects design was used to test the hypotheses. The sample consisted of 182 (55% male) undergraduates (juniors and seniors in the marketing major) who participated in the experiment for course credit. Participants were randomly assigned to one of the eight cells with each cell containing from 21 to 24 participants.

**Procedure.** In the experimental task, participants were asked to evaluate and provide their thoughts and feelings about a hypothetical car brand (brand XYZ). Brand XYZ had specific brand reputation, warranty, and price features with respect to the industry average values explained in a car purchase scenario. Before reading the scenario, participants were asked some questions in order to understand their self-efficacy in purchasing a car. In addition, they were asked to write down the number of cars (including their current car) they have owned or used as their own cars in the past. On a scale of 1 (strongly disagree) to 7 (strongly agree), the average self-efficacy of participants was 4.9 and the average number of cars owned was 3. Next, the “Decision Making Scenario for a Car Purchase” was introduced. In the scenario, participants were asked to imagine that they had just graduated from college, found a well-paying job, and decided to purchase a compact sedan car. In their search process, they came across several brands of compact sedan cars and included some of them in their consideration set. They were told to assume that brands in their consideration set have almost identical technical specifications and, hence, they could not decide on one brand over another based on these specifications. As they read the scenario and answered survey questions, they were told to imagine that brand XYZ with specific market-related attributes as described in the scenario was one of the brands in their consideration set.

**Manipulation Checks.** The description of brand XYZ’s market-related attributes included the reputation, warranty, and price manipulations. Manipulations were presented with respect to the industry average values to eliminate the possibility that participants might not be aware of whether manipulated values are in the low or high range. To emphasize manipulations with respect to their industry average values, they were also depicted in a table following the scenario. Brand reputation was manipulated by telling participants how previous models of the same brand were rated by Consumer Reports. Similar to the procedure used by Boulding and Kirmani (1993), participants in the high (low) brand reputation condition were told that brand XYZ had been rated above (below) average, with a value of 4.8 (1.5) compared to an industry average value of 3.3, by Consumer Reports. They were also told that brand reputation is measured on a scale of 1–5, with 1 = low and 5 = high. As in Purohit and Srivastava’s (2001) study, warranty was manipulated relative to the average industry coverage in terms of number of years and mileage amount. Participants in the strong (weak) warranty condition were told that...
brand XYZ offers a warranty of 10 years/100,000 (3 years/36,000) miles, which is better (worse) than the industry average of 6 years/60,000 miles. Finally, price was also manipulated relative to the industry average value for compact sedan cars. For the high (low) price condition, participants were told that brand XYZ has a price tag of $30,000 ($9900), which is above (below) the industry average of $20,000. All the manipulation levels were chosen at extreme levels that still fell within a feasible range of real industry values (Boulding & Kirmani, 1993). After reading the scenario, participants were asked to type their thoughts and feelings about brand XYZ and complete a questionnaire that collected information on the dependent measure, manipulation checks, and standard demographics. The entire task took about 20 minutes to complete.

**Dependent Measure.** Participants’ perception of product quality was measured by five items on a 7-point scale adopted from Purohit and Srivastava (2001) as follows (Cronbach’s $r = 0.97$):

- Brand XYZ is most likely going to be of high quality, ranging from 1 (strongly disagree) to 7 (strongly agree).
- Brand XYZ is likely to be reliable, ranging from 1 (strongly disagree) to 7 (strongly agree).
- I would worry about the quality of brand XYZ, ranging from 1 (strongly disagree) to 7 (strongly agree).
- Compared to the other car brands, the quality of brand XYZ is much worse (1) to much better (7).
- My overall impression of brand XYZ’s quality is very bad (1) to very good (7).

A factor analysis confirmed that the five items loaded on a single factor.

**Results**

Regarding manipulation checks, participants’ perceptions about brand reputation, warranty, and price of brand XYZ were measured in two different ways. First, participants were asked to rate reputation, warranty, and price (i.e., “Please rate the brand reputation, warranty, and price of brand XYZ as described in the scenario.”) on a 3-point scale (i.e., low, average, or high). Second, participants were asked to write down reputation, warranty, and price attributes of brand XYZ as they recalled them from the scenario. As manipulations were presented with respect to the industry average values, participants were also asked to rate and write down the industry average reputation, warranty, and price information as they recalled it from the scenario.

