

ADVERTISED REFERENCE PRICES IN AN
INTERNET ENVIRONMENT: EFFECTS ON
CONSUMER PRICE PERCEPTIONS
AND CHANNEL SEARCH INTENTIONS

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ABSTRACT

This research examines the effects of inclusion of a reference price in an Internet advertisement on consumer price perceptions and price-search intentions both (1) on the Internet and (2) in brick-and-mortar retail channels. Proposed differences between Internet sites and brick-and-mortar channels are examined across three studies using different methodologies: (1) a survey administered in a classroom setting, (2) an Internet survey, and (3) a mail panel survey. Findings show that both price perceptions and price-search intentions differ for the Internet and brick-and-mortar retail

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channels. There is mixed evidence for the prediction that the reference price impact on price perceptions for the brick-and-mortar retailer is attenuated for the Internet channel. Finally, respondents with Internet access had different price perceptions and price-search intentions than those without access.

INTRODUCTION

The Internet provides consumers with an alternative to traditional retail channels such as brick-and-mortar stores and catalogs. By the end of 2002, it is estimated that 53.2% (152.8 million) of the U.S. population will use the Internet ("Online Selling", 2002). Commerce on the Internet is rapidly expanding. Of the U.S. online population, 52% have used the Internet to purchase or to research purchases ultimately transacted off-line (Jupiter Communications, 2002). By 2005, it is estimated that one billion worldwide Internet users will account for \$5 trillion in online commerce ("1 Billion," 2001).

The online consumer perceives price as an important consideration in buying decisions when assessed against other factors (Jupiter Communications, 1999). Price information found in ads, Web sites, or through shopping agents (also referred to as "shopping bots" or "smart agents") are simply a click away and can be compared to competitors' ads or Web sites with relative ease. According to NFO Interactive, 28% of those consumers making purchases online indicate they have used shopping agents to search for products and prices offered at various sites ("Shopping Agent," 2000). Hence, the effect of price promotions on the Internet is an important topic of study for both Internet and brick-and-mortar retailers (Marketing Science Institute, 2000).

This research focuses on the effects of the presence versus absence of an external reference price in an Internet advertisement on consumers' price perceptions and price-search intentions related to traditional retail and Inter-

net channels. We examine several research questions. First, how does the use of a reference price in an Internet ad influence consumers' internal reference prices (i.e., estimates of the lowest and fair prices) for a product if it was purchased (1) from a site on the Internet and (2) from a brick-and-mortar retail store? Second, how does the use of a reference price in an Internet ad influence consumers' intentions to search for a better price from both (1) sites on the Internet and from (2) brick-and-mortar retail stores? We examine these questions regarding the use of external reference prices in Internet advertising in three studies that utilize three distinct data sources: (1) a survey administered in a classroom setting to students, (2) an Internet survey in which respondents are recruited and respond online, and (3) a mail panel survey comprised of adult consumers. For the mail panel sample, there are differences in consumers' Internet access. For that sample, we examine the role of accessibility on price perceptions and price-search intentions.

The following section presents a brief overview of theoretical rationale and past research on the effects of advertised reference prices and the hypotheses tested in this study. Next, we discuss our procedures, samples, and measures for Study 1, followed by analyses and findings used to test hypotheses. We then present methodologies and findings for Studies 2 and 3. Conclusions for retailers and marketers are then offered along with suggestions for future research.

CONCEPTUAL DEVELOPMENT AND HYPOTHESES

Previous conceptualizations indicate that consumers compare and make judgements about market offering prices relative to an internal adaptation level price or internal reference price (Monroe, 1979; Yadav & Seiders, 1998). In addition to the current offering price, retail advertisements often provide external reference prices, such as comparisons to competitor's prices, manufacturer's suggested retail prices, and regular (non-sale) prices (Della

Bitta, Monroe, & McGinnis 1981). Much of the previous work on use of these external reference prices in ads has drawn from two theories, adaptation level theory (Helson, 1964) and assimilation-contrast theory (Monroe 1973, Sherif & Hovland, 1961). Adaptation level theory suggests that contextual factors determine the ability of external reference prices to shift the adaptation level price. Assimilation-contrast theory suggests that the distance between external reference prices and the internal reference price will determine if the advertised reference price is assimilated or contrasted. Prices near the upper range of the latitude of acceptability are predicted to be assimilated and have positive effects on evaluations. Promoted reference prices outside of this latitude are generally proposed to have little effect because they are contrasted and rejected as unbelievable.

Based on these theories, it has been concluded that external reference prices, when relatively high yet plausible compared to consumers' perceived range of expected prices, affect consumers' price and offer-related perceptions. The use of external reference prices in retailers' print advertisements, primarily similar to those used in newspaper ads, has been the subject of numerous studies (cf. Biswas & Blair, 1991; Lichtenstein, Burton, & Karson, 1991). Such studies generally propose and find that the use of high but plausible external reference prices enhance consumers' internal reference price perceptions (e.g., higher perceptions of low and fair prices), and attitude toward the offer, while simultaneously reducing perceived search benefits and price-search intentions (e.g., Urbany, Bearden, & Weilbaker, 1988). Consistent with these theories and prior research (e.g., Biswas & Blair, 1991; Grewal, Monroe, & Krishnan, 1998; Lichtenstein & Bearden, 1989; Lichtenstein, Burton, & Karson, 1991; Urbany, Bearden, & Weilbaker, 1988), in this study we examine the use of a high plausible reference price in an Internet-based ad and predict it will lead to favorable effects (i.e., higher internal reference prices and decreased price-search intentions) when compared to a no external reference price condition.

