Towards Dimensionalizing Warranty Information:  
The Role of Consumer Costs of Warranty Redemption

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Firms routinely offer warranties, often as attempts to differentiate their offerings from those of competitors. Despite this practice common to virtually every consumer durable category, extant research has been inconclusive regarding the effect of warranties on quality judgments. One potential limitation of these prior investigations is the failure to model a key element of a product warranty—consumer-side transaction costs associated with warranty redemption. In this article, we introduce the role of consumer-side transaction costs associated with warranty redemption and examine the joint impact of warranty length and warranty redemption costs for brand names of varying strength on consumers’ judgments of product quality. Two experiments show that warranty length signals security but not quality, and that perceived quality increases as consumers’ warranty redemption costs decrease, provided that the warranty length is short. Different dimensions or aspects of warranties have different effects on perceived quality. The implications of the results for understanding conflicting findings in the warranty-quality literature are discussed.

Information asymmetry and its influence on consumer behavior has been the focus of much influential work in economics, management, and consumer behavior. Economists, in particular, have argued that high-quality sellers have an inherent incentive to convey their (higher) quality to consumers through a variety of actions or signals (e.g., Grossman, 1981; Milgrom & Roberts, 1986; Spence, 1974, 1977) or be driven from the market (Akerlof, 1970). Two common quality cues that have been examined by consumer researchers include brand name (e.g., Erdem & Swait, 1998; Janiszewski & van Osselaer, 2000; Rao, Qu, & Ruekert, 1999) and price (e.g., Gerstner, 1985; Rao & Monroe, 1989; Tellis & Wernerfelt, 1987).

Another cue that has received attention in the literature is that related to warranties (e.g., Kelley, 1988; Lutz, 1989; Purohit & Srivastava, 2001) and their impact on consumers’ judgments of product quality (Boulding & Kirmani, 1993; Price & Dawar, 2002), reliability (Price & Dawar, 2002; Shimp & Bearden, 1982; Wiener, 1985), and risk (Shimp & Bearden, 1982). While these investigations have advanced our understanding of warranties and their judgmental consequences, one dimension of a warranty that has not received much attention is that related to the transaction costs that consumers may incur to redeem the warranty, which we refer to as consumers’ warranty redemption costs.\(^1\)

Warranty redemption costs are incurred after purchase, and consumers’ satisfaction with postpurchase service encounters influence quality judgments (Slotegraaf & Inman, 2004). Indeed, research in economic and consumer psychology that focuses on how consumers evaluate information in a transaction further shows that the costs of a transaction are indeed considered prior to purchase (Thaler, 1980, 1985). Business practice also endorses this position, with catalog and internet retailers routinely marketing the ease of their return policies. Therefore, warranty redemption costs are likely to be relevant in prepurchase product quality judgments.

Importantly, if the warranty redemption process is costly for consumers, we expect that the warranty itself may be

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\(^{1}\)In this article, warranty redemption costs are treated as a demand-side consideration and refer exclusively to consumers’ costs (time, effort, emotional tradeoff, etc.) in redeeming a warranty. A manufacturer’s costs in offering and honoring the warranty are not the focus of our investigation.
perceived to be of lower worth. This intuition converges with Hart’s (1988) work showing that guarantees are meaningless if they are difficult for consumers to invoke. Therefore, to better understand how consumers’ quality judgments are influenced by warranties, we focus on warranty redemption costs that consumers anticipate as part of their ownership experience.

Across two experiments, we examine the impact of warranties on consumer judgments under different levels of warranty length and warranty redemption costs for brands of varying strength. In experiment 1, we investigate the joint effect of warranty length, warranty redemption costs, and brand strength on quality judgments. In Experiment 2, we examine respondents’ beliefs (thoughts) to obtain a more detailed picture of the processes which may underlie the effects obtained in Experiment 1. At an aggregate level, our findings underscore the multidimensional nature of warranty information.

WARRANTY REDEMPTION COSTS

For a warranty to serve as a signal of quality, consumers must perceive it to offer credible quality-related information (e.g., Akerlof, 1970; Klein & Leffler, 1981). Further, from a consumer’s viewpoint, while there are benefits to a warranty, there are costs associated with it as well. We conceptualize the warranty redemption process as a “cost” that consumers anticipate incurring and in the next section, make predictions regarding its effect on product quality.

Warranty Redemption Costs and Perceived Quality

Transaction utility theory (Thaler, 1980, 1985) models the mental accounting of costs and benefits that consumers undertake in making judgments, and more specifically, how they consider the combinations of gains and losses in the evaluation of transaction-specific purchases. Thaler (1980) purported that a choice task elicits a mental account of future transaction costs and that consumers, as utility maximizers, attempt to minimize the expected costs related to product consumption. “If the transaction costs are less than the value of the utilization of the good for [a period of time], then the maximizing consumer pays for the good and takes it home” (p. 46).

