Effect of Manufacturer Reputation, Retailer Reputation, and Product Warranty on Consumer Judgments of Product Quality: A Cue Diagnosticity Framework

Devavrat Purohit
Fuqua School of Business
Duke University

Joydeep Srivastava
Haas School of Business
University of California, Berkeley

In this article, we examine how consumers assess product quality when confronted with multiple cues. Based on cue diagnosticity, a conceptual framework is developed that differentiates between cue types and suggests that the diagnosticity of some cue types depends on the valence of other cue types in the environment. The cue diagnosticity framework is then used to assess the effects of manufacturer reputation, retailer reputation, and product warranty on consumer perceptions of product quality. Consistent with the conceptual framework, we find in 2 studies that warranty is not used in judgments of product quality when a manufacturer with a poor reputation sells directly to consumers or sells through a retailer with a poor reputation. However, when the same manufacturer sells through a reputed retailer, then the warranty is used in making quality evaluations. The results not only support the conceptual framework, but also highlight the important role that the retailer plays in assessments of product quality. The implications of the findings are discussed along with directions for future research.

In many situations, consumers do not know the true quality of competing products (or brands) before making their purchase decisions. This is particularly true for “experience” goods in which the quality of the good is not readily observable until after actual consumption (Nelson, 1970). In such cases, research suggests that consumers are likely to rely on simple heuristics, or cues, to assess product quality (e.g., Rao & Monroe, 1989). The likelihood of using cues in assessing product quality is further enhanced when consumers do not have the time or the incentive to compare products thoroughly prior to purchase (Dawar & Parker, 1994). Commonly studied marketing signals or cues in the literature include brand name (e.g., Aaker, 1996; Dodds, Monroe, & Grewal, 1991; Maheswaran, Mackie, & Chaiken, 1992; Rao & Monroe, 1989), price (e.g., Olson, 1977; Rao & Monroe, 1989; Wolinsky, 1983), advertising (e.g., Kihlstrom & Riordan, 1984; Kirmani, 1990; Milgrom & Roberts, 1986), store name or retailer reputation (e.g., Chu & Chu, 1994; Grewal, Krishnan, Baker, & Borin, 1998), and warranties or guarantees (e.g., Boulding & Kirmani, 1993; Grossman, 1981; Shimp & Bearden, 1982).

Despite the prevalence of research on the usefulness of cues in product-quality judgments, there are few conclusive and generalizable findings (Dawar & Parker, 1994; Zeithaml, 1988). One potential reason for this limitation is that much of the existing work examined the effect of different cues on quality perceptions in isolation, whereas most quality assessments are made in the presence of multiple cues. Although there is research that examined multiple cues simultaneously (cf. Dodds et al., 1991; Grewal et al., 1998; Jacoby, Olson, & Haddock, 1971; Rao & Monroe, 1989; White & Truly, 1989), little effort has been directed toward developing a conceptual framework to evaluate the impact of multiple cues on perceptions of product quality. Consequently, although consumers are exposed to multiple cues simultaneously in the marketplace, there is relatively little understanding of how these cues are combined or integrated in assessments of product quality.
As an illustration, consider a consumer contemplating the purchase of a new personal computer. Although the consumer may be certain about the intrinsic cues (e.g., configurations and options) he or she would like in the computer, there may be uncertainty regarding the quality of a particular machine and how it may perform over time. The consumer may thus rely on extrinsic cues, such as manufacturer reputation, product warranty, or retailer reputation, to assess the machine’s quality. Under what conditions would these cues help the consumer conclude that the product indeed is of high quality? For example, suppose a firm with a good reputation manufactures the computer but sells it through a retailer with a poor reputation—what would be the impact on quality perceptions if the manufacturer were to offer a better-than-average warranty? Said differently, how does the presence of additional cues enhance or detract the quality inferences that consumers make on observing a specific cue? Previous research, at best, provides a partial answer to this question because a complete understanding of these issues can only be obtained by examining how consumers combine multiple cues in assessing product quality. This is the goal of the research presented here.

In this article, we differentiate between two types of cues: high scope and low scope. High-scope cues have evolved over time such that their valence cannot be changed instantaneously (e.g., reputation of the manufacturer or the retailer). On the other hand, low-scope cues are transient, and their valence can be changed (e.g., changing the price or warranty of a product). The cues we focus on are manufacturer reputation, retailer reputation, and product warranty. Both manufacturer reputation and retailer reputation are high-scope cues. In fact, prior research suggests that manufacturer reputation (or brand name) is the most important cue in assessing product quality (Dodds et al., 1991; Jacoby, Szybillo, & Busato-Schach, 1977; Maheswaran et al., 1992; Rao & Monroe, 1989). Retailer reputation also plays an important role in many purchases, as retailers provide the interface between consumers and manufacturers. Moreover, in many cases, retailers provide the first avenue of redress in case of a product failure.

Warranty coverage, on the other hand, is a low-scope cue that can influence consumer purchase decisions. A warranty not only signals product quality, but also provides consumers some assurance that if the product breaks down, the manufacturer will repair it. Note that although a warranty is a part of the "product," whether consumers view warranty as a signal of product quality is uncertain because of the low-scope nature of the cue. Although previous research examined the effect of warranty on perceptions of risk (Bearden & Shimp, 1982; Shimp & Bearden, 1982) and quality (Boulding & Kirmani, 1993; Srivastava & Mitra, 1998), these studies do not analyze warranties within a retail environment. By examining the effects of manufacturer reputation, retailer reputation, and product warranty in a single conceptual framework, this article explicitly considers multiple cues within the context of a retail environment.