A $2 \times 2 \times 2$ analysis of variance (ANOVA) showed that perceptions of brand reputation, warranty, and price were significantly affected by the manipulations. Participants in the high-reputation condition recalled the brand with higher reputation compared to those in the low brand reputation condition ($M = 2.71$ vs. $M = 1.27$; $F(1, 180) = 289.23, p < 0.001$). Participants in the strong warranty condition recalled the brand’s warranty as being greater than participants in the weak warranty condition did ($M = 2.79$ vs. $M = 1.27$; $F(1, 176) = 383.07, p < 0.001$). Also, participants in the high price condition recalled the brand as having a higher price than participants in the low price condition did ($M = 2.69$ vs. $M = 1.50$; $F(1, 176) = 124.98, p < 0.001$). Furthermore, it was observed that, in the recall questions, approximately 85.3% of participants recalled manipulations correctly. Finally, a $2 \times 2 \times 2$ ANOVA design used to check for interactions found that, when the dependent variable is the manipulation for reputation; the only significant variable was the reputation manipulation levels chosen at extreme levels that still fell within a feasible range of real industry values (Boulding & Kirmani, 1993). After reading the scenario, participants were asked to type their thoughts and feelings about brand XYZ and complete a questionnaire that collected information on the dependent measure, manipulation checks, and standard demographics. The entire task took about 20 minutes to complete.

**Table 1. ANOVA Results—Study 1.**

<table>
<thead>
<tr>
<th>Effects</th>
<th>df</th>
<th>$F$ Value</th>
<th>Partial $\eta^2$</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reputation ($R$)</td>
<td>1</td>
<td>714.12***</td>
<td>0.804</td>
<td>1.00</td>
</tr>
<tr>
<td>Warranty ($W$)</td>
<td>1</td>
<td>31.27***</td>
<td>0.152</td>
<td>1.00</td>
</tr>
<tr>
<td>Price ($P$)</td>
<td>1</td>
<td>15.87***</td>
<td>0.084</td>
<td>0.98</td>
</tr>
<tr>
<td>$R \times W$</td>
<td>1</td>
<td>9.24***</td>
<td>0.050</td>
<td>0.86</td>
</tr>
<tr>
<td>$R \times P$</td>
<td>1</td>
<td>3.70**</td>
<td>0.021</td>
<td>0.48</td>
</tr>
<tr>
<td>$W \times P$</td>
<td>1</td>
<td>4.45**</td>
<td>0.025</td>
<td>0.56</td>
</tr>
<tr>
<td>$R \times W \times P$</td>
<td>1</td>
<td>1.24</td>
<td>0.007</td>
<td>0.20</td>
</tr>
<tr>
<td>Overall model</td>
<td>7</td>
<td>112.19***</td>
<td>0.820</td>
<td>1.00</td>
</tr>
</tbody>
</table>

$^{***}p < 0.01$; $^{**}p < 0.05$; $^{*}p < 0.1$; $^{n.s.}$
Table 2. Mean Perceived Quality Values and Planned Contrasts—Study 1.

<table>
<thead>
<tr>
<th></th>
<th>High Reputation</th>
<th>Low Reputation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strong Warranty</td>
<td>Weak Warranty</td>
</tr>
<tr>
<td>Price</td>
<td>M</td>
<td>SD</td>
</tr>
<tr>
<td>High</td>
<td>6.04</td>
<td>0.44</td>
</tr>
<tr>
<td>Low</td>
<td>5.75</td>
<td>0.53</td>
</tr>
</tbody>
</table>

Contrasts for testing hypotheses

H1: [(1) + [5] > [2] + [6]]*** and [(3) + [7] = [4] + [8]]†
H2: [(1) + [2] > [5] + [6]]*** and [(3) + [4] = [7] + [8]]†
H3a: [(1) > [2]]*** and [(1) > [5]]** and [(2) = [6]]*** and [(5) = [6]]***
H3b: [(3) = [4]]† and [(3) = [7]]† and [(7) = [8]]† and [(4) = [8]]†

Note: M = mean; SD = standard deviation.
Numbers in brackets denote the treatment cells.
***p < 0.01; **p < 0.05; †n.s.

The data also confirmed H2, suggesting that when a brand had high reputation, consumers were more likely to perceive higher quality with high prices (M = 5.75 vs. M = 5.12; F(1, 174) = 17.89, p < 0.01). However, for low reputation brands, perceptions of quality were not necessarily higher with higher prices (M = 2.68 vs. M = 2.46; F(1, 174) = 2.56, n.s.; see Figure 1b).