Implicit in this line of inquiry is the notion that a consumer identifies and considers the costs of a transaction prior to purchase. More recently, Prelec and Loewenstein (1998) empirically supported Thaler’s model that consumers mentally track the costs and benefits of a transaction at the point of purchase as well as throughout consumption. Moreover, Moorthy and Srinivasan (1995) showed analytically that consumers seek to minimize transaction costs associated with redeeming a money-back guarantee. Anecdotal evidence in business practice also converges with this reasoning. For instance, Lands’ End calls attention to the ease of its return policy with: “Guaranteed. Period. Return anything, anytime, for any reason.” Similarly, Best Buy promotes its product replacement warranty plan by emphasizing “Easy fulfillment. Flexibility. Nationwide redemption.”

Given the trade-off between costs and benefits, and that costs associated with a transaction comprise the “negative” side of a transaction, consumers should be particularly sensitive to information pertaining to costs. In particular, negative information is attended to, processed, and relied on more than positive information in forming judgments (Baumeister, Bratslavsky, Finkenauer, & Vohs, 2001; Herr, Kardes, & Kim, 1991; Rozin & Royzman, 2001; Smith & Petty, 1996). Deliberation should thus be greater for an event that has greater potential negativity associated with it, such as when it is more costly or difficult for a consumer to redeem a warranty.

A similar expectation can be arrived at using the persuasion knowledge model (Friestad & Wright, 1994), which suggests that consumers are often aware that marketers are attempting to persuade them. This knowledge leads consumers to attribute different motives to the marketer, depending on the precise nature of the attempt (e.g., Jain & Posavac, 2001). In our context, the attribution perspective suggests that the presence of specific costs motivates consumers to determine why these costs may be low or high. For example, when it is difficult for consumers to seek redress for a problem relating to a firm’s products, it may be perceived as a “red flag,” indicating (among other things) a potential problem with product quality.

This reasoning is also borne out by Moorthy and Srinivasan (1995) who state that one important criterion in signaling quality that is directly relevant for a money-back guarantee is “the probability of truth-telling in advertising” (p. 446). Specifically, when the expected costs of seeking redress for a product that fails to perform as promised are perceived to be high, a likely attribution is that the product is low in quality and the firm is making it difficult to redeem the warranty because it is protecting its financial risk. Conversely, when the expected costs of seeking redress are perceived to be low, a likely attribution is that the product is high in quality and the firm is making it easy to redeem the warranty because it has little to worry about. Hence, just as price may serve as a positive quality cue (Brucks, Zeithaml, & Naylor, 2000), perceived warranty redemption costs may serve as an inverse quality cue. We therefore expect an inverse relationship between warranty redemption costs and quality perceptions, where warranties with lower warranty redemption costs will garner higher perceptions of quality.

Warranty Redemption Costs, Warranty Length, and Perceived Quality

While we predict that the costs of warranty redemption alone will be utilized as a heuristic for quality judgments,
other warranty-related information, such as warranty length, may be jointly used to form judgments of product quality. Thus, we are interested in what impact, if any, warranty length may be jointly used to form judgments of product quality. To answer this question, we turn to transaction utility theory in conjunction with the expectation disconfirmation literature.

Transaction utility theory argues that the role of transaction costs is likely to depend on the temporal distance between losses and gains in the transaction. In particular, the cost depreciation effect shows that when perceived costs are temporally separated from the perceived benefits, consumers accord a lower weight to the costs and overweight the benefits (Gourville & Soman, 1998). This temporal separation is also borne out by research examining how outcomes are valued over time. Shelley (1994) and Epstein (1977) showed that not only is the value of outcomes discounted over time, but the discounting rate over temporal distance is greater for negative outcomes than for positive outcomes. Hence, consumers are likely to mentally depreciate the future costs associated with product ownership so that the effect of costly warranty redemption on perceptions of product quality is mitigated by longer warranties. Consequently, a longer warranty may compensate for and attenuate the perceived loss from high warranty redemption costs in consumers’ judgments of product quality.

This compensatory cue argument has some support in the marketing literature. Chernev and Carpenter (2001) suggested that consumers’ knowledge and expertise regarding market efficiencies in a product market (i.e., understanding what attributes are important for a product and how value is assigned to brands in the category) may lead them to make compensatory inferences regarding known and unknown attributes. Specifically, in a series of experiments, Chernev and Carpenter manipulated market efficiency scenarios describing the market characteristics, market efficiency intuitions (a priming task to encourage/discourage perceptions of market efficiency), and price information (available/unavailable). Based on these manipulations, respondents made inferences about an unknown product attribute (memory) for personal computers. Results suggest that consumers engaged in compensatory inferences when the market was known to be efficient, was perceived to be efficient, and when other bases for inferences, such as knowledge of specific interattribute correlations, were unknown.

