

Suresh Kotha
Shivaram Rajgopal

University of Washington

Mohan Venkatachalam

Duke University

The Role of Online Buying Experience as a Competitive Advantage: Evidence from Third-Party Ratings for E-Commerce Firms*

I. Introduction

This study examines whether the quality of online buying experience represents a competitive advantage for Internet firms focused on business to consumer e-commerce (“e-commerce” firms). Forrester Research, a consulting firm, estimates that revenues in the business to consumer segment will grow from \$20 billion in 1999 to \$184 billion by 2004. Such explosive growth is due, in part, to the superior shopping ex-

* Shivaram Rajgopal and Suresh Kotha appreciate funding from the Herbert Jones Foundation, administered by the Center for Technology Entrepreneurship at the University of Washington. Mohan Venkatachalam appreciates funding from the Center for Electronic Business and Commerce, Stanford University. Thanks to Yulin Long and Qian Wang for excellent research assistance and to Nola Jean Bamberry for editorial assistance. We thank two anonymous referees, Shannon Anderson, Mary Barth, Pradeep Chintagunta (the editor), Iliia Dichev, George Foster, Jennifer Francis, Mark Lang, Richard Leftwich, D. J. Nanda, Anu Ramanathan, Abbie Smith, Dave Wright, and workshop participants at the University of Chicago, the University of Michigan, the University of North Carolina at Chapel Hill–Duke University conference, the 2000 Stanford Summer Camp, and the Wharton Technology-Strategy group for comments and helpful suggestions. Contact the corresponding author, Shivaram Rajgopal, at rajgopal@u.washington.edu.

(Journal of Business, 2004, vol. 77, no. 2, pt. 2)
© 2004 by The University of Chicago. All rights reserved.
0021-9398/2004/7702S2-0006\$10.00

Claims have often been made that the quality of online buying experience—Web site usability, product selection, the extent of customer confidence, and the quality of customer relationships—are crucial to the success of e-commerce firms. We posit that Web site usability and product selection can be competed away via imitation, while customer confidence and relationship services represent a sustainable competitive advantage. Evidence from the association between third-party ratings of online buying experience and firms’ Tobin’s q for a sample of 46 e-commerce firms during the period 1999–2000 is consistent with our posited hypotheses.

periences that new e-commerce firms offer. Jeff Bezos, the chief executive officer (CEO) of Amazon.com, contends that the popularity of his company's Web site is due to the superior shopping experience that Amazon.com offers (Taylor 1996, p. 132): "Bill Gates laid it out in a magazine interview. He said, 'I buy all my books at Amazon.com because I'm busy and it's convenient. They have a big selection, and they've been reliable.' Those are three of our four core value propositions: convenience, selection, [and] service. The only one he left out is price: we are the broadest discounters in the world in any product category. . . . These value propositions are interrelated, and they all relate to the Web." Consistent with this idea, the resource-based view in the strategy literature (e.g., Wernerfelt 1995) posits that creating unique online buying experiences that cannot be easily imitated by the firm's rivals can lead to a sustainable competitive advantage and long-run economic value.

Skeptics, however, point to low barriers to entry and intense competition on the Web and argue that other firms, especially those with deep pockets, can easily imitate many aspects of the online buying experience (*Economist* 2000). For example, Steven Riggio, the CEO of Barnes & Noble, observes (*Fortune* 1997, p. 248): "Anything Amazon.com can do on the Internet, so, too can Barnes & Noble. There was a mystique about how difficult it was to get started on the web, but it is quickly fading. Hiring hot designers from Silicon Valley, Barnes & Noble now offers a web shop front that's just as inviting and useful as Amazon's, with easy-to-use subject indexes, online author events every day, book forums, book reviews, and other features." Consistent with this stand, it is often noted that if barriers to imitating online buying experiences are low, any excess rents from such strategies designed to build them will be competed away through imitation and innovation (Porter 2001; Varian 2002).

To test these competing arguments, we use a sample of 46 pure e-commerce firms over four quarters, starting with the fourth quarter of 1999, and examine the association between third-party quality ratings of online buying experience and competitive advantage as measured by Tobin's q . The quality ratings are compiled by Gomez Advisors (Gomez), a respected Internet rating firm. Gomez, as explained in greater detail in Section III, provides a scorecard that attempts to capture systematically the quality of online buying experience along five dimensions: (1) Web site usability, (2) customer confidence in the Web business, (3) the selection of goods and services on the site, (4) the effectiveness of relationship services such as virtual community building and site personalization, and (5) the extent of price leadership (see the appendix for details).

We hypothesize that Web site usability and product selection do not create a competitive advantage because such attributes are easily observable and, hence, susceptible to imitation by others. However, customer confidence and relationship services are developed using internal competencies that are complex, specialized, and tacit and are, hence, not easily observable or imitable by competitors (Lippman and Rumelt 1982). We do not offer specific pre-

dictions about the fifth dimension, price leadership, because of the conflicting arguments in the literature.

