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Managing Service Expectations in Online Markets: A Signaling Theory of E-tailer Pricing and Empirical Tests☆

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Abstract

Expectations play a significant role in determining customer perceptions and satisfaction. Accordingly, retailers seek to manage customers' service expectations. However, the tangible signals of service quality that are available to brick-and-mortar retailers (such as location, store appearance, and salespersons' behavior) may not be available in online markets. Using a signaling model, we obtain conditions when Internet retailers (e-tailers) use price to manage their customers' *service* expectations. In contrast to extant theory, we find that it is possible for both low and high service e-tailers to use price in signaling their service levels. Further, we develop an appropriate deductive test of our theory based on price-ending patterns as an artifact of the signaling process. Based on this test, we find evidence that e-tailers indeed manage service expectations using price. Interestingly, we also find preliminary evidence that suggests customers implicitly associate price-ending patterns with a retailer's expected service level. We discuss several other implications of our findings for researchers and managers.

Keywords: Expectations; Internet marketing; Pricing; Price-ending; Signaling; Separating and pooling equilibrium; Retailing

Introduction

Expectations are broadly defined as "beliefs that a given response will be followed by some event" (Fishbein and Ajzen 1976, p.30, also see Mitra and Golder 2006). For retailers, service expectations are customers' "pre-purchase beliefs or evaluative beliefs" (Oliver and Winer 1987, p. 470) about their services including "all activities carried out for the purpose of encouraging the conclusion of a transaction" for example, selection, procurement, assortment, access, display, aesthetics, layout, sales help, empathy, knowledge, trust, assurance, credit, delivery, and returns (European Court of Justice 2005). Given that at least some of these activities are unobserved, customers face an information asymmetry when evaluating a retailer's services. For Internet-only retailers (henceforth, we call them *e-tailers*), this asymmetry is likely to be even larger because of two reasons. First, "expectations are not as well-formed" in new markets like the Internet (Zeithaml, Parasuraman, and Malhotra 2002, p. 367). Second, many tangible signals of service commonly used by traditional retailers are unobservable in online markets (Pan and Zinkhan 2006). For example, a customer visiting the Toys R' Us store at Times Square in New York City may use the Toys R' Us brand, prime location, large store size, the colorful Ferris wheel, and a courteous welcome as being indicative of high service. The expected service, however, is less apparent if the customer visits an e-tailer such as etoys.com. After all, there are many websites that look similar, sell similar merchandise, boast of similar high service standards, and can easily imitate each other on website content. Additionally, many e-tailers (see Table 1 for examples) are relatively unknown and unable to spend much on branding and advertising. Therefore, price remains a key (and sometimes the only) instrument influencing customers' service expectations.

There is a rich tradition of research on information economics that examines the role of price signals to solve problems arising under asymmetric information (see Kirmani and Rao 2000, for a review). In particular, past literature has examined how firms with high-quality *products* can affect customers' quality expectations using price. Note that a key assumption is that,

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Table 1
E-tailer prices of Nintendo Wii Console[a].

1	AroundTownMarket.com	$249.83
2	ThisThatandEverything.com	$258.30
3	GamesComplete.com	$258.63
4	Sureneeds	$259.47
5	Shenentech.com	$262.00
6	Computers4SURE	$266.95
7	Organime.com	$267.85
8	eCOST.com	$268.99
9	DDRUniverse	$269.00
10	NextDayPC.com	$269.66
11	ThriftyGadgets.com	$269.99
12	CompSource	$273.00
13	TrioInternational.com	$280.03
14	TyrellElectronics.com	$286.23
15	Renchi.com	$289.90
16	BuyDonlin	$293.91
17	MobilePlanet, Inc.	$294.95
18	GameBaz Video Game Store	$299.40
19	Academic Superstore	$299.95
20	Elite-Electronix(E2)	$299.95
21	Noqst	$299.97
22	YesAsia.com	$299.99
23	HKToyz.com	$299.99
24	Pro Home Shop	$299.99
25	Oemsat	$299.99
26	ProdFinds	$300.00
27	oemsat@dns4ever.com	$300.00
28	Bargains Plus	$309.00
29	North Shore Style	$339.00
30	Ncsx	$345.00
31	VideoGameAction.com	$349.89
32	vFlyer Inc.	$350.00
33	BidzTrade.com	$375.00
34	Curious Minds, LLC	$389.95
35	CompUPlus.com	$389.99
36	AverestStore	$390.00
37	ACE Photo & Digital	$394.99
38	Shop.com	$397.99
39	Equistarr Internet Shops	$399.99