However, compensatory inferences were likely to be formed spontaneously only under limited conditions, possibly because negative correlations were difficult to learn (Johnson, Meyer, & Ghose, 1989) or because it may be more difficult to think about the judgmental implications of negative correlations relative to positive correlations (Kardes, Posavac, & Cronley, 2004). Yet, some negative correlations are likely to be intuitively appealing to consumers. For example, many consumers assume a negative correlation between the tastiness of snack foods and healthiness. Similarly, consumers that recognize firm resource constraints may also be more likely to assume negative correlations among variables like warranty redemption costs and warranty length that carry financial implications.

Marketplace decision making and expectancy confirmation/disconfirmation literatures offer further support for this compensatory effect. In particular, exposure to negative information (e.g., high warranty redemption costs) motivates consumers to find ways to minimize such losses (Chatterjee, Kang, & Mishra, 2004), and research suggests that consumers implicitly expect to make a value-for-money trade-off with respect to marketplace decision-making (Livesey & Lennon, 1978; Myers, 1967). When a cue carries negative implications for their welfare (e.g., high warranty redemption costs), consumers may expect a compensatory cue (e.g., longer warranty). Hence, all else being equal, consumers may expect a warranty to be long (short) when warranty redemption costs are high (low). Therefore, a juxtaposition of high (low) warranty redemption costs and a long (short) warranty supports consumers’ a priori marketplace expectations.

Conversely, when warranty redemption costs are high (low) and the accompanying warranty is short (long), the situation is expectancy disconfirming. Research further shows that disconfirmation of expectations has a greater impact on evaluations and repeat purchase behavior than when expectations are confirmed (e.g., Anderson & Sulli- van, 1993). One potential reason for this asymmetry is that the number of alternative interpretations is greater when consumers are presented with unexpected information. In such situations, one of two primary inferences can be made: (a) “the quality must be exceedingly good” or (b) “the offer is too good to be true” (Shimp & Bearden, 1982). In the former case, quality perceptions should become more positive; whereas in the latter case, cognitive response theory (Greenwald, 1968; Wright, 1973) suggests that a high degree of counter-argumentation and source derogation should lead to a decrease in quality perceptions. Specifically, unexpected information is discounted, especially when many alternative interpretations of the information are possible. Hence, product quality perceptions are not likely to be significantly different when low warranty redemption costs are coupled with a long warranty in comparison to either high warranty redemption costs and a long warranty or low warranty redemption costs and a short warranty.

However, when expectations are not met, such that both cues are negatively valenced, the primary inference is likely to be that there is simply a quality problem; that the manufacturer is unable to offer its product with a long warranty or with low warranty redemption costs. Hence, product quality perceptions should be significantly lower when high warranty redemption costs are coupled with a short warranty, in comparison to the three other possible combinations of warranty redemption costs and warranty length.

In summary, we expect warranty length to moderate the relationship between warranty redemption costs and perceived
quality such that warranty redemption costs should impact perceived quality more for a short warranty than for a long warranty.

EXPERIMENT 1

Stimulus Development

The notion that consumers rely on multiple heuristics for judgments when faced with uncertainty is well-known (e.g., Bettman, 1979; Chaiken & Maheswaran, 1994). Along these lines, brand name is one heuristic that appears to provide a great deal of diagnostic information to consumers and can be a powerful quality signal (Aaker, 1991; Keller, 2003). Furthermore, extant research shows that reputation influences the extent to which consumers use warranty information to infer quality (Purohit & Srivastava, 2001). Therefore, to examine the extent to which our results will generalize across brands of varying strength, we included brand strength in the analysis of our hypotheses and used a pretest to select these brands.

The pretest was conducted among 43 undergraduate students who participated for partial course credit, and was disguised as a “study about how consumers think about brands.” The questionnaire required participants to rate 10 brand names (arranged alphabetically) on 3 criteria—reputation, on a scale of 1 (not at all reputable) to 7 (highly reputable); credibility, on a scale of 1 (not at all credible) to 7 (highly credible), and trustworthiness, on a scale of 1 (not at all trustworthy) to 7 (highly trustworthy); α=0.94). The brand names were Annex, Audiovox, Compaq, Hewlett Packard, Infinity, Panasonic, RCA, Samsung, Sharp, and Sony. Gender had no effect on perceptions. Importantly, Sony and Annex emerged respectively as the strongest and the weakest brands, and were subsequently chosen for further testing.

