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Online Price Search: Impact of Price Comparison Sites on Offline Price Evaluations

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Abstract

Consumers increasingly rely on Internet price comparison sites (PCS) to gain knowledge about the market. The prices generated by a PCS search can act as contextual reference prices and influence the attractiveness of prices encountered later as consumers shop offline at local stores. This paper demonstrates that both PCS retailer ratings and the shape of the PCS price distribution influence the impact of PCS search results on later price evaluations. A favorable PCS retailer rating increases the perceived validity of the price associated with that retailer, enhancing the impact of that PCS price on offline price evaluations (Study 1). The shape of the PCS price distribution can also influence later price evaluations, however this effect depends on the information provided by the PCS retailer ratings. When PCS retailer ratings are similar, implying similar validity for the associated prices, low PCS prices and those appearing more frequently in the PCS price distribution have more impact (Studies 2 and 3). When PCS retailer ratings are variable (some high and some low), the PCS price distribution effect occurs only when the PCS retailer ratings provide congruent information about price validity — that is, the most frequent price is offered by retailers with more favorable ratings. Study 3 shows that price validity inferences do mediate this result. Finally, we depart from the offline shopping context to show that when consumers choose a retailer directly from the PCS search results, the effect of PCS retailer ratings is stronger for high-priced retailers and for consumers who rely less on the retailer price as a heuristic to infer retailer service level. Based on our findings we offer insights for online and offline retailers when considering strategic responses, such as price matching guarantees.

Keywords: Online price search; Multiple reference prices; Price validity; Retailer quality; Price comparison site; Online retailer choice

Keith is preparing for a triathlon and wants to exercise more effectively using a heart rate monitor. He decides to purchase the Garmin Forerunner 405 Heart Rate Monitor. Before heading to the mall, he uses *pricegrabber.com*, a price comparison site, which lists nine different retailers offering that exact model. For each of those retailers, *pricegrabber.com* shows both a price (ranging from $199.95 to $299.97) and a star rating of the retailer offering it (ranging from 1 to 5 stars). Later, at *Dick's Sporting Goods*, Keith sees the same model priced at $249.99. He recalls several *pricegrabber.com* retailers with prices around $200, but they had low retailer ratings. Keith feels that the price at *Dick's* is reasonably attractive.

Easy access to a wealth of online market information has made the Internet an important resource for consumers like Keith, who are searching for products and prices. A common strategy is "web-to-store" shopping or "research shopping", in which consumers use the Internet as their primary information source before finalizing a transaction offline (Hein 2007; Pauwels et al. 2011; Verhoef, Neslin, and Vroomen 2007). Price comparison sites (PCS) or shop bots, such as *pricegrabber.com*, are particularly efficient online information sources, capable of collecting and displaying numerous retailer prices for either a product type or a specific brand and model. The growing importance of PCS search is reflected in *Consumer Reports*' evaluation of 25 major PCS (Consumer Reports 2010).

PCS give consumers a valuable snapshot of the marketplace and an abundance of potentially useful information. The information presented in PCS search results can play different roles in consumer decisions. PCS search results may serve as contextual

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reference prices in consumer evaluations of prices offered by other stores, such as other online retailers or local offline retailers. The detailed information presented in PCS search results (e.g., retailer ratings, frequency of retailers offering the product at the same price, retailer price level) may influence which prices are used more in subsequent price evaluations. In addition, PCS search results may serve as an easily accessible set of retailer alternatives that offer the searched product, and the information in PCS results may influence a consumer's choice of an online retailer among the search results.

In this research, we primarily focus on the role of PCS results as contextual reference prices. We first investigate the impact of PCS retailer ratings on later price evaluations, proposing that a favorable retailer rating increases the impact of that retailer's price on subsequent, offline price evaluations. In our scenario, Keith's recall of the unfavorable retailer ratings attached to the low PCS prices should reduce their impact on his in-store price evaluations. We investigate the underlying process for this effect by introducing the concept of *price validity*, defined as the degree to which consumers believe a listed price to be a genuine and obtainable in the marketplace. A good retailer rating leads to the inference that the associated price is valid, enhancing its impact on price evaluations. Thus, price validity is a key mediator of retailer rating effects.