[a] Prices as of December 19, 2007 based on Google Product Search results.

in any signaling equilibrium, the firm that offers high-quality products will incur the cost of signaling since customers prefer higher quality products. We amend this framework to fit the retail service context. This is an important and needed theoretical contribution for two key reasons. First, more than 80 percent of all products in the US are sold by multiple retailers (Boyle 2003). So, why would a retailer engage in costly actions to influence expectations about a product that is also available at other stores? This question is even more relevant for e-tailers because the online environment makes it almost costless for the customer to navigate away to another e-tailer selling the same product. Therefore, we believe it is more likely that an e-tailer would seek to influence expectations about its *service* rather than a physical product that it sells (which is identical across stores). Second, we question whether a price signal is necessarily provided by the high service retailer. We offer two reasons why it may be plausible for a low service e-tailer to incur the cost of signaling its true (low) service level: (1) it (i.e., the low service e-tailer) is expected to be less expensive across-the-board, that is, for different products and over time and, (2) it is easier to satisfy or delight customers when they expect low service. Later, we provide more details about these reasons and their implications on signaling.

In addition to extending signaling theory to include retail service, in general, and signaling by low service retailers, in particular, another key contribution of this paper relates to the empirical testing of our theory in online markets. Empirically validating a theory of an unobservable variable is challenging because the variable under investigation, by definition, is unobserved and thus cannot be directly utilized in any empirical tests. We provide a solution to this challenge by developing and implementing an appropriate deductive test on price-endings—an observed artifact of our theory. Based on that test, we provide empirical evidence consistent with e-tailers signaling both low and high service. In particular, our finding on e-tailers signaling low service fills a void in terms of finding "examples (of firms that) deliberately under-represent the quality of their products or services" (Kopalle and Lehmann 2006, p. 9).

In sum, the objectives of this paper are twofold: (1) theoretically, to examine conditions when a retailer can use price to either signal high or low service so as to manage customers' service expectations and (2), empirically, to examine whether these conditions exist in online markets. The paper is organized in five sections. First, we review two streams of literature on signaling and online pricing, and propose our thesis on service expectation management. Second, we present a signaling model of service expectation management in which price is a credible signal of service. Third, we introduce a strategy for testing a theory of an unobservable. In this section, we deduce price-ending patterns as an observable artifact of our theory and derive a testable proposition based on price-ending patterns. The fourth section describes the data, estimation, and results of empirical tests on observed price-ending patterns. Finally, we conclude by summarizing the key findings, discussing the implications and providing directions for further research.

Customer expectations and e-tailer prices

As stated in the introduction, unlike traditional retailers (e.g., warehouse clubs, discount stores, department stores), e-tailers are not able to rely on physical characteristics (e.g., wide concrete aisles with high ceilings, unarranged product bins, shopping mall location) to signal their service and influence customers' expectations. Yet, signaling is desirable by e-tailers since many elements of retail service like personnel (e.g., specialized knowledge of merchandise buyers), delivery and returns (e.g., time or hassle involved in shipping or returning), and procurement (e.g., fashion leader or follower) may not be apparent to customers, at least in the short term. Even when the past service level of an e-tailer is reported through prior customers' ratings or reviews, such feedback is often subjective (i.e., hard to evaluate), mixed (i.e., high variance), dated (i.e., pertains to past service which may not reflect current performance), endogenous (e.g., the number of users providing feedback is not exogenously determined), or even biased (i.e., created by interested parties, e.g., see Mayzlin 2006). Moreover, for many e-tailers, customer