More important, this article develops and tests a conceptual framework, based on cue diagnosticity (e.g., Skowronski & Carlston, 1987) that allows an assessment of the simultaneous effect of multiple cues on consumer perceptions of product quality. In particular, the cue diagnosticity framework builds on cue utilization theory that suggests that the extent to which a cue is used in assessing product quality varies with its perceived diagnosticity (e.g., Richardson, Dick, & Jain, 1994). This basic argument is extended to suggest that there are different types of cues (e.g., high-scope and low-scope cues) and that the perceived diagnosticity of some cues depends on the presence—valence of other cues in the decision-making environment. In other words, the extent to which a cue is utilized in assessments of product quality may depend on the presence—valence of other cues. The cue diagnosticity framework thus explicitly accounts for the different types of cues in the environment and allows us to predict the simultaneous effects of manufacturer reputation, retailer reputation, and product warranty on consumer perceptions of product quality.

The remainder of this article is organized as follows. First, we develop the conceptual framework and then derive specific predictions regarding the effects of manufacturer reputation, retailer reputation, and product warranty on perceptions of product quality. Subsequently, we describe and report the results of two experiments that test these predictions. The article concludes by discussing the implications of the findings and providing directions for future research.

CONCEPTUAL BACKGROUND

Cue Diagnosticity Framework

The cue diagnosticity framework builds on cue utilization theory that suggests that most of the important judgments and choices are based on multiple attributes (Slovic & Lichtenstein, 1971). Much of the work in decision making on cue utilization has focused its efforts on studying how multiple cues are combined into an overall judgment (e.g., Lichtenstein, Earle, & Slovic, 1975; Slovic & MacPhailmy, 1974). Extending these ideas to marketing, we can conceptualize a product as an array of cues (e.g., Cox, 1962) that may serve as signals of product quality (e.g., Rao & Monroe, 1988; Richardson et al., 1994). Cue utilization theory also suggests that the extent to which a specific cue is utilized in assessing quality varies with its predictive value or its diagnosticity (Slovic & Lichtenstein, 1971). We extend this idea by arguing that because different types of cues are available in the marketplace, the diagnosticity, and thus the use, of cues of a particular type may depend on the valence of other cue types. In other words, we argue that to develop an understanding of how consumers combine multiple cues, it is important to differentiate among cue types as well as incorporate the interaction among them.
The cue diagnosticity framework views product quality assessment as a categorization process in which consumers use the available cues to assign a product to a specific quality category (Feldman & Lynch, 1988; Skowronski & Carlston, 1987, 1989). Cues that suggest one categorization over alternative categorizations are considered diagnostic, whereas cues that suggest multiple categorizations are nondiagnostic (Herr, Kardes, & Kim, 1991; Hoch & Deighton, 1989). Diagnosticity, thus, refers to the perceived reliability of a cue in discriminating between alternative categorizations (or interpretations). Because diagnostic cues are more likely to lead to accurate categorization, the more diagnostic the cue the higher the likelihood it will be used in assessments of product quality (Dick, Chakravarti, & Biehal, 1990). The cue diagnosticity framework further implies that when consumers are confronted with multiple cues, the relatively more diagnostic cues will be used in determining the quality category to which the product belongs.

We extend this argument by broadly differentiating cues into two types: high-scope cues and low-scope cues (see Gidron, Koehler, & Tversky, 1993). This distinction highlights the fact that it is important to consider not only how cues may change over time, but also how consumer perceptions of the product are affected by these changes. For example, the array of cues may change as firms routinely invest in research and development (R&D) to introduce new-and-improved products, start selling through new retailers, offer better warranties, and so forth.

High-scope cues can be characterized as cues that evolve over time such that their valence cannot be changed instantaneously. Rather, to change the valence of a high-scope cue, particularly from the negative to positive, considerable investments in both time and money are required. Given that the valence of high-scope cues is established over time and cannot be changed easily, high-scope cues should be perceived to be more credible and consequently more diagnostic relative to low-scope cues. High-scope cues can also be regarded as “stand alone” cues in the sense that the diagnosticity of such cues is relatively less dependent on the presence—valence of other cues. Examples of high-scope cues include brand name and firm reputation.

In contrast, low-scope cues are transient in nature such that their valence can be changed relatively quickly and inexpensively; thus, such cues can potentially be used to send false signals. Consequently, low-scope cues are relatively less diagnostic and are ambiguous in assigning a product to a particular quality category (see Hoch & Deighton, 1989). The implication is that the perceived likelihood of a particular product belonging to a specific quality category is much higher when based on a high-scope cue relative to a low-scope cue. However, the relative diagnosticity of low-scope cues may vary with the presence—valence of associated high-scope cues that are also available in the environment. The rationale is that a firm associated with a positive high-scope cue is less likely to send a false signal, thus making the associated low-scope cues relatively more diagnostic. In contrast, a negative high-scope cue makes the associated low-scope cues less diagnostic. Thus, the positive (negative) inferences evoked by the high-scope cues transfer over to the low-scope cues, making them more (less) diagnostic. This implies that when the associated high-scope cue is positive, consumers will be more sensitive and thus more likely to use a low-scope cue in assessing product quality. Examples of low-scope cues include warranty, money-back guarantee, and free-trial offer.

In summary, whereas high-scope cues are relatively stable, the diagnosticity of low-scope cues depends on the valence of high-scope cues. A high-scope cue either “enables” or “disables” a low-scope cue by altering its diagnosticity, thus affecting the likelihood of it being used in product quality judgments. This implies that the effect of high-scope cues on perceptions of product quality is both direct and indirect. Although the valence of a high-scope cue has an obvious direct effect on perceptions of product quality, the indirect effect is through the increase (decrease) in the likelihood that low-scope cues are used in assessing product quality.

**Effect of Manufacturer Reputation, Retailer Reputation, and Product Warranty**

We use the cue diagnosticity framework to assess the effects of manufacturer reputation, retailer reputation, and product warranty on perceptions of product quality. Because reputation is a characteristic that evolves over time and considerable investment is required to establish a positive valence, we posit that manufacturer reputation and retailer reputation are high-scope cues. On the other hand, because warranty coverage can be changed relatively easily and inexpensively, product warranty is a low-scope cue.