H3a and H3b propose a three-way interaction among brand reputation, price, and warranty. Planned contrasts (Table 2) and Figure 1c depict that, when brand reputation was high, high price had a higher effect on
perceived quality when warranty was stronger (Strong = 6.04, Weak = 5.46; \( F(1, 174) = 25.58, p < 0.01 \)). Also, under high reputation, strong warranty had a higher effect on perceived quality when price was higher (High = 6.04, Low = 5.75; \( F(1, 174) = 4.04, p < 0.05 \)). Therefore, the results revealed a higher perceived quality with consistent pair cues. Nevertheless, the study findings suggested that inconsistent pairs still led to a higher perceived quality than the low price–weak warranty pair under a high reputation. Hence, H3a was partially supported. Specifically, under a high reputation, strong warranty–low price had a higher effect on perceived quality than weak warranty–low price (Strong = 5.75, Weak = 4.48; \( F(1, 174) = 10.90, p < 0.01 \)) while high price–weak warranty had a higher effect on perceived quality than the low price–weak warranty pair (High = 5.46, Low = 4.48; \( F(1, 174) = 13.24, p < 0.01 \)). Overall, under the high brand reputation situation, the findings suggested a significantly higher perceived quality for brands with consistently positive cues (i.e., high price and strong warranty). Yet they implied that, when cues were inconsistent, perceived quality could still be significantly higher than that of the low price–weak warranty condition. Finally, for the low reputation condition, as H3b predicted, no significant interaction effects (all \( F_S < 1 \), n.s.) were found (see Table 1d).

**STUDY 2: EFFECTS OF THIRD-PARTY RATINGS, WARRANTY, AND PRICE ON PERCEIVED QUALITY**

**Hypothesis Development**

When consumers evaluate between multiple product alternatives, the only available cues to infer about quality are not marketing-related cues. Increases in information-sharing channels along with the rise of Internet and social media tools have triggered the emergence of intermediate information sources. Different infomediaries have made it easier for customers to learn about product features and quality before making a purchase. In this research, product-related cues not necessarily controlled by marketing but accessible in various infomediaries are referred to as third-party information. Third-party information pertains to experiences with products or companies and can include firms across multiple industries (e.g., *Consumer Reports*) or can be industry-specific (e.g., edmunds.com; Benediktus, Brady, Darke, & Voorhees, 2010).

The primary role of third-party information is to help consumers cope with uncertainty in their purchase decisions. Third-party information, including expert ratings, opinions, consumer reviews, and certification programs, has become increasingly popular in affecting customers’ inferences and decisions. A recent survey found that 86% of consumers consult reviews before making a major purchase decision, and 90% of these consumers trust third-party reviews (Miller, 2008). To some extent, previous research has examined the influence of third-party information on product or firm performance (Duan, Gu, & Whinston, 2005; Eliashberg & Shugan, 1997; Shaffer & Zettelmeyer, 2002) and its role on the effectiveness of marketing cues from a manufacturer’s point of view (Basuroy, Desai, & Talukdar, 2006; Blair & Inns, 1996; Chang & Wildt, 1996; Chen & Xie, 2005; Moon, Bergey, & Iacobucci, 2010). However, from a consumer’s point of view, despite the abundance and popularity of third-party product information, empirical research examining the moderating role of third-party product information on the impact of marketing cues on consumer perceptions remains very limited.

The purpose of Study 2 is to fill this gap in the literature by examining the interactions between third-party information and marketing cues on consumers’ perceptions of quality. One stream of research suggests that the existence of relevant third-party information attenuates the effect of marketing cues on consumer quality perception (Albrecht, 1981; Basuroy, Desai, & Talukdar, 2006). Another stream proposes a hedonic assumption suggesting that the correlation between marketing cues and perceived quality increases with the introduction of third-party information. For example, results have demonstrated that, in the presence of positive third-party reviews, the effects of price and advertising on perceived quality increases (Archibald, Haulman, & Moody, 1983). Despite the mixed results, it is evident that, when third-party product-related information is made available, consumers are willing to process it along with other marketing-related attributes of the product.

