

AN EXPLORATORY INVESTIGATION OF DIFFERENT PATTERNS
OF CONSISTENCY FOR CUES USED IN CONSUMERS'
SUBJECTIVE EVALUATIONS OF PRODUCT QUALITY

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Abstract

This research effort explores the patterns of relationship between price, brand name, and store name as they combine to influence perceived quality. The flexibility of the research design allowed examination of the strength of the cues both individually and in combination with one another. Also, the incremental influence of price, brand name and store name was measured when one of these cues was added to one or both of the other cues. The results of the study provide 10 useful propositions for future theory building research in regard to the relationship of extrinsic product cues as they influence the perception of product quality.

Introduction

Over forty years ago, Scitovsky (1945) observed that buyers may use price as an indicator of product quality. He argued that such behavior was not irrational, but simply represented a belief that the forces of competitive supply and demand would lead to a "natural" ordering of products on a price scale, resulting in a strong positive relationship between price and product quality. One explanation for the persistence of these beliefs in a positive price-quality relationship¹ is that consumers do not have perfect information about product quality before purchase and use. Hence, it remains natural that consumers might use extrinsic cues such as price, brand name and/or store name as indicators of product quality.

The primary outcome of the additional cues of brand name and store name has been to enhance the effect of price on buyers' quality perceptions. Monroe and Krishnan (1985) observed that price-perceived quality effects were enhanced in the presence of other consistent extrinsic cues, particularly brand information. This finding suggests that the combination of price and brand information not only is strong, but the influence of price on quality perceptions is stronger in the presence of brand information than by itself. Dodds and Monroe (1985) found that price in the presence of brand name caused subjects to perceive the product to be higher in quality than when brand name was absent. Not only this, but the evidence is sufficient to argue that the strong brand effect did not dominate price but enhanced the price effect. It was shown in research by Dodds and Monroe (1989) that, if consistent, price and brand name, price and store name, and price, brand name, and store name will individually and collectively influence the perception of products' quality.

It might be expected that with additional

¹It is not the intent of this paper to focus solely on the price-quality relationship. However, there are many good reviews of this conceptualization in the literature: Shapiro 1968; Monroe 1973; Olson 1977; Monroe and Dodds 1988; Zeithaml 1988; and Monroe and Rao 1989.

extrinsic information, buyers would rely less on price information. The extent of this effect depends on the degree to which the buyers are familiar or knowledgeable with the product category (Rao and Monroe 1988), and the degree to which the extrinsic cues provide similar or dissimilar information about the product (Monroe and Rao 1989). The magnitude of the effect of additional information provided by brand and store name on quality perceptions may vary depending on the amount and type of previous experience or knowledge buyers have available in their memories.

The purpose of this research is to explore the pattern of relationships between price, brand name, and store name as they combine to influence perceived quality. The flexibility of the research design allows the examination of the strength of the cues both individually and in combinations with one another. In addition, the incremental influence of price, brand name and store name can be measured when one of these cues is added to one or both of the other cues. The results of the study provide valuable substantive evidence toward theory building in regard to the relationship of extrinsic product cues as they influence the perception of product quality.

Research Method

Research Design

The exploratory study used an intricate 3 x 3 x 3 factorial between subjects design where price was crossed with brand name and store name. Each of the three independent variables had two levels of information as well as a level where no information was provided. The low and high price manipulations were a priori determined to be significantly different, but within the subject's acceptable price range. Pretest subjects were asked to indicate the lowest, expected, and the highest price they would pay for each of the two products. The means of these three estimates lead to the selection of a low price above the lower limit and a high price below the upper limit for each of the two products.

Two brand names were selected that the subjects viewed as being significantly different (low and high) in the perception of quality, along with familiarity and knowledge of the brand name. Similarly, two store names were chosen from a population of store names that were known to the subjects. In the pretest these store names met the criteria of being significantly different (high or low) in terms of quality of products carried in the store, store quality, and satisfaction with the store.

Rao and Monroe (1989) uncovered 34 studies with 54 results, however none of the studies had examined all three extrinsic cues and with no information treatments. The methodological strategy of "no-information cues" allowed the examination of the three dependent measures with varying levels of extrinsic information, such

as:

1. price only,
2. price and brand,
3. price and store,
4. brand and store, and
5. price, brand, and store.

Research Procedures

Three hundred and fifty one undergraduate students enrolled in a major university were randomly assigned to one of twenty seven treatment groups. The subjects were asked to assume to be in a buying situation for a stereo headset player and a calculator. They were given product descriptions for each of the products along with price, brand, and/or store information and then were asked to evaluate the product quality.

Subjects were then asked to evaluate multi-item indicators of perceived product quality developed from previous research and pre-test procedures. The internal consistency of the indicators was assessed using correlation analysis and coefficient alpha. The values of coefficient alpha were .95 for both products. The indicators for the construct perceived quality was standardized and averaged into an index for perceived quality.