In considering the high-scope cues, note that manufacturer reputation is directly linked to the product, whereas retailer reputation is linked only indirectly. This suggests that in assessing product quality, manufacturer reputation is more diagnostic than retailer reputation. This assumption is supported by several studies that show that manufacturer reputation and brand name has the greatest impact on consumer perceptions of product quality (Grewal et al., 1998; Rao & Monroe, 1989). In contrast, retailer reputation has less of an impact. Dawar and Parker (1994) argued that manufacturer reputation is more specific as it applies to a relatively small number of products, whereas retailer reputation applies to an assortment of products carried within the store.

Although our emphasis is on the effects of manufacturer reputation, retailer reputation, and product warranty on product quality judgments, we also discuss the case of a manufacturer that sells directly to consumers (i.e., retailer absent). The scenario in which manufacturers sell directly to consumers has been the focus of previous studies (e.g., Boulding &
Kirmani, 1993; Srivastava & Mitra, 1998) and thus provides a useful benchmark for our cue diagnosticity framework.

**Manufacturer sells directly.** Consider the case of a high-quality (vs. low-quality) manufacturer that sells directly to consumers. Undoubtedly, manufacturer reputation would have a direct impact on consumer judgments of product quality. Now suppose that this manufacturer decides to offer a warranty that is better than its competitors. Because of its good reputation, the manufacturer has no incentive to send a false signal—that is, offer a better warranty on a low-quality product. If anything, the manufacturer will hurt its good reputation and incur substantial costs if it sends a false signal. On the other hand, if the manufacturer has a poor reputation, there may be an incentive to send a false signal for at least two reasons. First, the likelihood of such manufacturers being fly-by-night operators is relatively high (Boulding & Kirmani, 1993). As such, the perceived likelihood of such manufacturers honoring warranty obligations may be remote to nonexistent. Second, a manufacturer with a poor reputation has nothing to lose by offering a better warranty. In fact, consumers may perceive that given the manufacturer’s poor reputation, it needs to compensate by offering a better warranty (see Krebs, 1998).

Said differently, the low-scope cue (product warranty) is diagnostic when the valence of the high-scope cue (manufacturer reputation) is positive but not when it is negative. This implies that the low-scope cue is more likely to be used in product quality judgments when the high-scope cue is positive and less likely when the high-scope cue is negative. Thus, a better warranty is more likely to affect perceptions of product quality when it is offered by a reputed manufacturer. Indeed, consistent with the cue diagnosticity framework, Boulding and Kirmani (1993) found that a better warranty led to higher perceptions of quality when the manufacturer offering the warranty was reputed to manufacture high-quality products. A better warranty coverage did not influence perceptions of quality when the manufacturer had a poor reputation. Thus, we hypothesize the following:

H1: When a manufacturer with a poor reputation sells directly to consumers, then consumers will not perceive product quality to be higher with a good warranty relative to a poor warranty.

H2: When a manufacturer with a good reputation sells directly to consumers, then consumers will perceive product quality to be higher with a good warranty relative to a poor warranty.

As stated earlier, these hypotheses provide a benchmark for the cue diagnosticity framework against the previous findings in the literature.

**Manufacturer sells through a retailer.** Now consider a scenario in which a manufacturer sells through an independent retailer. In this case, in addition to the reputation of the manufacturer, consumer perceptions of product quality should also be influenced by the reputation of the retailer. For example, by selling its product through a high-quality retailer, a manufacturer can potentially signal its high quality to consumers (Chu & Chu, 1994).

Similar to manufacturer reputation, retailer reputation is a high-scope cue, and its valence cannot be changed instantaneously. Although this high-scope cue is only indirectly linked to the product, retailers with a high-quality reputation still have incentives to preserve their reputation by screening out poor-quality manufacturers and offering high-quality products. Note that according to the cue diagnosticity framework, because both manufacturer reputation and retailer reputation are high-scope cues, the diagnosticity of each cue is relatively less dependent on the valence of the other cue. This implies that regardless of its reputation, a manufacturer should receive a boost in quality perceptions by selling through a high-quality retailer than by selling directly or through a low-quality retailer. Formally,

H3: Consumers will perceive product quality to be higher when the manufacturer sells through a retailer with a good reputation relative to when it sells either directly or through a retailer with a poor reputation.

Now suppose that a manufacturer with a reputation for manufacturing low-quality products has indeed improved the quality of its product. Because the manufacturer suffers from a poor reputation that was established with prior products, merely informing consumers about the change in product quality would not be effective. Furthermore, given that the negative high-scope cue (manufacturer reputation) makes the low-scope cue (product warranty) less diagnostic, offering a better warranty coverage will not lead to higher perceptions of product quality.

Although the cue diagnosticity framework suggests that the diagnosticity of high-scope cues is relatively independent of other cues, the diagnosticity of low-scope cues varies with the valence of high-scope cues. This implies that if the low-quality manufacturer were able to sell its product through a reputed retailer, the positive high-scope cue not only helps directly but also indirectly by making the low-scope cue more diagnostic.

The direct effect occurs because high-quality retailers are likely to carry high-quality products to preserve their reputation. Regardless of manufacturer reputation, going through a reputed retailer thus serves to ratify product quality, and it indicates that the manufacturer is not likely to be a fly-by-night operator. Consequently, selling the product through a reputable retailer provides some assurance to consumers, particularly when the manufacturer reputation is poor. The perceived assurance is also bolstered by the fact that a reputed retailer is also more likely to provide redress in case of a product failure.
The indirect effect comes from the positive inferences evoked by the high-quality retailer transferring over to the low-scope cue. Thus, the warranty becomes more diagnostic and the likelihood of it being used in quality judgments increases. This implies that regardless of manufacturer reputation, a better warranty coverage should lead to higher perceptions of quality when the product is sold through a high-quality retailer.