Previous research has indicated that independent third-party product information from a credible source is often perceived as being more credible and less biased than marketing cues (Darke, Bohner, Einwiller, Erb, & Hazlewood, 1998). A trustworthy and independent third-party agent has no reason to give a product a high-quality rating when it is actually of low quality as doing so would hurt the agent’s credibility in consumers’ eyes. In this study, third-party quality ratings from an independent and highly credible source (i.e., J. D. Power quality ratings) are used as a proxy to third-party information, functioning as a high-scope cue (Benediktus et al., 2010). Furthermore, cue-consistency theory suggests that third-party information and marketing cues will have a positive effect on quality perceptions when they provide corroborating versus disparate information. Thus, it is posited that consumers perceive a higher product quality with a better warranty or higher price when the third-party information about the product is credible and has a positive valence.

**H4:** Third-party ratings moderate the effect of warranty on quality perception such that under high (vs. low) ratings, the effect of a stronger (vs. weaker) warranty is higher on perceived quality.
**H5:** Third-party ratings moderate the effect of price on quality perception such that under high (vs. low) ratings, the effect of a higher (vs. lower) price is higher on perceived quality.

Drawing from the driving mechanism with cue-consistency and negativity bias in Study 1, a three-way interaction among third-party quality ratings, price, and warranty is proposed. It is posited that the interaction of low-scope cues (i.e., price and warranty), to the extent that they provide consistent (vs. inconsistent) information, is higher on quality perceptions under high third-party quality ratings. Moreover, when they provide inconsistent information, as the more negative cue dominates consumer perceptions, the effect of inconsistent pairs will not be significantly different from the low price–low warranty pair.

**H6a:** Under high third-party ratings, the interaction effect of price and warranty on quality perception is stronger when they provide consistent (i.e., high price–strong warranty) versus inconsistent (i.e., high price–weak warranty or low price–strong warranty) information.

Similar to Study 1, when third-party ratings have negative valence, the negativity bias will hold and the negative impact of third-party ratings will attenuate the interaction effect of price and warranty.

**H6b:** Under low third-party ratings, the interaction effect of price and warranty on quality perception is not significantly different among consistent or inconsistent cue pairs (regardless of their valence).

**Method**

**Design and Participants.** A 2 (low/high third-party rating) × 2 (weak/strong warranty) × 2 (low/high price) between-subjects design was used to test the hypotheses. The sample consisted of 178 (61% male) undergraduates (juniors and seniors in the marketing major) who participated in the experiment for course credit. Participants were randomly assigned to one of eight cells, with each cell containing from 20 to 25 participants.

**Procedure.** In this study, third-party rating, warranty, and price of the car brand (brand XYZ) were manipulated. The experimental task was similar to Study 1, in which participants were asked to evaluate and provide their thoughts and feelings of a hypothetical car brand with specific quality rating, warranty, and price features explained in the car purchase scenario. Before reading the scenario, participants were asked some questions in order to understand their self-efficacy in purchasing a car. They were also asked to write down the number of cars (including their current car) they have owned or used as their own cars in the past. On a scale of 1 (strongly disagree) to 7 (strongly agree), the average self-efficacy of participants was 4.7 and the average number of cars owned was 2.6.

**Manipulation Checks.** In the car purchase scenario, manipulations were presented with respect to the industry average values to eliminate the possibility that participants might not be aware of whether the manipulated values are in the low or high range. Participants in the high (low) quality rating condition were told that brand XYZ had been rated by J. D. Power with a value of 6 (2), which is higher (lower) than the industry average value of 4. They were also told that quality is measured on a 7-point scale (1 = poor, 7 = excellent quality). Warranty and price manipulations were kept the same. Similar to Study 1, after reading the scenario, participants were asked to type their thoughts and feelings about brand XYZ and complete a questionnaire that collected information on the dependent measure, manipulation checks, and standard demographics. The entire task took about 20 minutes to complete. In order to ensure the independence of the samples across the two studies, students who had already completed Study 1 were not allowed to participate in Study 2 and were provided with an alternative extra credit study.

**Dependent Measure.** Similar to Study 1, the dependent variable was perceived quality, which was measured by averaging the five items (Cronbach’s $\alpha = 0.97$) adopted from Purohit and Srivastava (2001). Again, factor analysis confirmed that the five items loaded on a single factor.

**Results**

Regarding manipulation checks, participants’ perceptions about third-party rating, warranty, and price of brand XYZ were measured in two different ways. First, participants were asked to rate third-party rating, warranty, and price (i.e., “Please rate the third-party rating, warranty, and price of brand XYZ as described in the scenario.”) on a 3-point scale (i.e., low, average, or high). Second, participants were asked to write down third-party rating, warranty, and price attributes of brand XYZ as they recalled them from the scenario. After manipulations were presented with respect to industry average values, participants were also asked to rate and write down the industry third-party rating, warranty, and price information as they recalled it from the scenario.