Method

Participants and design. One hundred and eighty three undergraduate students participated in the experiment for partial course credit. The study featured a $2 \times 2 \times 2$ full factorial design with warranty length (strong: 5 years; weak: 3 months), warranty redemption costs (high; low), and brand strength (strong: Sony; weak: Annex) as the three between-subjects factors. Warranty length was manipulated by varying the length of warranty coverage as done in past research (Shimp & Bearden 1982). Ours being a first examination of warranty redemption costs, we defined these costs along two dimensions—the ease with which respondents could expect to redeem the warranty and the time it took the company to honor the warranty. Consequently, after exposing respondents to brand and warranty length information, the low cost condition stated:

“The following additional information about the warranty was available from the Consumers Union, an unbiased source of information about products and services. In the cases that consumers have needed service for product malfunctions covered by the warranty, most consumers state that it was relatively easy and quick to get the company to fix the product. All that a consumer needed to do was to call a toll-free number and report the claim. Most claims were verified and taken care of in 2–3 days.”

Similarly, respondents in the high cost condition read the following information:

“The following additional information about the warranty was available from the Consumers Union, an unbiased source of information about products and services. In the cases that consumers have needed service for product malfunctions covered by the warranty, most consumers state that it was relatively difficult and slow to get the company to fix the product. A consumer had to log onto a website, provide several details, and then wait for a customer service representative to call back. It took 10–15 days for most claims to be verified and taken care of.”

Procedure. The cover page of the questionnaire informed respondents that the purpose of the study was to understand how consumers make purchase decisions and that there were no right or wrong answers. Next, participants were exposed to the description of a Quick Link Pen (see Appendix A), a product designed to be new to avoid confounding with prior experience.

The dependent variable was respondents’ perceptions of product quality measured on a 9-point scale anchored by low quality (1) and high quality (9) (higher numbers indicate higher quality). Following the administration of this measure, participants were checked for suspicion, debriefed, and dismissed. Responses of 6 respondents were eliminated because as revealed in the suspicion probe, these participants appeared to believe that the study pertained to the influence of warranty information on quality judgments.

Results

Warranty length did not impact perceived product quality ($M_{Long\ warranty}=6.85$, $M_{Short\ warranty}=6.53$), $F(1,168)=2.56$, $p>.10$, while brand strength did ($M_{Strong\ brand}=6.97$, $M_{Weak\ brand}=6.42$), $F(1,168)=6.90$, $p<.01$. Moreover, as predicted, warranty redemption costs were found to have a significant effect on perceived quality ($M_{Low\ cost}=7.06$, $M_{High\ cost}=6.27$), $F(1,168)=18.26$, $p<.0001$ (see Table 1), indicating that consumers rely on perceived ease of warranty redemption in judging quality. Overall, these results suggest that the perceived costs involved in redeeming the warranty may offer a cue to consumers more diagnostic of quality than the length of the warranty.
We also expected warranty redemption costs to impact perceived quality more for a short warranty than for a long warranty. This interaction was supported, $F(1, 168)=8.86$, $p < .005$, and simple effects tests revealed that for a long warranty, either low or high cost to redeem the warranty did not impact perceived product quality differentially ($M_{\text{Low cost}}=6.95$, $M_{\text{High cost}}=6.71$), $F(1, 90) < 1$; yet for a short warranty, this effect was significant ($M_{\text{Low cost}}=7.20$, $M_{\text{High cost}}=5.87$), $F(1, 84) = 25.37$, $p < .0001$. No other interactions (including Brand Strength × Warranty Length) were significant.

Discussion

Findings from experiment 1 offer important insight regarding the extent to which warranty information influences consumers’ quality judgments. In particular, results show that 1) warranty redemption costs are an important predictor of quality judgments, and 2) they interact with warranty length to differentially affect quality judgments. Interestingly, prior research has illustrated mixed results regarding the ability of warranties to signal quality. For example, Spence (1977) showed that high quality can be signaled with strong warranties whereas Lutz (1989) reported that weak warranties can signal quality. However, through a closer examination of the type of warranty information provided to consumers, our results show that warranty redemption costs play a strong role in consumers’ quality judgments.

Argued to be a powerful heuristic for product quality, the main effect of brand strength on quality judgments was confirmed by our results. However, we also found that the use of warranty redemption costs in forming inferences about product quality is not dependent on the strength of the brand. It is possible that since brand name is represented as an “informational chunk” (Olsen, 1976) that incorporates a wide variety of information, it becomes proximal to consumers when forming their quality judgments. For example, when consumers believe a seller will not readily honor a warranty as per expectations, they penalize the seller by expressing lower quality evaluations—even if the brand being evaluated is strong and well-established.