The perceptions of the Internet as a new

retail channel for consumers to search, shop, and purchase products when compared to traditional brick-and-mortar retail channels are also of interest to this study and our focus in Hypothesis 2. Many consumers seem to expect to obtain lower prices on the Internet, relative to off-line retail channels (Shankar, Rangaswamy, & Pusater, 1999). Such perceptions are consistent with studies that indicate that pure play e-tailers charge lower prices than both conventional brick-and-mortar retailers and multichannel retailers (Brynjolfsson & Smith, 2000; Pan, Shankar, & Ratchford, 2002; Tang & Xing, 2001). When all three types of retailers are considered together, traditional retailers have the highest prices followed in order by multichannel and pure play e-tailers (Ancarani & Shankar, 2002). A possible reason for expectations of lower prices is that consumers relate "virtual" stores to lower overhead costs and expect these lower costs of doing business to be reflected in prices passed along to consumers (Schlesinger, 1999). Although Internet retailers generally offer lower list prices than traditional retailers do, Ancarani and Shankar (2002) show that pure play e-tailers effectively charge higher prices when shipping costs are included. Due to perceptions of the ease of entry into the Internet, consumers may believe that the number of online competitors and ease in making price comparisons serve to drive prices down. Consumers also perceive finding competitive prices online as being easier than finding competitive prices from off-line retail stores. Extensive search on the Internet is viewed as easier and faster than searching individual brick-and-mortar retail stores (Zettelmeyer, 2000). As suggested by the economics of information literature, as search costs decrease, greater search is likely (e.g., Nelson, 1974; Stigler, 1961). The availability of detailed product information and the interactive nature of the medium may enhance consumers' willingness to search for price information on the Internet. Finally, even if consumers plan on searching traditional brick-and-mortar retail stores, they may search the Internet to gather product and price information to subsequently benchmark the same information from retail stores. Predictions in

Hypotheses 1 and 2 extend prior reference price and price-search research findings utilizing newspaper print ad stimuli to reference prices in an Internet advertisement. H1 and H2 follow.

H1: When a reference price is included in an Internet ad, consumers' perceptions for the (a) lowest price available and (b) fair price for a product will be higher, and (c) price-search intentions will be lower.

H2: Consumers' perceptions of the (a) lowest price available and (b) fair price for a product will be lower for the Internet than for brick-and-mortar retail stores, and (c) price-search intentions will be higher for the Internet than for brick-and-mortar stores.

We predict that the strength of the positive effect of inclusion of an advertised reference price proposed in Hypothesis 1 will vary across Internet and brick-and-mortar retail channels (Hypothesis 3). Performing an Internet search for the lowest prices will be perceived as relatively comprehensive and capable of delivering a favorable price with less cost to the consumer. In contrast, searches at brick-and-mortar stores will be viewed as less comprehensive, will have greater costs to the consumer in terms of time and effort required, and will be perceived as less likely to produce favorable outcomes given their reduced scope. The low cost and higher likelihood of benefits associated with a price search on the Internet suggest that intentions of performing a price search via the Internet will remain relatively high, and less likely to be strongly influenced by promotional cues such as inclusion of a reference price. Based on this rationale, we predict that inclusion of the reference price will have a *less* positive effect on Internet price-search intentions than for price searches at brick-and-mortar retail stores (i.e., channel type will moderate the favorable effect of the reference price). Similarly, we predict that the perceived effectiveness of an Internet price search coupled with the lower prices anticipated on the Internet, will somewhat attenuate the positive effect of an advertised reference price on consumers' price perceptions, as compared to their price perceptions associated with brick-and-mortar retail stores.

H3: The effect of an advertised reference price will be moderated by the channel considered. Specifically, the influence of an Internet advertised reference price will be less positive for the Internet than for brick-and-mortar stores in effects on consumers' perceptions of (a) lowest price, (b) fair price, and (c) price-search intentions.

An interesting question for both academics interested in price search by consumers and marketing managers is how access to the Internet affects consumers' search for price information both in brick-and-mortar stores and on the Internet. For newer durable products that consumers have not purchased previously, we anticipate that search in brick-and-mortar stores remains at least somewhat important to most consumers, but access to the Internet will significantly increase the likelihood of an online price search. When the buying experience for a durable good is new, consumers may feel that more reliable final prices can be obtained from a local retailer with whom they have some prior dealings and where they can speak directly to salespeople. At the same time, the Internet offers a means of easily comparing prices to those found in local brick-and-mortar outlets. Thus, access to the Internet should moderate search intentions across brick-and-mortar stores and the online channel. Specifically, Hypothesis 4 is as follows:

H4: Access to the Internet will moderate price-search intentions. Specifically, access to the Internet will have a stronger effect on Internet price-search intentions than on price-search intentions at brick-and-mortar stores.