A $2 \times 2 \times 2$ ANOVA showed that perceptions of third-party rating, warranty, and price were significantly affected by the manipulations. Participants in the high condition recalled the brand as having a higher third-party rating than in the low condition ($M = 2.88$ vs. $M =$
Table 3. ANOVA Results—Study 2.

<table>
<thead>
<tr>
<th>Effects</th>
<th>df</th>
<th>F value</th>
<th>Partial $\eta^2$</th>
<th>Power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Third-party rating (TPR)</td>
<td>1</td>
<td>457.18***</td>
<td>0.729</td>
<td>1.00</td>
</tr>
<tr>
<td>Warranty (W)</td>
<td>1</td>
<td>2.61†</td>
<td>0.015</td>
<td>0.36</td>
</tr>
<tr>
<td>Price ($P$)</td>
<td>1</td>
<td>11.72***</td>
<td>0.064</td>
<td>0.93</td>
</tr>
<tr>
<td>TPR $\times$ W</td>
<td>1</td>
<td>3.79**</td>
<td>0.022</td>
<td>0.49</td>
</tr>
<tr>
<td>TPR $\times$ P</td>
<td>1</td>
<td>9.18***</td>
<td>0.051</td>
<td>0.85</td>
</tr>
<tr>
<td>$W \times P$</td>
<td>1</td>
<td>2.05†</td>
<td>0.012</td>
<td>0.29</td>
</tr>
<tr>
<td>TPR $\times$ W $\times$ P</td>
<td>1</td>
<td>1.14†</td>
<td>0.007</td>
<td>0.18</td>
</tr>
<tr>
<td>Overall model</td>
<td>7</td>
<td>72.97***</td>
<td>0.750</td>
<td>1.00</td>
</tr>
</tbody>
</table>

*1.04; $F(1, 176) = 2087.64, p < 0.001$. Participants in the strong warranty condition recalled the brand as having a better warranty than in the weak warranty condition ($M = 2.93$ vs. $M = 1.16; F(1, 176) = 1272.48, p < 0.001$). Participants in the high condition recalled the brand as having a higher price than in the low condition ($M = 2.86$ vs. $M = 1.22; F(1, 176) = 398.77, p < 0.001$). Furthermore, it was observed that more than 91% of the participants recalled the manipulations correctly. Finally, a $2 \times 2 \times 2$ ANOVA was used to check for interactions; it was found that, when the dependent variable was the manipulation for third-party rating, the only significant variable was the rating cue (similar results for warranty and price). No other significant main or interaction effects of other cues on third-party rating were found (similar results for warranty and price).

The ANOVA results (Table 3) indicated significant main effects of third-party rating ($F(1, 170) = 457.18, p < 0.01$) and price ($F(1, 170) = 11.72, p < 0.01$) as well as interaction effects between third-party rating and warranty ($F(1, 170) = 3.79, p < 0.05$) and third-party rating and price ($F(1, 170) = 9.18, p < 0.01$). From partial $\eta^2$ values, it was observed that, compared to price (partial $\eta^2 = 0.064$) and warranty (partial $\eta^2 = 0.015$), third-party rating explains a greater proportion of the total variance (partial $\eta^2 = 0.729$) in the perceived quality. This result supported the role of third-party rating as a more credible cue than that of price and warranty.

Perceived quality means as a function of manipulated variables are displayed in Table 4; the results are graphically depicted in Figure 2. To test the hypothesized relationships, similar to Study 1, a series of planned contrasts were used. H4 states that, when a brand has high (vs. low) third-party quality rating, an increase in warranty results in higher perceptions of quality. As planned contrasts in Table 4 and Figure 2a revealed, participants in high third-party rating cells perceived brand quality to be significantly higher with stronger warranty offers ($M = 5.51$ vs. $M = 5.03; F(1, 170) = 5.95, p < 0.05$). However, with low third-party ratings, an increase in warranty did not necessarily lead to a higher perceived quality ($M = 2.30$ vs. $M = 2.34; F(1, 170) = 0.06, n.s.$). Therefore, H4 is supported.

The data also confirmed H5, indicating that if the brand has high (vs. low) third-party quality rating, consumers are more likely to have higher perceptions of quality with above industry average prices. With high third-party rating, consumers’ perception of brand quality was higher with high prices ($M = 5.72$ vs. $M = 4.82; F(1, 170) = 19.5, p < 0.01$); however, with low third-party rating, high prices did not lead to higher perceptions of quality ($M = 2.35$ vs. $M = 2.29; F(1, 170) = 0.08, n.s.; see Figure 2b).

