International Journal of Hospitality Management 52 (2016) 46–55

Contents lists available at ScienceDirect

International Journal of Hospitality Management

journal homepage: www.elsevier.com/locate/ijhosman

The exploration of hotel reference prices under dynamic pricing scenarios and different forms of competition

Giampaolo Viglia [a,*], Aurelio Mauri [b], Manu Carricano [c]

[a] Bournemouth University, Department of Tourism and Hospitality, Fern Barrow, Poole, BH12 5BB Bournemouth, UK
[b] IULM University, Department of Economics and Marketing, Carlo Bo 1, 20143 Milan, Italy
[c] Eada Business School, Department of Marketing, Aragó 204, 08011 Barcelona, Spain

ARTICLE INFO

Article history:
Received 6 January 2015
Received in revised form 5 August 2015
Accepted 16 September 2015
Available online 1 October 2015

Keywords:
Reference price
Dynamic pricing
Hotel pricing
Price competition
Price comparison

ABSTRACT

The reference price, used by consumers to evaluate market prices, has tremendous relevance in dynamic pricing. Reconciling current heterogeneous theories and studies on reference prices, this paper analyzes the impact of hotel price sequences on consumers' reference prices through a lab and a field experiment. Experiment 1 tests the importance of retrospective price evaluations, while Experiment 2 evaluates the impact of three forms of competition: (i) simultaneous behavior, where firms adjust prices simultaneously; (ii) leader–follower behavior, where one firm acts as the leader; and (iii) independent behavior, where each player takes its rival's strategy as given and seeks to maximize its own profits. The results show that consumers decrease their reference price when competing hotels adjust their prices simultaneously. Relevant managerial implications are drawn for the hospitality industry, which is affected by the presence of online travel agencies that announce the daily rates offered by each competitor.

1. Introduction

Suppose that Carol wants to book a hotel room and begins checking prices (hotel rates) over the Internet. After several searches, she realizes that there is a certain degree of price variability each time she checks. To judge the prices she is offered, she can recall the prices she may have seen in the past, the prices paid for rooms at the same hotel, and/or the prices charged by similar competing hotels. What she has seen or paid in the past, along with the prices of comparable hotels, will influence her price evaluation.

The issue of customers' price evaluations—how customers perceive prices and their variations—has become an important topic in hospitality management, particularly due to the widespread adoption of revenue management techniques by the lodging and travel industry. Dynamic pricing practices are now common and have become more feasible as Internet purchasing behavior has increased (Abrate et al., 2012). The widespread use of dynamic pricing is partly attributable to online tools, by which hotels can easily adjust prices in real time depending on the number of available rooms, the inventory and prices of close competitors, and other contextual indicators. However, though these pricing practices may benefit both sellers and buyers, consumers may perceive dynamic pricing as unfair because it produces a variety of rates for what appear to be identical products, such as the same hotel room (Choi and Mattila, 2005).

The reference price is the standard against which consumers evaluate current product prices to assess their attractiveness (Monroe, 1973). Reference price has been the subject of a large body of research by both economists and marketing scholars. It can be conceptualized as a price expectation based on customers' memories of previous information (Mazumdar et al., 2005) or as the normative price—the price considered a "fair" charge for the product (Bolton et al., 2003; Campbell, 1999).

Several studies have underlined the importance of including customers' reference price in price response models (Lichenstein and Bearden, 1989; Rajendran and Tellis, 1994). Moon et al. (2006), investigating how consumers encode prices, define three types of price response: (i) comparing current prices to some function of observed past prices, i.e., memory-based reference price, (ii) considering only the current distribution of prices, i.e., stimulus-based reference price and (iii) considering just the observed price, i.e., not accounting for any source of reference price. An empirical analysis in their study shows that consumers using at least one sort of reference price are predominant. In both the reference conditions, memory-based reference price and stimulus-based reference price, consumers weight price losses much more than price gains. This

* Corresponding author. Tel.: +44 1202962234.
E-mail address: gviglia@bournemouth.ac (G. Viglia).

http://dx.doi.org/10.1016/j.ijhm.2015.09.010
0278-4319/

finding is consistent with the ideas that a reduced price has a strong effect on the reference price (Bambauer-Sachse and Massera, 2015) and that price losses loom larger than gains (Erdem et al., 2001).

This study overrides the static determinations of the reference price, including (for the first time in a field study) the impact of competitors' prices on the determination of the reference price. This paper reconciles the relevant literature and then discusses the formation of the reference price based on sequences of past prices (i.e., the temporal dimension) and the theoretical foundations of the interrelated mechanisms between the reference price and the competition (i.e., the contextual dimension). Lab and field experiments are used to analyze the importance of each piece of past information in the formation of the reference price, not only from a static perspective but also by observing how the presence of different types of competition (i.e., simultaneous, leader–follower, and independent competitors) shapes the reference price. This paper thus explores both the internal and external dimensions of reference prices. Finally, several managerial implications for the international hospitality industry are drawn.