STUDY 1 METHODOLOGY

Stimulus, Procedures, and Sample for Study 1

Study 1 participants were shown an advertisement for a DVD player that included a picture of the product along with information on features. The picture and information were adapted from an ad on an Internet Web site. Product information included brand name, model number, and attribute information (e.g.,

Dolby digital 5.1 channel decoder, product size, remote control description, warranty information, video input/output connections, and high- and low-speed search options). All information about the DVD player that was presented to participants was invariant except for the inclusion (exclusion) of reference price information.

The reference price manipulation consisted of reference price present and reference price absent conditions. The reference price used was the highest price on the specific DVD model found using six well-known Internet shopping agents. The offering price was the second lowest price found for the DVD model using the same six Internet shopping agents. The second lowest price was used rather than the lowest price to allow for a lower price to be available for price perceptions and price-search intentions (see *Dependent Measures*). In the reference price absent condition, the ad stated, "Our Price: \$329.99." When the reference price was present, the semantic cue, "Compare to: \$468.95," was presented along with the offering price. Participants were told that the advertisement for the DVD player was from an Internet site and were asked to refer to the ad when answering questions in the survey.

Data were collected in Study 1 from junior and senior undergraduate students from a major university.¹ Participation was voluntary, and students received class credit for participating. Most of the participants (98%) were under 25 years of age and 55% were males. All students had access to the Internet through the university they attended. Sample size was 137 with 67 in the no reference price condition and 70 in the reference price present condition.

Dependent Measures

Two types of dependent measures, adapted from previous research on advertised reference prices (e.g., Grewal, Monroe, & Krishnan, 1998;

Lichtenstein & Bearden, 1989; Urbany, Bearden, & Weilbaker, 1988), were collected. The first set assessed fair and lowest price estimates for the DVD player if it was purchased at (1) a retail store or (2) from an Internet site. These questions were asked in an open-end format (e.g., "What do you think a fair price for the Sony DVD player would be if you purchased it from a retail store in your area?"; "What do you think a fair price for the Sony DVD player would be if you purchased it from a site on the Internet?"; "What do you think is the lowest price that you could find this Sony DVD player selling for from a retail store in your area?"; "What do you think is the lowest price that you could find this Sony DVD player selling for from a site on the Internet?").

The second type of dependent variables asked about search intentions for finding a better price both on the Internet and by shopping at retail stores in their area. For each search-related question, seven-point scales were used with endpoints of "very likely" and "very unlikely." These questions stated, "If you were going to purchase a Sony DVD player, how likely is it that you would visit retail stores in your area searching for a better price than the one advertised?" and, "If you were going to purchase a Sony DVD player, how likely is it that you would search the Internet for a better price than the one advertised?" For the search questions, responses were reverse coded so that higher scale values were associated with a higher likelihood of search.²

² While, due to length and cost constraints, in Studies 2 and 3 (the Internet and mail panel studies), single-item measures were used for the search measures, additional items were included for these measures on the Study 1 survey administered in a classroom setting (where there was less concern with cost/length constraints). This permitted an assessment of how the single items related to multi-item scales. Across the three studies, the single item used for the search measure at retail stores was positively correlated ($r = .76, p < .001$) with the four-item scale used to assess retail store price search ($a = .76$). These results indicate that the single-item measure used across all data sources was adequately related to the multi-item latent variable measure of search. To enhance comparability across results for the three studies, results for the single item measures used across all three studies are reported in the tables.

¹ Generalizability of findings is enhanced in Studies 2 and 3, in which data are collected using a marketing research Internet service (InsightExpress) in which all participants were recruited and responded to the survey online, and a mail panel consisting of a geographically dispersed sample from a Southeastern state.

TABLE I

Effects of Retail Channel and Reference Price on Low and Fair Price Perceptions and Price Search Intentions: Study I

Independent Variables	Multivariate Results		Univariate F Values		
	Wilks' λ	F Value	Low Price	Fair Price	Price Search Intentions
Main Effects					
Retail Channel (RC)	.63	25.9 ^a	22.3 ^a	41.2 ^a	10.8 ^a
Reference Price (RP)	.93	3.3 ^b	7.5 ^a	9.3 ^a	0.1
Interaction					
RC \times RP	.94	2.7 ^b	6.4 ^b	3.9 ^b	0.0

^a $p < .01$ ^b $p < .05$

STUDY I RESULTS

Internal Price Perceptions and Price-Search Intentions

To assess predictions related to consumers' perceptions of the lowest price, fair price, and price-search intentions for the DVD player both on the Internet and in retail stores, a repeated-measures MANOVA and ANOVAs were performed. The repeated measure was retail channel (Internet versus brick-and-mortar retail store) and the between-subjects factor was the reference price (absent versus present). Subsequent discussion focuses on the univariate results shown in Table 1 (which are used to test hypotheses), and cell means shown in the top portion of Table 2.