In considering the effect of warranty length information, we found that warranty length does not influence quality perceptions. Thus, to better understand the influence of the dimensions of warranty information, we conducted a second experiment that explores consumer beliefs to examine the type and the extent to which these beliefs vary across long and short warranties as well as high and low warranty redemption costs. This experiment used an open-ended thought listing procedure to assess spontaneous inferences/beliefs based on warranty redemption costs and other information. Besides helping us to discriminate between the types of beliefs across conditions, this method attenuates possible concerns about measurement-induced inferences in the first experiment (see Kardes et al., 2004, for a detailed discussion of spontaneous versus measurement-induced inferences).

Specific situations can induce a mindset that emphasizes security and a concern for loss avoidance, protection, and safety (Higgins, 2002). Furthermore, an important function of a warranty is to provide consumers with security in the event of product malfunction. Therefore, one of the beliefs that is likely to emerge with respect to warranty information is that related to security or feelings of reassurance. Consistent with this role of warranty, research across multiple marketing investigations has shown that strong warranties are associated with greater product reliability (e.g., Shimp & Bearden, 1982; Wiener, 1985). In fact, Price and Dawar (2002) specifically reported that warranty information impacts reliability but not quality judgments. Notably, while each of these investigations uses different operationalizations of warranty information, warranty length is the one common element. Therefore, given our results in experiment 1, we do not expect long and short warranties to induce differential quality judgments. However, given past findings, we expect that respondents will discriminate between long and short warranties with respect to security-related judgments.

Regarding warranty redemption costs, we expect different levels of product quality beliefs given our arguments and findings in experiment 1. However, expectations regarding the security-related beliefs underlying processing of warranty redemption cost related information are less clear. On the one hand, it is possible that since warranty redemption costs are intrinsically linked to the warranty, which serves a security purpose, they may also be associated with prevention-focused thoughts (Higgins, 2002). On the other hand, the strong quality associations of warranty redemption costs may represent stronger quality-related attributions so that these attributions dominate security-related beliefs associated with warranty redemption costs. Therefore, we predict warranty redemption costs to generate beliefs related to product quality but given the ambiguity surrounding the security beliefs associated with warranty redemption costs, we explore those related to security.

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**TABLE 1**

<table>
<thead>
<tr>
<th>Warranty Redemption Costs</th>
<th>3 months</th>
<th>5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sony</td>
<td>7.41</td>
<td>7.16</td>
</tr>
<tr>
<td>Annex</td>
<td>6.95</td>
<td>6.72</td>
</tr>
<tr>
<td><strong>High</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sony</td>
<td>5.94</td>
<td>7.14</td>
</tr>
<tr>
<td>Annex</td>
<td>5.77</td>
<td>6.26</td>
</tr>
</tbody>
</table>

*Note.* Cell sizes range from 19 to 25.
EXPERIMENT 2

Method

Participants, design, and procedure. A total of 79 undergraduate students participated in the study, which featured the same independent variables as experiment 1 but a different product (new car cell phones; see Appendix B). For our dependent measures, we employed a thought-listing task (after exposure to the stimulus) that instructed respondents to write down “all thoughts that came to your mind while you were going through the product description. These thoughts could be related to the product, its features, the manufacturer, warranty offered, etc., or they could be related to other topics.” Thoughts were coded by two judges (blind to the hypotheses) into three categories—quality-related thoughts (e.g., “the continuous charging feature is a bonus,” “this sounds like something that will be cool,” and “I wonder if it will perform as they say it will,” “Sony is a good company”), security-related thoughts (e.g., “I don’t believe that the company will fix the product as stated” and “what if it breaks before warranty expires?”), and neutral thoughts (e.g., “is this product available in different colors?” and “could this be the next techno fad?”). There was greater than 90% agreement on the classification of thoughts, with disagreements resolved through discussion. Subsequent to elicitation of thoughts, participants, were debriefed, and dismissed. Three dependent variables were examined to gain insight into the potential mechanism underlying judgments—absolute number of security-related thoughts, absolute number of quality-related thoughts, and security-related thoughts as a proportion of the total number of quality and security-related thoughts.

Results

Table 2 contains the means for the major DVs. As predicted, a $2 \times 2 \times 2$ ANOVA indicated that there was no difference between long and short warranties in terms of amount of quality-related thinking ($M_{\text{long warranty}} = 2.28$, $M_{\text{short warranty}} = 2.31$), $F(1, 71) < 1$. Also, short warranties were associated with significantly more security-related thoughts in absolute terms ($M_{\text{long warranty}}=0.80$, $M_{\text{short warranty}} =1.20$), $F(1, 71)=3.93$, $p = .06$, as well as in proportion to total thoughts ($M_{\text{long warranty}} = 0.20$, $M_{\text{short warranty}} = 0.32$), $F(1, 71) = 6.30$, $p < .05$. Thus, security-related thinking appears to guide judgments based on warranty length information.