H6a and H6b propose a three-way interaction among third-party rating, warranty, and price. Planned contrasts (Table 4) and Figure 2c revealed that, under high third-party rating, high price had a higher effect on perceived quality when the warranty was stronger ($Strong = 5.79, Weak = 5.65; F(1, 170) = 4.84, p < 0.05$). In addition, a strong warranty had a higher effect on perceived quality when price was higher ($High = 5.79, Low = 5.24; F(1, 170) = 5.21, p < 0.05$). Therefore, with high-quality ratings, the data revealed a higher perceived quality with consistent pair cues compared to inconsistent pairs. However, for the comparison of the inconsistent pairs with the low price–weak warranty condition under high third-party ratings, the data showed that high price–weak warranty had a higher effect on perceived quality than the low price–weak warranty pair ($High = 5.65, Low = 4.41; F(1, 170) = 14.82, p < 0.01$), although the effect of low price–strong warranty on perceived quality was not significantly different from that of weak warranty–low price ($Strong = 5.24, Weak = 4.41; F < 1, n.s.$). Therefore, the findings partially supported H6a. Finally, under low third-party ratings, as H6b predicts, no significant interaction effects (all $F$s < 1, n.s.) were found (see Table 2d).

DISCUSSION AND CONCLUSION

In markets where product quality is not easily observable, consumers rely on available product cues to infer product quality and cope with uncertainty in their decision making. Consumers are generally exposed to multiple-quality cues, which seldom operate in isolation. Despite this, prior research examining how consumers process and integrate various types of cues in their decision making has been scarce, producing equivocal results. Therefore, the purpose of this research was to build a conceptual framework to examine how multiple cues interact with each other in consumers’ quality perceptions. In order to examine rather complex interaction relationships, cues were first categorized as marketing controlled (e.g., price, warranty, and brand reputation) and nonmarketing controlled (e.g., third-party information). Second, based on prior research, cues were classified as high- or low-scope cues based on the diagnosticity of the cue.

Two experimental studies were used to examine two- and three-way interactions among various types of cues. Study 1 analyzed the interaction effects of multiple marketing-controlled cues (i.e., brand reputation,
Table 4. Mean Perceived Quality Values and Planned Contrasts—Study 2.

<table>
<thead>
<tr>
<th></th>
<th>High Third-Party Rating</th>
<th>Low Third-Party Rating</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Strong</td>
<td>Weak</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Warranty</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High</td>
<td>5.79 (M) 0.73 (SD)</td>
<td>5.65 (M) 0.45 (SD)</td>
</tr>
<tr>
<td>Low</td>
<td>5.24 (M) 0.94 (SD)</td>
<td>4.41 (M) 1.33 (SD)</td>
</tr>
</tbody>
</table>

Contrasts for testing hypotheses

**H4:** [(1) + [5] > [2] + [6]]*** and [(3) + [7] = [4] + [8]]

**H5:** [(1) + [2] > [5] + [6]]*** and [(3) + [4] = [7] + [8]]

**H6a:** [(1) > [2]]*** and [(1] > [5]|*** and [(2] = [6]|*** and [(5] = [6]]

**H6b:** [(3] = [4]| and [(3] = [7]| and [(7] = [8]| and [(4] = [8]]

Note: M = mean; SD = standard deviation.

Numbers in brackets denote the treatment cells.

***p < 0.01; **p < 0.05; n.s.

price, and warranty) on consumers’ quality perceptions. Regarding the two-way interactions, the results provide strong support for cue-diagnosticity theory such that a high-scope cue such as brand reputation positively moderates the effects of lower scope cues such as price and warranty. Specifically, the data suggested that consumers will perceive stronger warranty (or higher price) claims as being more credible when sent by a manufacturer with a high brand reputation. Furthermore, the data indicated that consumers did not perceive a higher product quality with a stronger warranty (or higher price) when brand reputation was low. These findings also provide additional support for prior research on the interaction of high- and low-scope cues (e.g., Purohit & Srivastava, 2001) such that positive (negative) implications suggested by high-scope cues are expected to transmit over to the low-scope cues, making them more (less) diagnostic. In other words, consumers perceive that, although a manufacturer with a high reputation is less likely to make false claims via marketing cues as this will weaken its credibility; a manufacturer with a low reputation is more likely to
send false promises as it does not have much to lose. Actually, in most cases involving a manufacturer with low reputation, consumers tend to infer higher prices or better warranty cues as an offsetting mechanism for low reputation.