In sum, the low-scope cue—product warranty—is relatively more diagnostic when at least one of the high-scope cues (manufacturer reputation or retailer reputation) is positive. This occurs because consumers are more likely to use warranty in their assessments of product quality when either high-scope cue is positive. The implication is that unless a manufacturer goes through a reputable retailer, it cannot convey improvements in product quality through a warranty. Based on the previous discussion, we hypothesize:

H4a: When a manufacturer with a poor reputation sells through a retailer with a poor reputation, then consumers will not perceive product quality to be higher with a good warranty relative to a poor warranty.

H4b: When a manufacturer with a poor reputation sells through a retailer with a good reputation, then consumers will perceive product quality to be higher with a good warranty relative to a poor warranty.

H4c: When a manufacturer with a good reputation sells through a retailer with a poor reputation, then consumers will perceive product quality to be higher with a good warranty relative to a poor warranty.

H4d: When a manufacturer with a good reputation sells through a retailer with a good reputation, then consumers will perceive product quality to be higher with a good warranty relative to a poor warranty.

STUDY 1

In this study, we examine a manufacturer that sells directly to consumers as well as through a reputed retailer. A real-world store, CompUSA, was used to represent the reputed retailer. Given that a familiar store name was used, we measured participants’ perceived reputation about CompUSA. Because the experimental design did not include a manufacturer selling through a retailer with a poor reputation, Study 1 explicitly tests H1, H2, H3, H4b, and H4d.

Method

Participants and procedure. A total of 164 undergraduates (juniors and seniors only) participated in the experiment for course credit. Participants were randomly assigned to one of eight cells of the 2 (manufacturer reputation: good and poor) × 2 (retail setting: absent and reputed retailer) × 2 (warranty: better than average and worse than average) between-subjects design. The number of participants in each cell ranged from 19 to 22.

In the experimental task, participants were asked to evaluate and provide their impressions of a new product that was recently introduced in the market. Participants were asked to imagine that they were purchasing an IBM-compatible desktop computer and, during their information search, had come across a description of a new computer model, Convex C-11. They were told that this model was manufactured by a company called “Convex Corporation” that has been in the computer business for 5 years. The description contained information about the company and some generic attribute information about the new Convex C-11 model. Manufacturer reputation and retail setting manipulations were embedded in the introductory description, whereas the warranty manipulation was embedded within the attribute information. After reading the description, participants were required to complete a questionnaire that collected information on the dependent measures, manipulation checks, as well as standard demographics. The entire task took about 10 minutes to complete.

Manipulated variables. Manufacturer reputation was manipulated by telling participants how previous products manufactured by the company fared relative to competitive offerings. Similar to Boulding and Kirmani (1993), participants in the high (low) manufacturer reputation condition were told that, “Past Convex models have been rated ‘well above (below) average’ to ‘average’ by Consumer Reports.” Participants were however explicitly informed that “Consumer Reports had not yet rated the new Convex C-11.”

The two different retail environments explored were manufacturer selling directly via mail order and selling through a reputed retailer. Participants in the direct selling condition were told that Convex Corporation sold its computers through mail order only. A toll free number was included in this condition. Participants in the reputed retailer condition were told that the new Convex C-11 was sold through CompUSA. To bolster the manipulation, CompUSA was described as a large, reputable retail computer chain, with stores all over the country, that had been top rated by J.D. Power and Associates on customer satisfaction and product assortment. The data showed that all the participants were familiar with CompUSA.

The warranty coverage was manipulated relative to the average coverage in the industry. It was stated that “the average coverage in the industry is 12-months parts and labor.” The worse than average (poor) warranty condition was represented by a manufacturer’s 4-months parts and labor warranty, whereas the better than average (good) warranty condition was represented by a manufacturer’s 24-months parts and labor warranty. The average industry warranty provided a reference standard against which to judge the given warranty coverage.
Dependent variable. Participants’ perceptions of product quality were measured by averaging five 7-point items (Cronbach’s $\alpha = 0.89$). The five items were: “my overall impressions of the new Convex computer model is,” ranging from 1 (very bad) to 7 (very good); “the new Convex computer model is most likely going to be of high quality,” ranging from 1 (strongly disagree) to 7 (strongly agree); “the risk involved in purchasing the Convex computer would be,” ranging from 1 (very high) to 7 (very low); “the Convex computer is likely to be durable,” ranging from 1 (not very likely) to 7 (very likely); and “compared to other computers, the quality of the Convex computer is,” ranging from 1 (much lower than average) to 7 (much higher than average). A factor analysis confirmed that the five items loaded on a single factor.

Results

Manipulation checks. Participants’ perceptions about manufacturer reputation were measured by a composite of two 7-point Likert scales (correlation = 0.79), ranging from 1 (strongly disagree) to 7 (strongly agree). Participants were asked to indicate the extent to which they agreed with the following statements: “Convex is a brand name one can trust,” and “Convex has a reputation for manufacturing high-quality computers.” A $2 \times 2 \times 2$ analysis of variance (ANOVA) showed that perceptions of manufacturer reputation were significantly affected by the manipulation. Relative to the participants in the high-reputation condition, participants in the low-reputation condition perceived the firm to be of significantly lower reputation ($M = 3.68$ vs. 2.46), $F(1, 155) = 49.37$, $p < .0001$. No other effects were significant.

Participants also rated CompUSA’s reputation as a computer retailer. They were asked to rate their agreement with the statement: “CompUSA has a reputation as a high-quality computer retailer” on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree). The mean rating of 5.13 suggests strong agreement with the statement.

The warranty manipulation was assessed by a composite of two semantic differentials. Participants were asked to rate the warranty offered by Convex on a 7-point scale, ranging from 1 (very bad) to 7 (very good), and they were asked to rate the warranty relative to other computer manufacturers on a 7-point scale, ranging from 1 (shorter than average) to 7 (longer than average). Participants in the 24-months warranty condition perceived it to be significantly better ($M = 5.63$ vs. 2.02), $F(1, 155) = 339.7, p < .0001$, and longer ($M = 5.46$ vs. 2.21), $F(1, 155) = 259.52, p < .0001$, than participants in the 4-months condition. Thus, the manipulations appeared to be successful in evoking the intended mental frame.