In an analysis of type of elaborations pertaining to warranty redemption costs, as predicted, we found that low warranty redemption costs were associated with significantly more quality-related thoughts ($M_{\text{low cost}} = 2.55$, $M_{\text{high cost}}=2.02$), $F(1, 71) = 4.82$, $p < .05$. Interestingly, high warranty redemption costs also evoked significantly higher security-related thoughts as a proportion of total thoughts ($M_{\text{low cost}} = 0.18$, $M_{\text{high cost}} = 0.350$), $F(1, 71) = 11.71$, $p < .005$, as well as in an absolute sense ($M_{\text{low cost}} = 0.68$, $M_{\text{high cost}}=1.33$), $F (1, 71)=10.16$, $p < .005$. Thus, security-related elaborations are associated with both warranty redemption costs and warranty length whereas different levels of warranty redemption costs also induce differential quality-related beliefs.

For a deeper investigation of respondents’ thoughts, two different judges, unaware of the hypotheses, classified the thoughts into five new categories related to: quality/feature, brand/company, warranty length, warranty redemption costs, and other. The judges agreed on 91% of the thoughts and resolved the discrepancies through discussion. Note that this new classification results in a finer categorization of thoughts by separating quality-focused beliefs into quality/feature and brand/company beliefs, and by separating security-focused beliefs into warranty length and warranty redemption cost beliefs.

Results show that the influence of warranty length on quality/feature or brand/company related beliefs are non-significant ($F < 1$ for both). The impact of warranty redemption costs was marginally significant for quality/feature beliefs ($M_{\text{low cost}} = 2.27$, $M_{\text{high cost}}=1.82$), $F(1, 71)= 3.12$, $p = .08$, but nonsignificant for brand/company beliefs, $F(1, 71)=1.16$, $p > .25$. Further analysis revealed a two-way interaction between warranty length and warranty redemption costs, $F(1, 71)=3.46$, $p = .06$. Specifically, when warranty was short, there were significantly more beliefs associated with warranty redemption costs when such costs were high ($M_{\text{low cost}} = 0.30$, $M_{\text{high cost}}=1.21$), $F(1, 38)= 4.91$, $p < .05$. However, when warranty was long, there was an equivalent number of such beliefs regardless of whether warranty redemption costs were high or low ($M_{\text{low cost}} = 0.30$).

TABLE 2
Mean Number of Quality and Security-Related Beliefs (Experiment 2)

<table>
<thead>
<tr>
<th>Warranty Length</th>
<th>Brand</th>
<th>3 months</th>
<th>5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td>Warranty Redemption Costs</td>
<td>Sony</td>
<td>Annex</td>
<td>Sony</td>
</tr>
<tr>
<td>Low</td>
<td>High</td>
<td>Low</td>
<td>High</td>
</tr>
<tr>
<td>Quality related beliefs</td>
<td>2.50</td>
<td>1.90</td>
<td>2.60</td>
</tr>
<tr>
<td>Security related beliefs</td>
<td>0.20</td>
<td>1.00</td>
<td>0.90</td>
</tr>
</tbody>
</table>

Note. Cell sizes range from 9 to 10.
Findings from experiment 2 reveal that consumers discriminate between long and short warranties in terms of beliefs about security but not in terms of perceived product quality. In particular, our findings are convergent with several other studies that have shown the link between warranties and reliability judgments for numerous products (see Table 3). Results for warranty redemption costs were similar to those obtained for warranty length concerning security-related beliefs; however, low (vs. high) warranty redemption costs were also found to result in more quality-related thoughts. Importantly, the two-way interaction based on the more fine-grained classification of the two featured dimensions of a warranty not only supports our compensatory cue prediction but also underscores the interactive influence of different dimensions of warranties.

TABLE 3
Selected Warranty Studies on Performance and Reliability Judgments

<table>
<thead>
<tr>
<th>Authors</th>
<th>Product Categories</th>
<th>Performance Judgments</th>
<th>Reliability Judgments</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shimp &amp; Bearden (1982)</td>
<td>Multiscreen TVs</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>Plastic tires</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Wiener (1985)</td>
<td>Color TVs</td>
<td>Not tested</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>TVs</td>
<td>Not tested</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>Air conditioners</td>
<td>Not tested</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>Washing machines</td>
<td>Not tested</td>
<td>No effect</td>
</tr>
<tr>
<td></td>
<td>Durables (general)</td>
<td>Not tested</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Boulding &amp; Kirmani (1993)</td>
<td>Personal computers</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>Facsimile machine</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strong brand name</td>
<td>Directional (+)</td>
<td>Directional (+)</td>
</tr>
<tr>
<td></td>
<td>Weak brand name</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td>Price &amp; Dawar (2002)</td>
<td>Camera</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Strong brand name</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
<tr>
<td></td>
<td>Weak brand name</td>
<td>No effect</td>
<td>Positive effect</td>
</tr>
</tbody>
</table>

Note: The investigations varied in their operationalization of warranty information.