In addition to investigating these two-way interactions, the current research extended the literature by accounting for a possibly more complex set of relationships among product cues. Regarding three-way interactions among brand reputation, warranty, and price, the study findings provided interesting implications for cue-diagnosticity and cue-consistency theories as well as negativity bias. First, under a high brand reputation, consumers perceive a higher level of product quality with the interaction of consistent and a high-valence pair of low-scope cues (i.e., high price–strong warranty) than with the interaction of inconsistent pair cues (i.e., high price–weak warranty or low price–strong warranty). In line with H1 and H2, this specific result of three-way interaction supports cue-diagnosticity as well as cue-consistency theory, which asserts that multiple sources of information are more useful when they provide corroborating information than when they offer disparate information. Second, the research focused on perceived quality differences between inconsistent pairs and the consistent but low-valence pair of low-scope cues. Negativity bias predicts that, when cues provide inconsistent information, the more negative cue dominates consumer perceptions; hence, the effect of inconsistent pairs is not significantly different from low price–weak warranty pair. However, the results suggested that, when cues are inconsistent, consumers’ perceptions of quality can still be significantly higher than those in the low price–weak warranty condition.

This specific result constitutes a significant contribution to previous research and cue-diagnosticity and negativity bias theories. Miyazaki Grewal, and Goodstein (2005) found that, in a two-way interaction framework when cues were inconsistent, quality evaluations were not significantly different from the condition where both cues were of low valence. In the current research, the two-way interaction was extended into a three-way interaction by examining it under high (vs. low) brand reputation. Second, negativity bias may become biased if it does not explicitly account for the diagnosticity of the information provided (i.e., high- vs. low-scope cue). In this case, the preliminary evidence from a three-way interaction showed that a high-scope cue could offset the possible negativity bias caused by a negative low-scope cue in an inconsistent pair. It is possible that the diagnosticity of a high-scope cue is so powerful that a single negative low-scope cue cannot limit the impact of a high-scope cue on quality perceptions in the consumer’s eyes. Therefore, under a high brand reputation, a strong warranty can still lead to higher perceived quality with low prices or a high price can still lead to higher perceived quality with weaker warranty than the low price–weak warranty pair. However, in the presence of two negative low-scope cues, the effect of a positive high-scope cue is reduced to the extent that overall evaluations of perceived quality erode.

Third, this research examined the perceived quality differences among various cue pairs under low brand reputation. This time, the negativity bias emerging from the high-scope cue dominated consumers’ evaluations and led to an attenuation of perceived quality overall. More specifically, consumers did not perceive product quality differently between consistent or inconsistent price and warranty pairs (regardless of their valence) when these cues were sent by a manufacturer with a low reputation.

Study 2 analyzed interaction effects between nonmarketing-controlled (i.e., third-party information) and marketing-controlled product cues (i.e., price and warranty) on consumer quality perception. In terms of the two-way interactions, the results confirmed that third-party ratings from an independent and credible source positively moderated the effects of lower scope cues as price and warranty. Specifically, consumers perceived stronger warranty (higher price) claims leading to higher perceived product quality when supported by high third-party quality ratings by J. D. Power. Furthermore, consumers did not perceive a higher product quality with a stronger warranty (or higher price) offer when the product did not have high third-party ratings. Drawing on Benediktus et al. (2010), independent and credible third-party information was expected to operate as another high-scope cue in this research context. Although not necessarily similar to brand reputation cue, it has similar properties to high-scope cues. For instance, a trustworthy third-party agent has no reason to give a product a high-quality rating when it is actually of low quality as, if anything, doing so will hurt the agent’s credibility in consumers’ eyes. Furthermore, prior research shows that independent third-party product information from a credible source is often perceived as being more credible and less biased than marketing cues (Darke et al., 1998). Results for two-way interactions suggested preliminary evidence for the high-scope role of third-party information. Furthermore, they confirmed cue-consistency in the sense that third-party information and marketing cues positively affected quality perceptions when they provided supporting versus contradictory information.