Our second research question focuses on the extensive price information generated by a PCS search, and asks: what aspects of PCS information actually impact consumers' evaluations of prices they encounter later? Given consumers' relatively limited recall of specific price information (Dickson and Sawyer 1990; Vanhuele and Drèze 2002), do later price evaluations actually incorporate this distributional information generated by a PCS? Or, do evaluations depend on specific and highly salient PCS prices, such as the most frequently occurring price in PCS results? We investigate the effects of the distributional characteristics of PCS prices — their frequency and rank — on consumers' evaluations of prices they encounter later. In this investigation, we first focus on the impact of the PCS price distribution when ratings are similar for all retailers, and therefore, less diagnostic. Next, we focus on the impact of the PCS price distribution when retailer ratings are mixed (some have higher ratings and others have lower ratings). Specifically, we compare the case when both frequency and retailer rating provide congruent signals of the validity of a PCS price as a reference price (e.g., the most frequent price in the PCS result is associated with *favorably* rated retailers) with an incongruent case (e.g., the most frequent price in the PCS result is associated with *poorly* rated retailers).

Finally, we explore a secondary effect of PCS results, *how* the characteristics of the PCS distribution influence consumer choice among the online retailers presented in PCS results. We expect favorable retailer ratings to increase the choice likelihood of the associated retailer, however, we also expect two factors to moderate this effect: the retailer's price level and the consumer's reliance on retailer price to infer retailer service level.

Our empirical findings across three studies provide useful insights. When setting in-store prices or offering price matching guarantees, offline retailers naturally worry about the low-price competitors who are easily identified by a PCS search. For offline retailers, our findings suggest that retailers should focus on prices that are associated with highly rated retailers, as these prices have higher perceived validity and greater impact on subsequent price evaluations (Study 1). When there is little variation in PCS retailer ratings to influence consumers, retailers should also focus on prices that occur frequently in PCS searches, and not just on the lowest price (Studies 2 and 3). Our results suggest that the impact of retailer ratings on subsequent price evaluations does not change for low- or high-priced retailers (Study 3). Consumers are likely to use higher prices associated with favorable ratings, rather than low prices associated with poor ratings, in subsequent price evaluations. This finding may be good news for offline retailers, as high-priced online retailers with high ratings may serve as a buffer to competition by low-priced online retailers. Offline retailers should also pay attention to whether the most frequently occurring price in the PCS results is associated with favorable ratings. Our findings imply that consumers are less likely to be influenced by the most frequently occurring price when offered by poorly rated online retailers. Overall, these findings imply that retailers should consider several aspects of PCS search information and their effects on offline price evaluations before committing to a price matching guarantee. These findings answer the call for a better understanding of the impact of online prices on price perceptions by Kopalle et al. (2009).

Finally, our results provide insights for online retailers that are presented in the PCS results. In this context, when the focus is online retailer choice, the impact of favorable retailer ratings is positive, but conditional on retailer price level and consumers' level of reliance on retailer price to infer retailer service level (RPRS beliefs). Taking a hit on ratings is less damaging for low-priced online retailers, but it can significantly reduce sales for high-priced online retailers. For high-priced online retailers, a hit in ratings may not affect consumers who rely on the high price as a signal of retailer quality (high RPRS). However, it reduces sales to consumers with weak or moderate RPRS beliefs, who have higher sensitivity to their retailer ratings. Our findings also revealed that other retailers offering the same price do not have any discernible effect on the choice likelihood of online retailers.

Conceptual Development and Hypotheses

Price evaluations depend on reference prices (Mazumdar and Papatla 1999). A PCS search can be a particularly useful source of contextual reference prices because it creates an in-depth, highly organized display that facilitates price comparisons, in contrast to assembling the same amount of information offline piece by piece. As a result, PCS constitute an important environment for investigating the reference price effects and the role of retailer ratings. Given the number and diversity of prices that may serve as contextual reference prices, a long standing issue has been how to identify those most influential in consumers' price evaluations (Rajendran and Tellis 1994). In the following discussion, we draw on configural weight theory (Birnbaum 1974) and the accessibility-diagnosticity model (Feldman and Lynch 1988) to provide a theoretical framework for understanding these effects (Mazumdar, Raj, and Sinha 2005). These