Research Methodology

The exploratory study examines how the differences between consistent and inconsistent information influences the perception of quality. Within the conceptualization of product perceptions discussed earlier, consistent information leading to the perception of quality would be a situation where any combination of the price, brand, and store cues were all either high or low. Any differing combinations would be deemed inconsistent information.

As the basis for evaluating the effect of inconsistent and consistent extrinsic cues of information, the effect size between treatments was used. Effect size means the degree to which the phenomenon was present in the population or the degree to which the null hypotheses is false (Cohen 1977). The need for a numerical index for the degree of departure from no effect, where population means are equal, is satisfied for two means when the difference in means is standardized by dividing it by the within-population standard deviation. In analysis of variance where there are typically more than two means, the spread of the means is represented not by their range as in a two mean case, but by a quantity formally like a standard deviation, again dividing by the common standard deviations of the populations involved (Cohen 1977). This value for effect size, f , can take on values between zero, when the population means are all equal, and an indefinitely large number when the population means are very different. According to Cohen (1977), a medium effect, $f=.25$, and a large effect, $f=.40$, are often found through measurement methods that minimize irrelevant variance and leads to substantive differences. Since all the cells are standard normal, the analysis was shortened where a comparison of mean differences would arrive at the same conclusions.

1. The standardized mean differences of the price information, store name information and brand

name information were computed and compared. Interest focused on the source of information which had the greatest individual effect.

2. The standardized mean difference between the combinations of price, brand name, and store name was compared. Interest focused on (a) strength of individual cues, (b) strength of combinations of cues, (c) marginal effects of cues, and (d) the overall influence of having inconsistent cues, such as low price, high quality brand name, and low quality store name.

TABLE 1
TEST OF OVERALL SIGNIFICANCE

Source	Calculator		
	df	F-test	P value
Price	2	15.838	.0001
Brand	2	33.561	.0001
Store	2	5.361	.0051
PricexBrand	4	.142	.9664
PricexStore	4	.052	.9949
BrandxStore	4	1.184	.3177
PricexBrandxStore	8	.712	.6812
Error	324	Mean Square error: .661	

Source	Stereo Headset Player		
	df	F-test	P value
Price	2	5.983	.0028
Brand	2	55.319	.0001
Store	2	3.914	.0209
PricexBrand	4	2.199	.0689
PricexStore	4	.532	.7126
BrandxStore	4	1.100	.3565
PricexBrandxStore	8	.652	.7335
Error	324	Mean Square error: .622	

Analysis and Results

A test of statistical significance was carried out for the overall design. The main effects were statistically significant for both products although there was a price-brand interaction in the stereo headset player study (Table 1)². However, the intent of this research was to explore the changing pattern of effects as the cues are combined rather than to rely on statistical techniques to give significant results. Future research can examine the propositions drawn from this analysis using rigorous statistical methods.

The Absolute Effect of Combined Cues on Perceived Quality

For each product experiment, situations were analyzed where only one, two, or three extrinsic cues were given (Table 2). For the single cue situation, brand name had a substantively stronger influence on perceived quality than either the price or store name cues. When

²A complete statistical analysis of the data in this study is found in Dodds, William B., and Kent B. Monroe (1989), "The Effects of Price, Brand and Store Information on Buyers' Product Evaluations," Boston College Working Paper, Department of Marketing, Boston College, Chestnut Hill, MA 02167

TABLE 2
ABSOLUTE EFFECTS OF EXTERNAL CUES ON
PERCEPTION OF QUALITY

SINGLE CUE SITUATIONS			
STEREO HEADSET PLAYER		CALCULATOR	
HBN	.508	HBN	.605
HSN	.151	LBN	.159
HP	.007	HSN	.108
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LBN	-.244	HP	-.025
LSN	-.460	LSN	-.273
LP	-.762	LP	-.837
MULTIPLE CUE SITUATIONS			
CONSISTENT:			
HBN-HSN-HP	.851	HBN-HSN	.842
HBN-HSN	.837	HBN-HSN-HP	.765
HBN-HP	.507	HBN-HP	.395
HSN-HP	.166	HSN-HP	.159
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LBN-LP	-.640	LBN-LSN	-.403
LBN-LSN-LP	-.654	LBN-LP	-.653
LBN-LSN	-.692	LSN-LP	-.798
LSN-LP	-.827	LBN-LSN-LP	-.930
INCONSISTENT:			
HBN-LSN-LP	.654	HBN-LSN	.685
HBN-LSN-HP	.484	HBN-LSN-HP	.540
HBN-HSN-LP	.365	HBN-LP	.396
HBN-LP	.363	HBN-HSN-LP	.119
HBN-LSN	.233	HSN-LBN	.067
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LSN-HP	-.127	HP-LBN	-.015
LBN-HSN-LP	-.164	HBN-LSN-LP	-.024
LBN-HP	-.187	HSN-LP	-.141
LBN-HSN-HP	-.335	LBN-HSN-HP	-.207
LBN-HSN	-.414	LBN-LSN-HP	-.394
HSN-LP	-.506	HP-LSN	-.487
LBN-LSN-HP	-.745	LBN-HSN-LP	-.601