As in Study 1, three-way interactions among third-party ratings, price, and warranty were examined in Study 2; the results showed that, under high third-party ratings, consumers perceived a higher perceived product quality with the interaction of consistent and high-valence pair of low-scope cues (i.e., high price–strong warranty) than with the interaction of inconsistent pair cues (i.e., high price–weak warranty or low price–strong warranty). Similar to H1 and H2, this specific finding lent support to both cue-diagnosticity and cue-consistency theories. In addition, perceived quality differences between inconsistent pairs and the consistent but low-valence pair of low-scope cues were examined. Consumers still perceived a higher perceived
quality with high price–weak warranty than the low price–weak warranty condition. Although negativity bias predicted no significant difference between inconsistent pairs and the consistent low-valence pair, when high-scope features of third-party ratings were taken into account, they made up for the potential negativity bias created by a weaker warranty in the high price–weak warranty pair. An interesting finding was that the effect of low price–strong warranty on perceived quality was not significantly different from that of weak warranty–low price. In this case, no offsetting mechanism of third-party ratings on the negative valence of price was found. This finding potentially introduces another contingency condition for the operation of negativity bias. Negativity bias has to account for not only the difference between high-scope and low-scope cues, but also the difference between how consumers perceive certain low-scope cues. Finally, similar relationships under low third-party ratings were examined. Consumers did not perceive product quality differently among consistent or inconsistent price and warranty and price pairs (regardless of their valence) when the product itself received low-quality ratings by a reputable third party.

Managerial Implications

The findings from this research offer both theoretical and managerial implications. Study 1 and Study 2 demonstrated that brand reputation and quality ratings of a brand had a greater impact on consumer quality perceptions than low-scope marketing cues. In the American auto industry, the importance of brand name credibility has been a concern, as evident in one of General Motor’s studies of the Saturn brand. In Business Week’s February 26, 2009 issue, the damage to Saturn’s brand image was explained via an experiment that the company conducted. When the automaker showed buyers the Aura family sedan model of Saturn with the nameplate removed, the car got a score of 3.4 of 4.0; with the Saturn badge on the hood, the same car scored only 2.0 (Welch, 2009). Consumers’ confidence in brands and the quality of cars has been a great issue with most automakers.

Another interesting implication is that perceptions of quality were not affected by high warranty offerings when the reputation or the quality rating of the manufacturer was low. Therefore, without investing in brand reputation or actual quality of a product, provision of an above industry average warranty strategy can backfire because extended warranty strategy claims may result in consumers perceiving the brand to be advertising its quality and distinguishing itself from other brands based on warranty instead of emphasizing the real insurance role of warranty against failure (e.g., Cooper & Ross, 1985). The same is true for the pricing strategy. Increasing price tags for new models replacing old ones (e.g., Buick Enclave vs. Buick Rendezvous) or increasing prices to compete in the luxury segment (e.g., Hyundai Genesis) should also be supported by the overall reputation of the brand name or the quality image of the manufacturer.

Considering the main effects of price and warranty on quality perceptions, this research demonstrated that price had a more consistent signaling role than warranty in both studies. In addition, in three-way interactions, it was found that high-scope features of third-party ratings could not offset the negativity bias created by the low price–strong warranty condition on perceived quality. However, the credibility of warranty varied from context to context. In an environment with credible third-party product information, the individual significance of warranty seemed to be undermined. However, the warranty cue is perceived as a diagnostic when it interacts with the high third-party quality ratings. Overall, this result by itself emphasizes the interplay between marketing-controlled and nonmarketing-controlled cues and suggests that consumers may aggregate perceptions across multiple existing cues when making global quality evaluations.

Limitations and Future Research

As with any study, this research has some limitations, which provide avenues for future research. First, this research used simple stimuli and an artificial setting. To serve the objectives with clarity, manipulations were kept at a simple level compared to an actual car purchase. Second, the experiments were conducted with student participants. Third, the product category of cars was chosen as quality is an indispensable attribute of cars, yet it is not always easy to observe before making a purchase. However, for college student participants, car buying might not be the most relevant context. In future research, more relevant participants with higher self-efficiency in buying cars might be selected.

The results provided strong support for existing theoretical conjectures. They also provided preliminary evidence of the contingency of negativity bias effects when cue-diagnosticity was taken into account. In future studies, the dynamics between cue-diagnosticity, cue-consistency, and negativity effects might be tested with more complex stimuli and other product categories. Furthermore, in addition to perceived quality, other components of consumers’ decision-making process, such as perceived risk, anticipated satisfaction, and purchase intentions are worth examining as dependent measures in the proposed theoretical framework proposed in this research.

REFERENCES


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