First, in a multiple cue environment, we find that warranty length does not appear to exert an independent effect on quality judgments whereas warranty redemption costs do. Regulatory focus theory (Higgins, 2002) distinguishes between two types of motivations that are believed to guide people’s beliefs and behavior. A promotion focus engenders an eagerness orientation where people are driven towards hopes, aspirations, gains and maximal goals. A prevention focus evokes a vigilance mindset that emphasizes security and engenders a concern for obligations, loss avoidance, protection, and safety (Jain, Lindsey, Agrawal, & Maheswaran, in press; Lee & Aaker, 2004). Further, specific situations are capable of temporarily inducing either a promotion focus or a prevention focus (Higgins, 2002). It is possible that warranty information may induce a prevention focus in general, generating concerns related to loss avoidance.

**GENERAL DISCUSSION**

Firms routinely offer warranties, possibly as an attempt to differentiate their products from those of their competitors. Within the automotive industry, for example, Korean manufacturers’ offering of 10-year warranties has precipitated other manufacturers to lengthen their warranty periods from the typical 3-year period (Harris, 2002; Wall Street Journal, 2001). At the same time, in several other industries, warranty lengths are shortening. For instance, manufacturers of desktop personal computers (PCs) have shortened their 3-year warranties to a 1-year period (Ferguson, 2000), while varying their software support, ostensibly as a means of continuing to utilize warranties as differentiating mechanisms while communicating their quality. Despite the industry practice of strategically using warranties to communicate quality about a firm’s product, extant academic research is inconclusive regarding the effect of warranties on quality judgments. As a means to better understand the role of warranty information on consumer judgments, we introduced the role of warranty redemption costs and disentangled the effects of warranty redemption costs and warranty length as two underlying dimensions of warranty information. While the importance of warranty redemption costs has been recognized (Boulding & Kirmani, 1993), ours appears to be the first empirical examination of the processing and judgmental consequences of delineating these costs. Results show important distinctions in consumer judgments across these two dimensions, offering new insight regarding the role of warranty redemption costs and warranty length on consumer beliefs.

First, in a multiple cue environment, we find that warranty length does not appear to exert an independent effect on quality judgments whereas warranty redemption costs do. Regulatory focus theory (Higgins, 2002) distinguishes between two types of motivations that are believed to guide people’s beliefs and behavior. A promotion focus engenders an eagerness orientation where people are driven towards hopes, aspirations, gains and maximal goals. A prevention focus evokes a vigilance mindset that emphasizes security and engenders a concern for obligations, loss avoidance, protection, and safety (Jain, Lindsey, Agrawal, & Maheswaran, in press; Lee & Aaker, 2004). Further, specific situations are capable of temporarily inducing either a promotion focus or a prevention focus (Higgins, 2002). It is possible that warranty information may induce a prevention focus in general, generating concerns related to loss avoidance.
and security. Moreover, warranty redemption costs may also induce a promotion focus, since quality considerations may underlie consumers’ aspirations for gains.

Second, we also demonstrated across two separate experiments that not only do warranty redemption costs exert an independent effect but they also generate an interactive effect with warranty length on perceptions of product quality. Consistent with our reasoning and expectations, we found that the negative associations of (high) warranty redemption costs could be offset with a longer warranty. Specifically, we showed that when a warranty is long, consumers are more likely to disregard high warranty redemption costs in their quality judgments, compared to when the warranty is short. This finding appears to be based in the notion of compensatory inference-making, a strategy consumers have been found to use when evaluating marketplace offerings (Chernev & Carpenter, 2001).

Thus, one way to address the limitations of a short warranty is for the seller to make the warranty redemption process as costless as possible and to ensure that these efforts are made salient to the targeted segment(s). Communicating the ease with which a warranty can be redeemed may be especially critical for online retailers, given the high perceived transaction costs associated with consumers’ willingness to buy online (Teo, Wong, & Leong, 2004). Moreover, in experiment 2, through a cognitive response analysis, we find that consumers discriminate between high and low warranty redemption costs on the basis of both quality as well as security-related beliefs. It is possible that while warranty redemption costs, being associated with warranties in general, elicit security-related elaborations, the differential quality-related thinking across high and low costs enables consumers to also form beliefs about quality as well. Measurement-induced inferences (quality judgments) were assessed in experiment 1, spontaneous inferences (open-ended thoughts) were assessed in experiment 2, and converging results were observed across the two experiments.