Where:
HBN and LBN - high and low quality brand names
HSN and LSN - high and low quality store names
HP and LP - high and low prices

TABLE 3
INCREMENTAL EFFECTS OF EXTERNAL CUES ON
PERCEPTIONS OF QUALITY
-FROM ONE TO TWO CUES

INCREMENTAL EFFECT	STEREO HEADSET PLAYER GIVEN EFFECT (SINGLE CUE)					
	HBN	LBN	HSN	LSN	HP	LP
HBN	*	*	.686	.693	.500	1.125
LBN	*	*	-.565	-.232	-.194	-.180
HSN	.329	-.170	*	*	.159	-.046
LSN	-.275	-.488	*	*	-.134	-.367
HP	-.001	.057	.015	.333	*	*
LP	-.145	-.396	-.657	-.367	*	*
INCREMENTAL EFFECT	CALCULATOR GIVEN EFFECT (SINGLE CUE)					
	HBN	LBN	HSN	LSN	HP	LP
HBN	*	*	.734	.958	.420	1.233
LBN	*	*	-.041	-.130	.010	.184
HSN	.237	-.092	*	*	.184	.696
LSN	.080	-.562	*	*	-.462	.039
HP	-.210	-.174	.051	-.214	*	*
LP	-.209	-.812	-.249	-.525	*	*

multiple cues were used, the strength of the brand name was again evident. In situations where consistent information was present, high brand name along with other cues clearly provided the highest perceptions of quality. This combination was substantively higher than when only high store name and high price information were given. Although high price and high store combined to be marginally above the mean, these cues were substantively strong only in the presence of high brand name. In inconsistent situations, higher measures of perceived quality occur in the presence of high brand name and inconsistent combinations of price and store name information. The combined strength of high price and high store was not sufficient to overcome the strength of a low brand name, resulting in a less than average perception of quality for both products.

The range of quality perceptions was widest when three cues were given. The range was smaller when only two of the same cues were present. The quality perception range was smallest when only different levels of one cue were present. Situations where cues are consistently high or low produce the extreme measures of perceived quality while measures of inconsistent cues fall between these extremes. The strength of the brand name continues to be the key determinant of high product quality. In both product experiments, the high brand name combined with various levels of the other two cues to produce higher measures of product quality.

The Relative Effects of Combined Cues on Perceived Quality

Given one cue of information, the incremental influence of adding information in the form of price, brand name, or store name clearly appeared to be strongest for adding brand name (Table 3). The incremental effect of adding high brand name information was strong for both consistent and inconsistent combinations. However, brand name increased the perception of quality more when it was added to an inconsistent information cue. The influence of the store name was weak and more erratic when added to one of the other two cues. A high quality store name enhanced the quality perception when added to a consistent brand name or price information cue but showed mixed results when added to an inconsistent set of cues. The incremental influence of price information on perceived quality was weak and erratic in its pattern.

Given two cues of information, the incremental effect of brand name information was consistently strong in all situations (Table 4). Brand name enhanced the perception of quality when the store and price information was already strong. The brand information reversed the situation when brand information reversed the situation when store and price information was weak, as well as strengthening the situation when the price and store cues were inconsistent. The addition of a strong store name cue lead to incremental gains in quality perception only when added to consistent brand-price combinations (either strong or weak). The ability of the price cue to enhance quality perception when store and brand name information was already high was inconsistent and weak for the two products. The incremental effect of the high price cue ranged from minimal impact to a

TABLE 4
INCREMENTAL EFFECTS OF EXTERNAL CUES ON PERCEPTIONS OF QUALITY-FROM TWO
TO THREE CUES

STEREO HEADSET PLAYER												
					GIVEN EFFECT (TWO CUES)							
	HSN /HP	LSN /HP	HSN /LP	LSN /LP	HBN /HP	LBN /HP	HBN /LP	LBN /LP	HBN /HSN	LBN /HSN	HBN /LSN	LBN /LSN
HBN	.685	.611	.871	1.481	*	*	*	*	*	*	*	*
LBN	-.501	-.618	.342	.038	*	*	*	*	*	*	*	*
HSN	*	*	*	*	.344	-.148	.002	.476	*	*	*	*
LSN	*	*	*	*	-.023	-.558	.291	-.014	*	*	*	*
HP	*	*	*	*	*	*	*	*	.014	.079	.251	-.053
LP	*	*	*	*	*	*	*	*	-.472	.250	.421	.038