Hypothesis 1 pertains to effects of inclusion of the reference price on price perceptions and search intentions, and Hypothesis 2 addresses differences between price perceptions and search intentions between the Internet and brick-and-mortar channels. Consistent with hypothesis 1, univariate results in Table 1 and means shown in Table 2 indicate that the presence of the reference price in the Internet ad significantly increases both the lowest price and fair price estimates ($F = 7.5$ and 9.3 , respectively, $p < .01$ for both). The effect on search is not significant. These findings support H1a and H1b, but do not offer support for H1c.³

³ As discussed subsequently and shown in Figure 1, the retail channel by reference price interaction is ordinal in nature and does not preclude interpretation of the main effects.

Consistent with Hypothesis 2 predictions, when purchasing a DVD player on the Internet (rather than a brick-and-mortar retail store), consumers anticipate lower prices for both estimates of a fair price ($F = 41.2$, $p < .01$) and the lowest price they expect to find ($F = 22.3$, $p < .01$). For both fair and lowest prices, consumers anticipated Internet prices to be approximately 8% (or \$25.00) lower than prices at brick-and-mortar retail stores. In addition, price-search intentions are higher for the brick-and-mortar retail channel ($F = 10.8$, $p < .01$) than for a price search on the Internet.⁴ These findings support H2a and H2b, but are not consistent with predictions for price search in H2c.

⁴ A reviewer noted that the order of soliciting Internet versus the retail channel price perceptions and search intentions might influence responses. To test for the possibility of any order effects an additional two (channel order: order of presentation of Internet versus retail channel price/search measures) by two (reference price: present versus absent) between subjects experiment was conducted. Using the same stimulus materials as in the main studies (i.e., DVD players), 133 college students (53% males, 47% females) participated in the study. For Internet and retail price perceptions, multivariate and univariate results were nonsignificant for both the main effect of channel order and the interaction of channel order by reference price ($p > .10$). Multivariate and univariate results also revealed no significant main effects or interactions for the effects of channel order and reference price on Internet and brick-and-mortar retail search intentions. Thus, these results indicate that findings are not affected by order of presentation effects. Similar to findings reported in the main studies, the presence of reference prices did impact perceptions for brick-and-mortar retail low and fair prices and Internet fair prices ($p < .05$) but not for Internet low prices, ($p > .10$).

T A B L E 2

Cell Means for Price Perceptions and Search Intentions: Studies 1, 2, and 3

<i>Source/Reference Price Condition</i>	<i>Low Price Perceptions</i>	<i>Fair Price Perceptions</i>	<i>Price Search Intentions*</i>
Study 1: Self-Administered Survey			
Reference Price			
Retail Channel	\$315.77	\$326.60	6.29
Internet Channel	277.30	294.84	5.74
No Reference Price			
Retail Channel	275.30	289.48	6.21
Internet Channel	263.72	272.73	5.70
Study 2: Internet Survey			
Reference Price			
Retail Channel	311.91	325.51	5.79
Internet Channel	271.36	286.70	5.74
No Reference Price			
Retail Channel	288.63	307.80	5.82
Internet Channel	268.90	276.75	5.53
Study 3: Household Mail Panel			
Reference Price			
Retail Channel			
Internet Access	333.92	339.41	6.21
No Internet Access	303.70	319.63	6.07
Internet Channel			
Internet Access	297.35	303.50	4.84
No Internet Access	283.06	303.43	2.57
No Reference Price			
Retail Channel			
Internet Access	298.47	312.97	6.26
No Internet Access	281.10	281.96	6.07
Internet Channel			
Internet Access	277.46	286.50	4.98
No Internet Access	267.00	267.10	3.14

* Measured on seven-point scales, where higher means indicate higher price search intentions.

Hypothesis 3 predicts that the effect of the advertised reference price will be moderated by the channel considered. Results in Table 1 show the univariate reference price by channel interactions are significant for both low price ($F = 6.4, p < .05$) and fair price perceptions ($F = 3.9, p < .05$). Plots of the reference price by retail channel means are shown in Figure 1 for both lowest and fair price dependent variables. The slope of lines indicate that the effect of the reference price is somewhat *less* positive when the Internet was the retail channel considered

($t = 2.4 [p < .05]$ and $1.5 [p > .10]$, for two-tailed tests of fair and low price, respectively) rather than a brick-and-mortar retail store ($t = 3.1 [p < .01]$ and $3.3 [p < .01]$, for fair and low price, respectively). These findings support the interactions proposed in H3a and H3b.

In sum, there was general support for predictions in H1 to H3 in Study 1. To extend the generalizability of findings from Study 1 to samples of nonstudent consumers and examine the role of Internet access in predictions made in H4, two additional studies were performed.