This article applies experimental methods used in behavioral economics, as in Lee and Jang (2013b), to examine the above questions, so that external influencing factors (such as the impact of hotel location) are eliminated. The experimental economic methodology for dealing with consumer research questions was initially advocated by Ariely and Norton (2007) in cases where abstractions had to be used to capture the essential elements of the investigated phenomenon. More recently, Nicolau and Sellers (2012), uncovering the relation between willingness to pay and product bundling in hospitality, suggested that the link between experimental economics and tourism should be reinforced to detect nonrational economic behavior.

2. Theory

As observed by Rajendran and Tellis (1994), despite its intuitive appeal, reference price began to be formally modeled only in the late 1980s. The concept of reference price has been conceptualized through multiple theoretical approaches, leading to many different operationalizations of the reference price construct (Rajendran and Tellis, 1994). To disentangle these various perspectives on the topic, a number of comprehensive literature reviews have attempted to integrate them. Mazumdar et al. (2005) present a review of published articles on reference price, dealing with (i) the formation of reference price, (ii) the retrieval and use of reference price, and (iii) the influence of reference price on various purchase decisions and evaluations. Kalyanaram and Winer (1995) developed three empirical generalizations based on the research on reference price, observing that reference prices have a significant impact on consumer behavior concerning the evaluation of past prices, sensitivity to price losses, and purchase and brand decisions.

Particularly relevant to our study is the contribution of Rajendran and Tellis (1994), who explore the temporal and contextual components of reference prices. They define the temporal dimension as the internal reference price—the prices faced by consumers on past purchase occasions and stored in their memory. The contextual component includes the different prices of products within the same product category (Mazumdar and Papatla, 1995). This formulation of reference price, based on the current price of some contextual good or service, is denoted the "external reference price" (Hardie et al., 1993; van Oest, 2013). It is important to note, however, that some empirical evidence suggests that these two mechanisms operate simultaneously and should be assessed jointly (Mazumdar and Papatla, 2000).

The idea that individuals make judgments and choices based on reference prices can shed light on the tourism and hospitality relationship between prices and consumers' response (Nicolau, 2011). The reference price concept in its multiple formulations becomes particularly relevant in contexts where favorable conditions for dynamic pricing occur, as the importance of reference price increases with price instability (Winer, 1986). In sectors highly characterized by dynamic pricing scenarios (e.g., the airline, hospitality, and retail industries), consumers can frequently pay a different price for the same good or service, increasing the potential for perceptions of unfairness with respect to past purchases and contextual cues (Xia et al., 2004 Karande and Magnini, 2011). Thus, along with the implementation of dynamic pricing, the reference price should be an essential component of managerial decisions concerning pricing, promotional strategies, and tactics.

2.1. The temporal component: reference prices and sequences of historical prices

A key aspect of reference prices is the effect past price sequences may have on their determination. Although several studies suggest that time-based pricing strategies tend to be accepted by consumers, price discrimination may be perceived as unfair if standard conventions are violated (Huang et al., 2005; Wirtz and Kimes, 2007). Recent studies have thus assessed optimal dynamic pricing strategies with reference effects (Puppe and Rosenkranz, 2011). Surprisingly, perceptions of unfairness tend to remain stable across levels of brand class or segment, varying only across levels of familiarity with dynamic pricing strategies (Taylor and Kimes, 2011).

Purchasing decisions have a temporal dimension; individuals usually form their reference prices after having observed sequences of prices (Lattin and Bucklin, 1989; Kalyanaram and Winer, 1995; Bell and Lattin, 2000) while collecting the available information (Thaler, 1985). As the hospitality industry is widely adopting dynamic pricing and revenue management techniques, the factors characterizing the formation and updating of reference prices must be investigated. What are the most important factors in a price sequence? Building on the literature, this article identifies two factors in the sequences of past prices that can affect the current reference price: the first, average, and last price seen, and the highest and the lowest price.

2.1.1. First, average, and last price

Dickson and Sawyer (1990) conducted a field study and found that the further in the past a price was, the less it contributed to the current reference price. Reference prices are often represented as a decaying weighted average of all past prices (Jacobson and Obermiller, 1990). The last (i.e., most recent) price is assumed to be the most influential, as in Nasiry and Popescu (2011). Contrary to these findings, however, Baucells et al. (2011) found in a financial setting that the first price was influential in the formation of reference prices; however, in their study, the first price was also the investor's purchasing price. Grant et al. (2010) focused on the trend of previous prices and showed that people updated reference prices asymmetrically: they adapted their reference prices more quickly to "good news" and more slowly to "bad news."

Based on this literature, we propose that recent price information is more important than older price information in the determination of the reference price. We further posit that consumers adapt more rapidly to good news (i.e., a price reduction) than to bad news (i.e., a price increase).

We thus derive the following hypotheses for the timeline factors:

H1a. The order of the previously available prices affects reference price formation, with more recent price information being more salient for consumers.