Hypotheses. Table 1 displays the means and standard deviations of the dependent measure as a function of the manipulated variables. A series of protected planned contrasts were used to test the hypotheses (see Table 1).¹

Hypothesis 1 states that when a manufacturer with a poor reputation sells directly, then an increase in warranty coverage will not imply higher perceptions of quality. As Table 1 shows, when the manufacturer with a poor reputation sold directly, participants in the good-warranty condition did not perceive the product quality to be significantly higher relative to participants in the poor-warranty condition ($M = 3.02$ vs. 2.92), $F(1, 156) = 0.09, ns$. Although we acknowledge the difficulty in testing a null hypothesis, consistent with the findings of Boulding and Kirmani (1993), the data provide support for H1.

Hypothesis 2 states that when a manufacturer with a good reputation sells directly, then a better warranty should lead to higher quality perceptions. As predicted, Table 1 shows that when the reputed manufacturer sold directly, participants in the good-warranty condition perceived product quality to be significantly higher than participants in the poor-warranty condition ($M = 4.28$ vs. 3.60), $F(1, 156) = 4.25, p < .04$.

Hypothesis 3 predicts that consumer perceptions of product quality would be higher when the manufacturer sold its product through a reputed retailer relative to selling directly. Consistent with this hypothesis, participants perceived product quality to be significantly higher when it was sold through a reputed retailer relative to when it was sold directly by the manufacturer ($M = 4.10$ vs. 3.44), $F(1, 156) = 15.37, p < .0001$. Perceptions of product quality were significantly higher in the CompUSA condition both when the manufacturer reputation was poor ($M = 3.72$ vs. 2.97), $F(1, 156) = 10.71, p < .001$, and when the manufacturer reputation was good ($M = 4.47$ vs. 3.92), $F(1, 156) = 5.18, p < .02$.

Of particular interest is Hypothesis 4b, which states that when a manufacturer with a poor reputation sells its products through a reputed retailer, then an increase in warranty will lead to higher perceptions of product quality. As Table 1 shows, when Convex Corporation had a poor reputation but sold through CompUSA, perceptions of quality in the good-warranty condition were significantly higher than in the poor-warranty condition ($M = 4.05$ vs. 3.38), $F(1, 156) = 4.54, p < .03$.

Also consistent with H4d, when Convex Corporation had a good reputation and sold through CompUSA, the mean quality perception was significantly higher in the good- versus poor-warranty condition ($M = 4.82$ vs. 4.11), $F(1, 156) = 4.86, p < .02$.

¹Planned contrasts are more efficient than omnibus $F$ tests in testing hypotheses that predict differences in specific cell means (Keppel, 1991; Kirk, 1995; Rosenthal & Rosnow, 1985). The overall ANOVA assesses the differences among the experimental groups, but contrast analysis provides much greater statistical power and clarity in interpreting the substantive results (Rosenthal & Rosnow, 1985).
These results provide strong support for the cue diagnosticity framework. In particular, the results are consistent with the premise that high-scope cues and low-scope cues possess distinct characteristics that make the relative diagnosticity of a low-scope cue depend on the valence of the associated high-scope cue(s). However, the diagnosticity of high-scope cues is less dependent on the valence of other cues in the environment. Accordingly, the data show that manufacturer reputation and retailer reputation have a direct as well as indirect effect on participants’ perceptions of product quality.

The indirect effect was manifested by the fact that warranty information was utilized in product quality judgments when at least one of the high-scope cues was positive. When the manufacturer was reputed to manufacture high-quality products, then regardless of whether the product was sold directly or through a reputed retailer, participants tended to utilize warranty information in judging product quality. Thus, a better warranty coverage led to higher perceptions of quality. This was, however, not true when a manufacturer with a poor reputation sold directly to consumers. The negative inferences generated by the high-scope cue (manufacturer reputation) reduce the perceived diagnosticity of the low-scope cue (product warranty). Thus, warranty information was considered uninformative in making judgments of product quality. However, the saving grace for a manufacturer with a poor reputation who has indeed improved the quality of its products is that part of the stigma of past performance can be overcome by selling its products through a reputable retailer. In addition, selling through a reputed retailer has the benefit of making the warranty more diagnostic for assessing product quality.

Although the findings of Study 1 have important theoretical as well as managerial implications, these are subject to the limitations of this study. First, a familiar store name was used, and participants’ perceptions of the retailer were measured. To the extent that employing an actual store name compromises experimental control, it is important to manipulate retailer reputation to more directly test the cue diagnosticity framework. Experimental manipulation of retailer reputation allows us to manipulate its valence that is required to directly test H4.

Second, we found that a low-quality manufacturer cannot convey improvement in product quality through a warranty unless it goes through a reputable retailer. Based on the cue diagnosticity framework, it is posited that a low-scope cue such as product warranty is more likely to be used in product quality judgments when either high-scope cue, manufacturer reputation, or retailer reputation is positive. In particular, it was argued that when manufacturer reputation is poor, going through a reputable retailer provides some assurance to consumers. However, because manufacturer reputation is more diagnostic in assessing product quality than retailer reputation, it is likely that the assurance provided by the retailer plays a more dominant role when the manufacturer has a poor versus a good reputation. This implies that the effect of retailer reputation will be mediated by perceived assurance when manufacturer reputation is poor but not when manufacturer reputation is good. This postulated mechanism cannot be confirmed in Study 1 because perceived assurance was not measured. Study 2 is designed to address these issues.
manner, such that H4 could be explicitly tested. In addition, data on participants’ perceptions of the assurance provided by the retailer were collected.