Past warranty literature showed that consumers may use warranty information to infer quality, but that the perceptions about the firm may moderate this effect (Boulding & Kirmani, 1993; Purohit & Srivastava, 2001; Shimp & Bearden, 1982). In our research, however, no interactions involving brand strength and warranty information were obtained. Perhaps, this discrepancy is due to the possibility that earlier research either did not dimensionalize warranty information or that in prior research, participants may have assumed lower warranty redemption costs for strong (vs.) weak brand names. Regardless, the implication of the absence of a brand name by warranty redemption cost interaction is that when consumers believe a seller will not readily honor a warranty as per expectations, they penalize the seller through lower quality evaluations, regardless of brand strength. This strong effect of warranty redemption costs is intriguing and adds to the growing literature on service quality and its perceived quality-related outcomes.

Finally, though our experiments featured two different products, the results converged. Nevertheless, our findings are bounded by the specifics of our manipulations, including salient warranty (length and redemption) information and new products, as well as by our focus on quality judgments. Further research that focuses on overall attitude toward and purchase intention for the brand could offer additional insight, because these downstream variables may be influenced by perceived value.

CONCLUSION

In this research, we introduced the notion of warranty redemption costs as a dimension of warranty information (in addition to warranty length). While extant research has recognized that warranty information could encompass different aspects of the warranty (e.g., length, coverage), it has not considered the possibility that different underlying dimensions of warranty information may induce differential judgments. We find that warranty length’s role is primarily security-related but that of warranty redemption cost induces beliefs associated with security as well as quality. We also find that these two dimensions of warranty interact in a manner that suggests a trade-off between warranty length and warranty redemption costs when faced with a short warranty. It is possible that mixed findings from extant research may have been driven by different underlying dimensions of warranty information. This possibility underscores the need for further research to decompose warranty information and examine more precisely the influence of different dimensions of warranty information.

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REFERENCES


APPENDIX A

Experiment 1 Manipulations

The Quick Link Pen

Sony, the firm that has offered high quality consumer electronics for generations, is introducing a product called the Quick Link Pen. Given below is a short description provided by the manufacturer concerning this product. Please read through the description, think of yourself as consumer, and then answer the questions that follow.

The Sony Quick Link Pen enables you to scan up to 1,000 pages of printed information and then transfer it to your computer at your convenience. The Quick Link Pen helps you to organize notes and insert them into a Word document, capture Internet links from news articles and upload them to Netscape/Microsoft Explorer, or scan addresses from business cards and synchronize them with Outlook. It can also build Excel tables and capture handwriting as a picture file. It can be carried in your pocket/purse and you can use it in the library or classroom for outlining important information.

It comes with a 5-year warranty.

The following additional information about the warranty was available from Consumers Union, an unbiased source of information about products and services. In the cases that consumers have needed service for product malfunctions covered by the warranty, most consumers state that it was relatively easy and quick to get the company to fix the product. All that a consumer needed to do was to call a toll-free number and report the claim. Most claims were verified and taken care of in 2 to 3 days.

Note. This is for the strong brand, long warranty, and low warranty redemption cost manipulation. For the weak brand manipulation, the brand name was replaced by Annex and the opening sentence was replaced with, “Annex, a firm that has no prior experience in the field of consumer electronics, . . . that follow. For the high warranty redemption cost and short warranty manipulation, see Experiment 2 manipulation in Appendix B.
APPENDIX B

Experiment 2 Manipulations

Car Cell Phone System and Continuous Digital Recorder

Sony, the firm that has offered high quality consumer electronics for generations, is introducing a product which is a car cell phone system and a digital recorder. Given below is a short description provided by the manufacturer concerning this product. Please read through the description, think of yourself as a consumer, and then answer the questions that follow.

The Sony car cell phone system plugs into our car’s dash and turns your cell phone into a hands-free speakerphone. Its continuous digital recorder instantly captures and stores the prior 20 seconds of any conversations or message at any point during that conversation. Whenever you hear something you need to remember, just press one of four HEAR IT AGAIN buttons to record what you just heard. A convenient forward recorder takes a 30-second note to yourself. Its built-in ¼” speaker and adjustable boom microphone offer clear sound. When not in use, the system continuously charges your cell battery.

It comes with a 3-month warranty.

The following additional information about the warranty was available from Consumers Union, an unbiased source of information about products and services. In the cases that consumers have needed service for product malfunctions covered by the warranty, most consumers state that it was relatively difficult and slow to get the company to fix the product. A consumer had to log on to a website, provide several details, and then wait for a customer service representative to call back. It took 10-15 days for most claims to be verified and taken care of.

Note: This is for the strong brand, short warranty, and high warranty redemption cost manipulation. For the weak brand manipulation, the brand name was replaced by Annex and the opening sentence was replaced with, “Annex, a firm that has no prior experience in the field of consumer electronics,… that follow.” For the low warranty redemption cost and long warranty manipulations, see Experiment 1 manipulation in Appendix A.