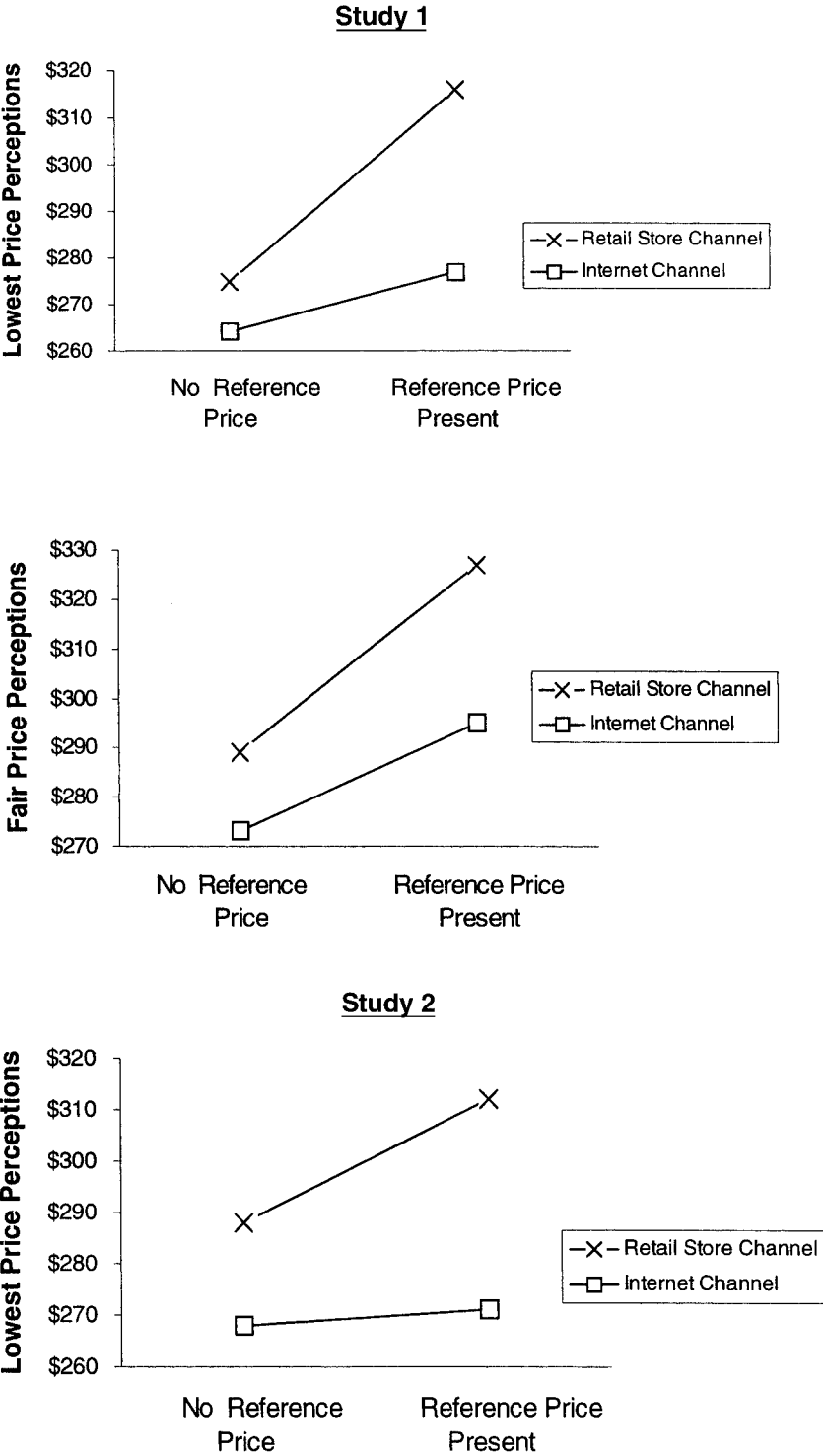


FIGURE 1
 Lowest and Fair Price Perceptions Across Retail Outlet Type and Reference Price Manipulation

T A B L E 3

Effects on Low and Fair Price Perceptions and Price Search Intentions: Studies 2 and 3

<i>Independent Variables</i>	<i>Multivariate Results</i>		<i>Univariate F Values</i>		
	<i>Wilks' λ</i>	<i>F Value</i>	<i>Low Price</i>	<i>Fair Price</i>	<i>Price Search Intentions</i>
Study 2					
Main Effects					
Retail Channel (RC)	.75	38.1 ^a	44.9 ^a	99.9 ^a	1.5
Reference Price (RP)	.99	1.0	2.6	2.5	0.4
Interaction					
RC × RP	.98	2.7 ^b	5.4 ^b	1.2	0.9
Study 3					
Main Effects					
Retail Channel (RC)	.44	98.4 ^a	31.5 ^a	50.9 ^a	215.8 ^a
Reference Price (RP)	.95	4.2 ^a	8.9 ^a	11.7 ^a	1.0
Internet Access (IA)	.85	13.9 ^a	5.2 ^b	4.2 ^b	35.1 ^a
Interactions					
RC × RP	.99	1.1	1.8	0.7	1.1
RC × IA	.85	13.5 ^a	1.9	5.7 ^b	37.5 ^a
RP × IA	.98	1.6	0.3	0.8	0.3
RC × RP × IA	1.0	0.3	0.3	0.4	0.6

^a $p < .01$

^b $p < .05$

STUDIES 2 AND 3

Methodology

Both data-collection methodologies and demographic composition of participants in Studies 2 and 3 differed from Study 1. In Study 2, data were collected using a marketing research Internet service (InsightExpress) in which all participants were recruited and responded to the survey online. In Study 3, data were collected from a mail panel consisting of a geographically dispersed sample of adult consumers from the same Southeastern state from which the Study 1 data were collected. While all participants in Study 2 had access to the Internet, in Study 3 the ease of access to the Internet varied across the study respondents.