Method

Participants and procedure. A total of 161 undergraduates (juniors and seniors only) participated in this study for course credit. The participants were randomly assigned to one of the eight cells of a 2 (manufacturer reputation: good and poor) × 2 (retailer reputation: good and poor) × 2 (warranty: better than average and worse than average) between-subjects design. The number of participants in each cell ranged from 19 to 21. The cover story was the same as in Study 1. However, unlike Study 1, along with the description of the Canadian computer manufacturer, which was supposedly excerpted from Wall Street Journal, they were also given a description of the new computer that was being considered for the U.S. market. Whereas manufacturer reputation and retail environment were manipulated in the initial description, the warranty manipulation was embedded in the description of the computer. After reading the description, participants completed a questionnaire that collected information on the dependent measures, manipulation checks, selected covariates, and standard demographics. Participants were told that there were no right or wrong answers.

Manipulated variables. Manufacturer reputation was manipulated exactly as in Study 1, and the retailer reputation manipulation was similar to the manufacturer reputation manipulation. Participants in the (good–poor) retailer reputation condition were told that

In a strategic move, Convex Corporation has also decided to sell its new computer model through a regional retail computer chain—Computer Universe. This computer chain, with stores in the north-eastern part of the United States, sells a variety of (well known brand names/products). In a survey by J.D. Power and Associates, an independent market research agency, the retail chain has been rated well (above/below) average on dimensions such as customer satisfaction and product assortment. Computer Universe has decided to carry the new Convex model.

The warranty manipulation used was also similar to Study 1. Participants were told that “the average coverage in the industry is 12-months parts and labor.” The worse than average (poor) warranty condition was represented by a manufacturer’s 6-months parts and labor warranty, whereas the better than average (good) warranty condition was represented by a manufacturer’s 24-months parts and labor warranty.

Dependent variable. As in Study 1, an average of five 7-point items was used to measure perceived quality (Cronbach’s $\alpha = 0.88$).

Results and Discussion

Manipulation checks. As in Study 1, participant perceptions about manufacturer reputation were measured by averaging the ratings of two 7-point scales (correlation = 0.85). A $2 \times 2 \times 2$ ANOVA showed that participant perceptions of manufacturer reputation were significantly affected by the manipulation. Relative to the participants in the good-reputation condition, participants in the poor-reputation condition perceived the manufacturer to be of significantly lower repute ($M = 4.84$ vs. $2.75$), $F(1, 153) = 166.72, p < .0001$. The other manipulations did not affect perceptions of manufacturer reputation.

Perceptions of retailer reputation were assessed by averaging a pair of Likert scales (correlation = 0.88). Participants were asked to rate the following statements on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree): “Computer Universe has a reputation for selling high-quality products,” and “it is very likely that a product sold at Computer Universe would be of high quality.” As expected, the $2 \times 2 \times 2$ ANOVA showed that participant perceptions of Convex’s reputation were significantly higher in the good-reputation condition relative to the poor-reputation condition ($M = 5.17$ vs. $2.73$), $F(1, 153) = 166.57, p < .0001$. The retailer reputation ratings did not vary with any other manipulation.

The warranty manipulation was assessed by asking participants to rate the following statement on a 7-point scale, ranging from 1 (much shorter than average) to 7 (much longer than average): “compared to other computer manufacturers, the warranty offered by Convex is.” As expected, participants in the 24-months warranty condition perceived it to be significantly better than participants in the 6-months condition ($M = 5.98$ vs. $1.95$), $F(1, 153) = 445.04, p < .0001$. The warranty ratings were not affected by the other manipulations. In summary, the experimental manipulations were successful and orthogonal.

Hypotheses. Table 2 shows the means and standard deviations of the dependent measures as a function of the manipulated variables. The hypotheses were tested as a series of protected planned contrasts.

According to H3, perceptions of product quality would be higher when the manufacturer sells through a retailer with a good reputation versus a retailer with a poor reputation. Corroborating the findings of Study 1, the results show that perceived product quality is significantly higher when the retailer has a good reputation relative to when it has a poor reputation ($M = 4.42$ vs. $3.63$), $F(1, 153) = 33.95, p < .0001$. Furthermore, the mean quality ratings were higher in the good
retailer reputation condition when the manufacturer reputation was poor ($M = 3.94$ vs. 3.03), $F(1, 153) = 23.18, p < .0001$, as well as when the manufacturer reputation was good ($M = 4.90$ vs. 4.24), $F(1, 153) = 11.77, p < .0008$. These data thus provide additional support for the cue diagnosticity framework, suggesting that the relative diagnosticity of a high-scope cue does not depend on the valence of other cues.

Hypothesis 4a states that when a manufacturer with a poor reputation sells its products through a retailer with poor reputation, then a better warranty will not imply higher perceptions of product quality. Consistent with this prediction, Table 2 shows that when Convex Corporation had a poor reputation and sold through a retailer with low reputation, participant perceptions of quality were not significantly different across the good- and poor-warranty conditions ($M = 3.13$ vs. 2.92), $F(1, 153) = 0.6, ns$.

In contrast, H4b predicts that when a manufacturer with a poor reputation sells its products through a reputed retailer, then a better warranty should lead to higher perceptions of product quality. Consistent with this hypothesis, when Convex had a poor reputation but sold through a reputed retailer, perceptions of quality in the good-warranty condition were significantly higher than in the poor-warranty condition ($M = 4.31$ vs. 3.57), $F(1, 153) = 7.63, p < .006$. This result supports the argument that the relative diagnosticity of a low-scope cue varies with the valence of high-scope cues. In this case, the positive reputation of the retailer makes the warranty more diagnostic and allows it to be used in assessing product quality. The implication is that a manufacturer with a low-quality reputation can indeed signal changes in product quality by selling its products through a reputed retailer and providing a better-than-average warranty.

H4c suggests that when a manufacturer with a good reputation sells its products through a poor-reputation retailer, a better warranty level will imply higher perceptions of quality. Table 2 shows that when Convex sold through a retailer with a poor reputation, perceptions of quality were higher in the good-warranty condition relative to the poor-warranty condition ($M = 4.47$ vs. 3.01), $F(1, 153) = 2.92, p < .07$. The difference was, however, only marginally significant.

