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Marketing modeling for e-business

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Abstract

The emergence of e-business is opening up new challenges and opportunities for marketing modelers. Drawing on an illustrative pool of recent articles we seek to convey two points in this note. First, that available theories and approaches may be insufficient in tackling many e-business problems. Second, that marketing modeling for e-business can enrich our field quite remarkably in terms of new theories, data and methods.

Keywords: Marketing models; e-business; Internet marketing

1. Introduction and positioning

Few are likely to disagree with the assertion that marketing modeling efforts over the next decade will reflect the Internet's growing influence on consumer behavior and marketing strategy. While marketing issues facing the likes of Folgers, Intel, Microsoft, Nestle, P&G, Sony and Wal-Mart dominated our journal pages, the future is likely to see more of the issues that concern "new age" companies such as Amazon.com, eBay, Netscape, Palm, Priceline, Webvan and Yahoo, whose success is intertwined with the nature and extent of consumers' adoption and use of the Internet.

Leeflang and Wittink (2000) offer an insightful critique of extant marketing modeling efforts and propose fascinating avenues for future research. They have also delineated an accessible model building process. Leeflang and Wittink maintain a slant toward models dealing with grocery products that involve UPC scanner data. Grocery products have several distinct characteristics. They are typically in the mature stage of the product life cycle. Marginal costs are not insignificant relative to consumers' willingness to pay. Network externalities are normally absent. The products are repeat-purchased. Data sources are rich, and marketing models in this context are strongly grounded in econometric and statistical methods. Branding, pricing, promotion and physical distribution are key variables in marketing grocery products. Looking ahead, we see Leeflang and Wittink's (2000) blueprint yielding valuable answers for firms such as Coca Cola, IRI, Nielsen, P&G, Peapod and Webvan.

We seek to complement Leeflang and Wittink's efforts by emphasizing modeling efforts related to Internet-driven products and activities. (By "Internet-driven" we mean that a significant component of the buying process (e.g., information search, order-

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Table 1
Summary of illustrative articles on e-business

Study	Genre	Key question(s)/issue(s)	Approach/model	Key finding(s)/recommendations
Ansari et al. (2000)	Data; method	What is an appropriate methodology for an Internet recommendation system for movies and other such consumer products that have unobserved heterogeneity?	Bayesian model based on *EachMovie* dataset containing customers' and critics' ratings of movies.	• Model based on unobserved customer heterogeneity and unobserved product heterogeneity performs well on a data set involving 2000 customers and 340 movies.
Bakos and Brynjolfsson (1999, 2000)	Theory: analytical	What is the optimal form of offering digital information goods on the Internet? How does size affect market power of information providers?	Math. statistical approach based on law of large numbers.	• For information goods with zero marginal cost, the pure bundling strategy is optimal for a monopolist. • Among competing providers of information goods, the one with the larger bundle would be able to outbid the rivals for exclusive rights to market a new good.
Balasubramanian (1998)	Theory: analytical	How can the competition between direct and conventional retail channels be modeled? What are the implications?	Circular market model with a direct marketer and multiple retailers.	• When information can be freely disseminated on the Internet, it may be optimal for a seller to provide lower levels of information. • The impact of entry of a local retailer (or direct retailer) affects strategies and profits of local retailers (or of all retailers).
Bradlow and Schmittlein (2000)	Method	How can the performance of Internet search engines be modeled and measured? Which engines search the best and why?	A probabilistic "proximity" model based on distance between a URL and a search engine. Data from search engines.	• Altavista and Northern Light locate the most URLs for business terms. The size of the search engine in terms of the number of web pages indexed influences its search performance.
Brynjolfsson and Smith (2000)	Theory: empirical	Is the Internet an efficient, "frictionless" market?	Full factorial research design. Price data collected from websites and from retailers.	• The Internet offers less friction than conventional markets, characterized by lower prices and fine price adjustments. • Yet heterogeneity in consumer awareness and trust is still a source of sizable dispersion in online prices.
Degeratu et al. (2000)	Theory: empirical; data	Does a consumer's choice behavior differ across online and offline transactions?	Brand choice model based on panel data from Peapod and IRI.	• Factual, non-sensory information affects online choice more strongly than sensory cues. • Features that restrict consumers' consideration sets such as Peapod's Personal Lists may keep price sensitivity lower online than offline.