To enhance the comparability across studies, the stimuli and experimental conditions were identical across the studies except the stimuli were shown on a computer monitor in the Internet study rather than the print form used in

the mail panel and student samples. All dependent variable measures were also the same across the studies. Sample sizes for Study 2 (the Internet sample) were 344 (163 in the reference price absent and 181 in the reference price present conditions) and 243 in the Study 3 household research panel (117 in the reference price absent and 126 in the reference price present conditions).

Results for Studies 2 and 3

Analysis of variance results used for testing hypotheses in Studies 2 and 3 are shown in Table 3 and relevant means are shown in Table 2. Study 2 findings, in the top portion of Table 3, show significant main effects of the retail channel on low and fair price perceptions ($p < .01$ for both). Means for the low and fair price perceptions are in the predicted direction. However, there is a significant interaction between retail channel and reference price for low price perceptions. A plot of the relevant means

is shown at the bottom of Figure 1. Similar to Study 1 findings, the effect of the reference price is less positive for the Internet retail channel than the brick-and-mortar retail channel. Follow-up tests show that the effect of the reference price is significant for the brick-and-mortar retail store ($t = 2.5, p < .02$, two-tailed test) but nonsignificant for the Internet channel ($t = 0.5, p > .10$). Interestingly, for this sample, the main effects of reference price on all dependent variables are nonsignificant. These findings provide partial support for H2 and H3, but no support for H1.

Results for Study 3 are shown in the bottom portion of Tables 3 (multivariate and univariate results) and 2 (cell means). Because participants in Study 3 varied in terms of their access to the Internet, this access factor is included as a third independent variable in analyses. As in the analyses in other studies, the repeated measure is retail channel (Internet versus brick-and-mortar retail store) and between subject factors are the reference price (absent versus present) and Internet access (access versus no access).

Significant main effects of reference price for low price perceptions ($F = 8.9, p < .01$) and fair price perceptions ($F = 11.7, p < .01$) were found but price-search intention was nonsignificant ($F = 1.0$). For both low and fair price, higher price perceptions were found for those exposed to the external reference price ($M = \$304.51$ and $M = \$316.49$, respectively) than for those not exposed to an external reference price ($M = \$281.01$ and $M = \$287.13$, respectively).

Significant main effects of retail channel and Internet access also were found for price perceptions and price-search intentions. For the main effects of Internet access, those participants without access had lower low and fair price perceptions (means = \$283.72 and \$293.03, respectively) and lower price-search intentions (means = 4.46) than those with Internet access (means = \$301.80, \$310.59, and 5.57, respectively). Consistent with findings of Studies 1 and 2, price perceptions were higher for brick-and-mortar retail channels (low price = \$304.30, fair price = \$313.49) than for Internet channels (low = \$281.22, fair = \$290.13).

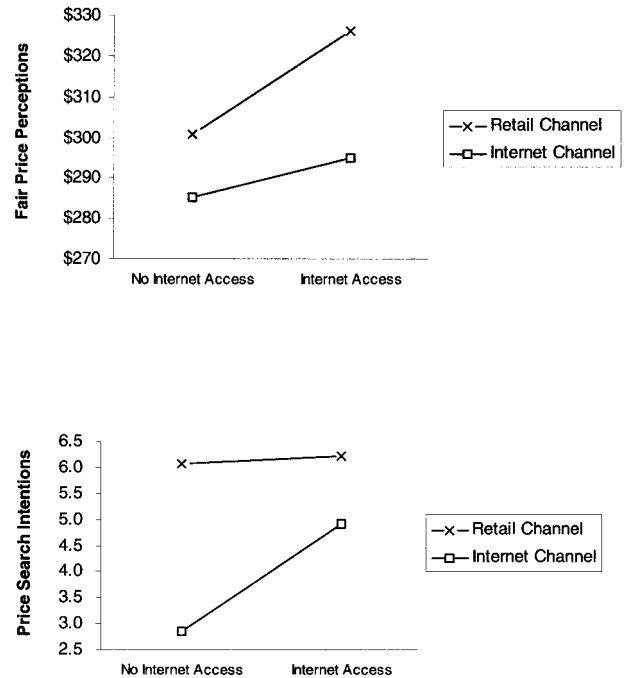


FIGURE 2
Fair Price Perceptions and Search Intentions Across Channels and Internet Access

Consistent with Study 1, price-search intentions were higher for brick-and-mortar channels (search intentions = 6.15) than for the Internet (search intentions = 3.88).