CALCULATOR												
					GIVEN EFFECT (TWO CUES)							
	HSN /HP	LSN /HP	HSN /LP	LSN /LP	HBN /HP	LBN /HP	HBN /LP	LBN /LP	HBN /HSN	LBN /HSN	HBN /LSN	LBN /LSN
HBN	.606	1.027	.260	.774	*	*	*	*	*	*	*	*
LBN	-.366	.093	-.460	-.132	*	*	*	*	*	*	*	*
HSN	*	*	*	*	.370	-.192	-.277	.052	*	*	*	*
LSN	*	*	*	*	.145	-.379	-.420	-.277	*	*	*	*
HP	*	*	*	*	*	*	*	*	-.077	-.274	-.145	.009
LP	*	*	*	*	*	*	*	*	-.723	-.668	-.709	-.527

negative impact.

The incremental effect of changing one of the cues from a low to high treatment level was examined in situations where the other two cues were held constant (Table 5). For both products, the effect of changing brand name from low to high had the greatest impact. Store name appeared to be the next strongest, while the results for the price effects were mixed. For the stereo headset player, the increase in price decreased the perception of quality for three of the four situations, while substantial increases on perceived product quality were shown in the calculator study.

Discussion

Academic researchers often plunge into data analysis with the intention of using sophisticated statistical tools in search of significant relationships. This approach is certainly expected by editors and reviewers of academic journals. While cell means and variances are often reported, little time is spent in examining the relationships. This paper takes time to study these relationships. The use of an intricate design where a no information treatment is used for each independent variable permits the exploration of the absolute and incremental effects of price, brand, and store information on the perception of quality. The analysis of the data suggests the following propositions for future research initiatives.

1. Brand name information is the dominating external cue in determining the perception of quality (Table 2)
2. From strongest to weakest, the order of external information cues in determining the perception of quality is brand name, store name, and price (Table 2).
3. A wider range of quality perception is realized as more cues of information are

given. (Table 2)

4. Strong brand name information will increase the perception of quality when added to other single external cues of information, regardless of whether those cues are consistent or inconsistent with the strength of the brand name information. (Table 3)
5. Strong store name information will increase the perception of quality when added to other single external cues of information when those cues are consistent with the store name information. (Table 3)
6. Strong price information adds little to the perception of quality when added to other single external cues of information, regardless of whether those cues are consistent or inconsistent with the strength of the price cue. (Table 3)
7. Strong brand name information will increase the perception of quality when added to consistent or inconsistent combinations of price and store cues (Table 4).
8. Strong store name information will increase the perception of quality when added to consistent brand-price combinations (Table 4).
9. High price information will have minimal to negative impact on the perception of quality when added to brand-store combinations (Table 4).
10. Changing brand information will produce greater changes in perceived quality, *ceteris paribus*, than changing store or price information (Table 5).

This paper is exploratory and the findings are tentative. Consideration must be given to the limits due to product types, price levels, brand names, store names, and subjects used. The ten propositions offer researchers important issues to consider in evaluating how three relevant external cues of quality individually and collectively impact upon the evaluation of quality. If any of the findings fail to replicate, there is evidence of a limit to the generalizability of the relation. But when a finding does replicate, then the scope of the

relation has been extended. In any event, uncertainty about the relation will be reduced when either the scope of the relation has been extended or the relation has been shown to be limited.

TABLE 5
INCREMENTAL EFFECT OF CHANGING PERCEPTIONS OF PERCEIVED QUALITY

STEREO HEADSET PLAYER			
CHANGES FROM LOW TO HIGH QUALITY			
BRAND	STORE	PRICE	
IN SITUATION			
WITH:			
HSN-HP	1.186		
HSN-LP	.529		
LSN-HP	1.229		
LSN-LP	1.308		
HBN-HP		.367	
HBN-LP		-.289	
LBN-HP		.410	
LBN-LP		.490	
HBN-HSN			.486
HBN-LSN			-.170
LBN-HSN			-.171
LBN-LSN			-.091
CALCULATOR			
CHANGES FROM LOW TO HIGH QUALITY			
BRAND	STORE	PRICE	
IN SITUATION			
WITH:			
HSN-HP	.972		
HSN-LP	.577		
LSN-HP	.934		
LSN-LP	.906		
HBN-HP		.225	
HBN-LP		.143	
LBN-HP		.187	
LBN-LP		.329	
HBN-HSN			.646
HBN-LSN			.564
LBN-HSN			.394
LBN-LSN			.536

The findings from the analysis of the combined effects have to be examined within the constraint that the brand names, store names, and prices were categorized as high or low in a pretest. The pretest made no attempt to calibrate the relative strength of the three cues. Calibration does not appear possible, hence the three cues are actually seen as being high or low but not necessarily in equal strengths.

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