Finally, consistent with H4d, when Convex had a good reputation and sold through a reputed retailer, participants in the good-warranty condition perceived the quality to be significantly higher than participants in the poor-warranty condition ($M = 5.21$ vs. 4.58), $F(1, 153) = 5.29, p < .02$. These results show that it is necessary for at least one associated high-scope cue to be positive for a low-scope cue to be used in product quality judgments.

**Postulated mechanism.** We argued that when manufacturer reputation is poor, then the effect of retailer reputation on perceptions of quality should be mediated by the perceived assurance provided by the retailer. Data on perceived assurance were thus collected after the perceived quality measures. Participants were asked to rate the following statements on a 7-point scale, ranging from 1 (strongly disagree) to 7 (strongly agree): “Given that the new computer model will be sold at Computer Universe, I am assured of its quality,” and “it is reassuring to know that the computer will be sold through Com-

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**TABLE 2**
Study 2: Mean Perceived Quality and Perceived Assurance

<table>
<thead>
<tr>
<th>Good Manufacturer Reputation</th>
<th>Poor Manufacturer Reputation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good</td>
</tr>
<tr>
<td></td>
<td>$M$</td>
</tr>
<tr>
<td>Retailer reputation</td>
<td></td>
</tr>
<tr>
<td>Good</td>
<td></td>
</tr>
<tr>
<td>Perceived quality</td>
<td>5.21</td>
</tr>
<tr>
<td>Perceived assurance</td>
<td>5.42</td>
</tr>
<tr>
<td>Poor</td>
<td></td>
</tr>
<tr>
<td>Perceived quality</td>
<td>4.47</td>
</tr>
<tr>
<td>Perceived assurance</td>
<td>3.19</td>
</tr>
</tbody>
</table>

**Contrasts for testing hypotheses**

- Hypothesis 4a: $[7] = [8]$
- Hypothesis 4b: $[3] > [4]$
- Hypothesis 4c: $[5] > [6]$
- Hypothesis 4d: $[1] > [2]$

**Note.** Cell numbers are given in brackets.
puter Universe.” The average of these scales was used as a measure of the assurance that a retailer provided consumers by selling a particular product (correlation = 0.82).

Following Baron and Kenny (1986), the test of mediation showed that perceived assurance completely mediated the effect of retailer reputation on perceptions of product quality when the manufacturer was reputed to manufacture low-quality products. In particular, the effect of retailer reputation had a significant effect on perceptions of product quality, $F(3, 77) = 20.83$, $p < .0001$. However, when perceived assurance was added to the model as a covariate, retailer reputation was not significant, $F(3, 77) = 1.09$, ns, whereas perceived assurance was significant, $F(3, 77) = 18.06$, $p < .0001$.

In contrast, when the manufacturer was reputed to manufacture high-quality products, perceived assurance did not mediate the effects of retailer reputation on product quality. In particular, the effect of retailer reputation on perceptions of product quality was significant, $F(3, 76) = 13.29$, $p < .0005$. When perceived assurance was added in the model as a covariate, retailer reputation remained significant, $F(3, 76) = 5.47$, $p < .02$, whereas perceived assurance was not significant, $F(3, 76) = 0.41$, ns. These findings support the contention that when the manufacturer is reputed to manufacture high-quality products, consumers are adequately assured by the reputation of the manufacturer. Thus, they do not need the assurance that comes with a product being sold by a reputed retailer.

### GENERAL DISCUSSION

#### Summary of Findings

This research was motivated by our interest in how consumers deal with pre-purchase product uncertainty by assessing product quality based on multiple cues. In particular, the purpose of this article was to develop and test a conceptual framework that allows an assessment of the simultaneous effect of multiple cues on consumer perceptions of quality. Based on cue diagnosticity, a conceptual framework was developed and hypotheses regarding the effects of manufacturer reputation, retailer reputation, and product warranty were derived and tested in two studies.

The cue diagnosticity framework suggests that the extent to which a cue is used in product quality judgments varies with the other cues that are also available. Furthermore, it is suggested that there are at least two types of cues in the marketplace: high-scope cues and low-scope cues. Although the diagnosticity of high-scope cues is relatively stable, the diagnosticity of low-scope cues depends on the valence of high-scope cues. The cue diagnosticity framework suggests that a low-scope cue is more diagnostic when the associated high-scope cue is positive. Thus, a low-scope cue is more likely to be used in the presence of a positive high-scope cue.

The results of Studies 1 and 2 provide strong support for the cue diagnosticity framework. As such, manufacturer reputation and retailer reputation, the two high-scope cues employed in this article, were used in evaluating product quality regardless of the valence of other cues. However, the low-scope cue—product warranty—was used in product quality judgments only when the valence of at least one high-scope cue was positive. These findings, consistent with the cue diagnosticity framework, suggest that the effect of a high-scope cue on perceptions of product quality is both direct and indirect.

We note that although the cue diagnosticity framework explains the effects of the cues used in Studies 1 and 2, it is not clear that the framework would apply to other sets of cues. It is thus important for future research to test the cue diagnosticity framework with different cue combinations.

#### Theoretical Implications

It is worth noting that some of our findings can be explained by the negativity bias finding documented in a number of information integration studies (e.g., Skowronska & Carlston, 1989). The negativity bias suggests that when multiple cues are combined, of which one cue is negative, the negative cue receives more weight leading to smaller (or no) effects of other cues. The finding that warranty is used in quality evaluations when the reputation of the manufacturer is good, but not when it is bad, is consistent with the negativity bias. However, the result that retailer reputation has a similar effect on quality evaluations, regardless of manufacturer reputation, is inconsistent with the negativity bias. Moreover, the negativity bias cannot account for the combined effects of manufacturer reputation, retailer reputation, and warranty on perceptions of quality. On the other hand, the cue diagnosticity framework provides a parsimonious explanation for the overall pattern of data in Studies 1 and 2. This suggests that it is important to distinguish between different types of cues and explicitly incorporate the interaction between cue types.