The significant main effects of fair price perceptions and price-search intentions were qualified by significant univariate interactions of retail channel by Internet access (fair price: $F = 5.7, p < .05$; price-search intentions: $F = 37.5, p < .01$). As can be seen in Figure 2, both participants with and without Internet access perceived a higher fair price for brick-and-mortar retail stores relative to the Internet ($p < .05$ for both). Study 3 participants with Internet access perceived the fair price for the Internet to be about 10% less than for brick-and-mortar retail stores. Participants without Internet access perceived the fair price for the Internet to be about 5% less than for brick-and-mortar retail stores. Those participants with Internet access perceived a fair price at a brick-and-mortar channel to be significantly higher (mean = \$326.19) than those without Internet access (means = \$300.79; $F = 6.38, p < .05$). However, there was no difference between those with In-

ternet access (mean = \$295.00) and those without Internet access (mean = \$285.26) for Internet fair price perceptions ($F = 1.39, p > .10$).

As shown in the bottom portion of Figure 2, participants with Internet access versus without access did not differ in their price-search intentions for brick-and-mortar retail stores ($F < 1.0$, means = 6.23 and 6.07, respectively). This indicates that access to the Internet does not reduce price-search intentions at brick-and-mortar retail stores. As expected, participants with Internet access had higher price-search intentions for the Internet (mean = 4.91) than those without Internet access (mean = 2.85, $F = 46.82, p < .01$). This pattern of findings supports Hypothesis 4.

DISCUSSION

The primary purpose of this research was to address effects of the presence (absence) of an external reference price in an Internet ad on consumer price perceptions and search intentions across both traditional brick-and-mortar retail and Internet channels. Findings in two of the three studies replicate previous research (e.g., Biswas & Blair, 1991; Lichtenstein, Burton, & Karson, 1991) that found effects of reference prices in (newspaper-type) print ads on price perceptions, there are consistent effects of the retail channel on price perceptions, and there is mixed evidence that the positive influence of the reference price on price perceptions is moderated by channel.

Overview of Findings and Managerial Implications

In Study 1, the effect of the reference price, although still positive from the merchant's perspective, had *less* positive influence on price perceptions for the Internet channel than for a brick-and-mortar retail store. It was particularly interesting that in Study 2, in which the reference price ad stimulus was accessed on the Internet, there were no significant main effects involving reference price, although predictions about the combined effect of the retail channel and reference prices on price perceptions were supported. Thus, these findings are consistent

with the rationale that because consumers expect lower prices on the Internet (Shankar, Rangaswamy, & Pusater, 1999) and price-search comparisons are easier for consumers to perform (Zettermeyer, 2000), inclusion of reference prices should have a less positive influence on the Internet than the traditional brick-and-mortar channel. In Study 3, which involved a mail panel comprised of participants with generally less Internet experience compared to respondents in Studies 1 and 2, there were main effects of reference price but no significant reference price by channel interactions. From a managerial perspective, this pattern of results across studies suggests that retailers' use of reference prices are capable of positive effects on price perceptions, but these price perception effects may not be as strong for the Internet channel as for conventional brick-and-mortar channels.

We also predicted that consumers' lowest and fair price perceptions for a product marketed on the Internet would be perceived as lower than prices for the identical product offered in conventional brick-and-mortar channels. The rationale underlying this prediction is that consumers view that the perceived lower cost of doing business on the Internet (Schlesinger, 1999), combined with a greater number of competitors and ease of making price comparisons, tend to drive prices down on the Internet channel (Zettermeyer, 2000). Consistent support was found for this prediction across all three studies. When compared to the conventional brick-and-mortar retail store channel, results supported that consumers appear to have lower expectations for both a fair price ($p < .01$) and the lowest price they expect to find ($p < .01$) on the Internet. Across studies and price perceptions, estimates are about 8–10% lower for the Internet channel. This finding is consistent with past research that found prices on the Internet to be 9–16% lower than prices in conventional brick-and-mortar retail outlets even though the price dispersion (variance and range) is comparable for Internet and brick-and-mortar retail stores when controlling for market share (Brynjolfsson & Smith, 2000; Pan, Ratchford, & Shankar, 2002). Our consumer perception find-

ings are also consistent with past research that found actual prices offered by pure play e-tailers to be lower than prices offered by multichannel bricks-and-clicks retailers (Pan, Shankar, & Ratchford, 2002; Tang & Xing, 2001). Thus, retail managers setting prices for Internet transactions should be aware that lower prices are anticipated by consumers. It also suggests that brick-and-mortar retailers potentially could create low store price perceptions for their product lines by promoting favorable comparisons between their specific product prices and those found via Internet searches. This creates interesting pricing scenarios for retailers making decisions about offering prices across both their Internet and brick-and-mortar channels as well as possible scenarios for using the brick-and-mortar channel for customer acquisition and the Internet for demand fulfillment (Lal & Sarvary, 1999). Past research has shown that retailers operating both Internet and traditional channels tend to price products higher than pure play e-tailers, but lower than brick-and-mortar retail stores (Ancarani & Shankar, 2002).

Based on the economics of information literature (Nelson, 1974; Stigler, 1961), it was predicted that price-search intentions would be higher for the Internet channel due to lower search costs and greater perceived benefits from search relative to costs. This prediction was not supported. In each of the three studies, intentions to search for prices at brick-and-mortar channels were as high or higher than search intentions on the Internet. The finding that price-search intentions at conventional retail stores were as high as Internet search intentions was especially surprising for consumers who responded to the Internet survey in Study 2 (and thus are clearly active Internet users).

This is a potentially important finding for marketers and retailers because it suggests that most consumers are not ready to rely solely on an Internet search. This may be particularly true for a relatively new product categories such as the DVD player examined in this study. Even though 28% of online purchasers indicate that they have used shopping agents, these purchasers also indicate that they used the shopping

agents for only 25% of their purchases ("Shopping Agents," 2000). It is also possible that some consumers may not be sufficiently confident with their Internet search skills and/or product knowledge to feel comfortable eliminating all search at brick-and-mortar channels. Consumers may place greater confidence in prices obtained from a local retailer with whom they have prior business dealings, where they can have face-to-face interaction with a salesperson, and where they can physically examine and take possession of the product. Also, although the Internet allows consumers to evaluate some attributes easily (e.g., price), other important product attributes can only be evaluated through physical presence (Lal & Sarvary, 1999). Similarly, the possibility of hidden add-on costs for a relatively higher priced consumer durable good may affect consumers' confidence in relying solely on an Internet price search. Note that the relatively high means for price search across both channels suggest that many consumers appear likely to engage in both types of price search. From a managerial perspective, this indicates that brick-and-mortar stores have the opportunity to compete against the Internet channel because many consumers will search both outlets, and the brick-and-mortar store environment permits the use of a variety of sales and merchandising tactics not easily transferable to the Internet channel. Future research is clearly warranted.

It should be noted that there were some differences in findings across studies, particularly between the Internet survey and the mail and in-class survey methodologies. For the specific questions and contexts examined in this study, these differences in findings may alter substantive conclusions that might be drawn if the Internet survey data were used in isolation and conclusions were generalized too broadly. Thus, it is important for marketers conducting survey and experimental research to exercise reasonable caution for findings using different data sources and focal products. Future research may more directly address differences across Internet surveys and more conventional methodologies as well as for different products.

Study Limitations and Future Research

We acknowledge several limitations of this research that may affect the generalizability of findings. Because of resource related factors for the data collection on the Internet, the reference price manipulation included only a single, plausible price based on an extensive search of prices on the Internet for a single durable product. Future research may address other reference price levels as well as durable and nondurable products. For example, Lal and Sarvary (1999) have found that, for certain products (e.g., staple goods) and under certain conditions (e.g., high loyalty), Internet retailers may be able to increase their prices.

In the three main studies, the order of presentation of items relating to price perceptions for the Internet and brick-and-mortar retail channels were not rotated and, therefore, the possibility exists that demand effects influenced the findings. Although our additional study (see Footnote 4) suggests that order does not significantly influence findings, future studies may choose to use between subjects designs that vary the channel (Internet versus brick-and-mortar retail store) or, in the case of within subject designs, counterbalance the order of Internet and retail store pricing questions.

Similar to most of the prior published experimental research on advertised reference prices, our study examined price perceptions and channel search intentions rather than actual search behavior and purchases. More controlled e-lab settings that focus on similar ad-related issues can potentially examine actual Internet search (although search intention measures probably are still necessary for the brick-and-mortar channels).

Although we found differences in low and fair price perceptions and price-search intentions for the Internet and brick-and-mortar retail channels, and between those with Internet access versus those without, it is not clear what precise mechanisms are driving these findings. The samples in the three studies varied based on data collection methods, demographics (e.g., education, age), and Internet access. In

addition, differences in the brick-and-mortar retail environment and respondent product knowledge may also contribute to differences between and within studies. Similarly, although we used a specific brand and model of digital video disc player, it has been suggested that different models and prices are often used for Internet and traditional retail store channels ("Bargain Hunters," 2000). It is possible that the lack of knowledge of different models being offered by different channels may account for some of the differences for both price perceptions and price-search intentions. Consumer price perceptions, price-search intentions, and perceptions of the quality and comparability of brands being offered through the Internet and tradition retail channels of a single retailer may help uncover some of the mechanisms driving differences in perceptions. It would also be beneficial to relate these price perception findings to actual retail pricing practices. For example, both Internet and brick-and-mortar retail store price practices (e.g., low price, price dispersion, price adjustments) differ based upon the product category, retail channel (Internet versus brick and mortar), distribution of market shares and, to a limited extent, the service level (Brynjolfsson & Smith, 2000; Pan, Ratchford, & Shankar, 2002; Smith, 2001). Linking actual price practices with consumer price perceptions and behaviors (e.g., satisfaction and loyalty) is a worthwhile research pursuit (Shankar, Smith, & Rangaswamy, 2002).

The present studies generally found that reference price effects are more pronounced for the retail store channel than for the Internet channel. The lack of any relationship between price perceptions and price-search intentions, regardless of retail channel, in the present study is an area of needed study and should incorporate actual price-search and purchase behaviors. As the Internet grows and develops it is important to identify and assess potential differences in the applicability of marketing practices across various retail channels (Marketing Science Institute, 2000).

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