We distinguish among cue types by classifying them on the level of their scope, where scope refers to the amount of evidence required to form or to change a judgment implied by the cue (see Gidron et al., 1993). Extensive evidence is required to form or to change a judgment based on a high-scope cue, whereas relatively little evidence is required to form or to change a judgment based on a low-scope cue. It also follows that it is easier to change the valence of a low-scope cue relative to a high-scope cue. High-scope cues are, therefore, more credible and diagnostic relative to low-scope cues. This implies that the perceived likelihood of a product belonging to a particular quality category is much higher when perceptions are based on a high-scope cue relative to a low-scope cue.

Although there exists other ways of classifying cues such as intrinsic–extrinsic (Cox, 1962) and credence–search cues (Nelson, 1970), our distinction among cues is intended to convey the stability–transience of the cue and its inherent am-
bigness. That is, whereas the reputation of the manufacturer and retailer should be recognized as belonging to a set of cues that tend to relatively stable, warranty belongs to a set of cues that can be transient (easily changed). The ambiguity arises because none of the cues fully resolves the uncertainty about product quality. The intrinsic–extrinsic distinction, based on whether product-related cues can be manipulated without altering the physical properties of the core product (Richardson et al., 1994), suggests that the cues used in this article are extrinsic in nature. The credence–search distinction, based on the extent to which ambiguity associated with a cue is resolved (Nelson, 1970), does not serve our purposes because of the assumption that search resolves all ambiguity.

The cue–component distinction of Connolly and Srivastava (1995) is perhaps the closest in spirit to the distinction proposed in this article. According to the cue–component distinction, cues reflect or indicate the level of product quality, whereas components are substantive value elements that constitute the value of the product. Both manufacturer reputation and retailer reputation can be conceived of as cues in this framework, whereas product warranty may be more cue like or component like, depending on the valence of other cues. Thus, product warranty is more component like when a poor-reputation manufacturer sells directly or through a retailer with a poor reputation, but it is more cue like when either the manufacturer reputation or the retailer reputation is good. The cue–component distinction, however, reflects different underlying causal models and does not capture the interaction among cue types that our distinction posits. In particular, there is a hierarchy of cue types in our high–low scope distinction because high-scope cues have a direct, as well as an indirect, effect, and the effect of low-scope cues depends on the associated high-scope cue or cues.

Managerial Implications

In addition to the theoretical implications, the effects of manufacturer reputation, retailer reputation, and product warranty are also of interest from a managerial perspective. Although it is clear that manufacturer reputation is the most important cue for assessing product quality, the results demonstrate that retailer reputation also plays an important role in quality evaluations (cf. Dodds et al., 1991). Given that a retailer with a good reputation has every incentive to preserve its reputation, it is likely to screen out poor-quality products and offer high-quality products. Our results clearly show that regardless of manufacturer reputation, perceptions of product quality are higher when the manufacturer sells its product through a retailer with a good versus a poor reputation.

Interestingly, studying the effects of manufacturer reputation, retailer reputation, and warranty on consumer perceptions of quality provided insights into two related issues. First, the effect of product warranty was assessed within the context of a retail environment. Note that previous research has examined warranty in conjunction with manufacturer reputation only. We thus argue that to fully understand the effect of a warranty, we have to consider it within the context of additional cues that are commonly available to consumers. Second, we address the issue of how a low-quality manufacturer, who has improved its product quality, can convey this improvement to consumers. Previous research suggests that changing warranty coverage will not lead to higher perceptions of product quality (Boulding & Kirmani, 1993; Srivastava & Mitra, 1998).

Consistent with the previous literature, we found that perceptions of quality were not influenced by warranty when the reputation of the manufacturer was poor and the product was sold either directly or through a retailer with a bad reputation. In contrast, a better than average warranty implied higher perceptions of quality when the same manufacturer sold through a reputed retailer. Thus, a manufacturer with a poor reputation cannot signal its improvement in product quality by simply offering a better than average warranty: The better warranty will signal product quality when the manufacturer sells its product through a reputed retailer. This implies that although the warranty coverage is intended to provide some assurance, it does not influence consumer perceptions of product quality until a reputed retailer puts its stamp on it. On the other hand, when a manufacturer with a good reputation offers a warranty, then, regardless of retailer reputation, a higher warranty is associated with higher quality. In this case, the manufacturer is already associated with a high-quality product, and, hence, product assurance provided by the retailer is not an issue.

In summary, this research examines how consumers combine multiple cues in their assessments of product quality. Toward this goal, these studies developed and tested a conceptual framework that allows an assessment of the effects of multiple cues on product quality judgments. Although this research suffers from several limitations, such as artificial setting, simple stimuli, student participants, and so forth, the results of the two studies provide strong support for the conceptual framework and argue for further research in this area. Among the specific cues examined in our research, our findings point to the important role that the retailer plays in conveying a quality image. The reputation of the retailer not only impacts perceptions of product quality directly, but also indirectly impacts perceptions by increasing the likelihood of warranty being used in assessing product quality. Taken more broadly, this suggests that the retailer may influence other forms of communication between manufacturers and consumers (e.g., price and advertising). Future research in this area should explore the impact of retailers on other cues that manufacturers may use to signal quality. Within the context of product warranties, we note that a warranty plays a dual role of providing insurance against product failure and in signaling product quality. Note that retailers can potentially affect both these roles because they provide repair service and screen manufacturers based on product quality. Separating out these effects suggests an interesting area for future research.
ACKNOWLEDGMENTS

We thank Jim Bettman, Amna Kirmani, John Lynch, Priya Raghubir, Frank Kardes, and three anonymous Journal of Consumer Psychology reviewers for their helpful comments on an earlier version of this article. We also acknowledge David Chen and Josephine Kwok for their help in collecting the data. We are listed in alphabetical order and contributed equally to this article.

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Accepted by Frank Kardes.