Our results are generally consistent with our predictions. We find that customer confidence in the Web business, price leadership, and the effectiveness of relationship services such as virtual community building and site personalization are positively associated with Tobin's q . The presence of competition does not eliminate the positive influence of these aspects of the buying experience on Tobin's q . As predicted, we find no association between Tobin's q and both Web site usability and the selection of goods and services. Moreover, benefits that stem from increased Web site usability and broad product selection decrease with the extent of competition facing the firm. Our findings are robust to numerous sensitivity checks.

The remainder of the article is organized as follows: Section II develops the hypotheses. The data and empirical specifications are discussed in Section III. Section IV presents the results of the empirical estimation, and Section V provides concluding remarks.

II. Hypotheses: Online Buying Experience and Competitive Advantage

We anchor our theoretical arguments in the resource-based theory of the firm (Barney 1991; Wernerfelt 1995) and, specifically, on the concept of inimitability because of causal ambiguity. The notion of causal ambiguity represents an important tenet of the resource-based theory. It refers to the "basic ambiguity concerning the nature of the causal connections between actions and results" (Lippman and Rumelt 1982, p. 420). Because causal ambiguity creates complex, specialized, tacit knowledge, investing in competencies that rely on such ambiguity can enable firms to maintain their barriers to imitation and thus create sustainable competitive advantage. In the sections that follow, we propose a set of arguments that link Gomez's five online customer experience dimensions to competitive advantage and then discuss whether such advantage is sustainable.

A. *Ease and Selection as Sources of Imitable Advantage*

Web site usability (EASE). Neilsen (2000) defines Web site usability as the ease with which users can navigate a site. Web site usability is affected by the speed with which a Web site loads and the manner in which information is structured and integrated with the graphic design layout, development, and final construction of the Web site.

Low entry barriers and the lack of location-based advantages on the Internet make e-commerce firms more dependent on customers' willingness to surf particular Web sites and then undertake a commercial transaction. Online buying is based on the premise that buyers can access full information about products and make informed decisions. However, searching for information

can be costly in the physical world (Stigler 1961) and equally frustrating online. Hence, improving the usability of a Web site could result in enabling buyers to search and process information more easily, thus converting them into paying customers.

Forrester Research notes that more than half the online buyers use the “search” functionality to find products—and the better the search tools, the more they buy (Hof 2001). Brynjolfsson and Smith (2000) find that online retailers who make it easier to find and evaluate products are able to charge a price premium to time-sensitive customers. On the cost dimension, an efficient Web site design layout can reduce the cost of acquiring new customers and reduce the need for extensive customer support as customers navigate the site and help themselves. An aesthetically appealing Web site can be a differentiator in a cluttered marketplace and can attract new customers. Thus, cost-efficiency and differentiation, derived from Web site usability, can enable a firm to achieve an advantage vis-à-vis its competitors. If this advantage were sustainable, greater future profitability would follow.

On-site resources (SELECTION). Following Evans and Wurster (1999), we define on-site resources as the richness of the product and service information that a firm has assembled on its Web site. Customers are drawn to a site because of its outstanding product information and selection (McWilliam 2000). Recognizing this, many e-commerce firms exploit the notion of “infinite shelf space,” explicitly touting selection as the most important value proposition vis-à-vis their traditional offline counterparts. Smith, Bailey, and Brynjolfsson (2000) argue that customers, having come to a site, choose to buy products if the site has better search and suggestion tools, extensive product reviews, product samples, and faster checkout services. These findings suggest that the greater the on-site resources assembled by a firm, the greater the firm’s potential to attract new customers and retain existing customers. Retaining existing customers leads to lower customer acquisition costs in the future while attracting new customers assists in increasing sales. Thus, providing better on-site resources should lead to greater future profitability, *ceteris paribus*.

Imitability of EASE and SELECTION. Skeptics argue that these aspects of superior online shopping experience can be easily imitated by both online and offline competitors. Specifically, on the Internet, since every competitor is a “click” away, information about marketing-mix variables such as the depth of product offerings (i.e., selection) is highly transparent and readily observable by all competitors in the marketplace. The design and layout of a firm’s Web site and, more important, its functionality (i.e., ease of navigation) can be readily studied, understood, and imitated by industry rivals. Guidelines (i.e., formalized and codified design rules) and information about designing and implementing user-friendly and effective Web sites are widely disseminated and discussed (Nielsen 2000). In other words, as the Internet has become established as a commercial medium, the tacitness and complexity involved in designing user-friendly Web sites or offering a broad selection have become

less ambiguous. Therefore, attempts to provide superior online buying experience via EASE and SELECTION are unlikely to result in long-run competitive advantage, thereby leading to the following hypothesis (stated in alternate form):

HYPOTHESIS 1. A strategy focused on Web site usability and product selection is not related to future profitability.

B. Trust and Relationships as Sources of Sustainable Advantage

Customer confidence (TRUST). Customer confidence, or trust, is a critical factor in any relationship where the customer does not have direct control over the merchant's actions (Jarvenpaa, Trackinsky, and Vitaleet 2000). Following Mayer, Davis, and Schoorman (1995, p. 712), we define trust as the "willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party."

Several characteristics of the Internet intensify the importance of customer confidence, or trust, in Internet-based exchange relationships. The novelty of the Internet creates pervasive uncertainty among buyers and sellers. Many online firms are relatively new with short operating histories, and buyers do not always have full information about them. Consequently, buyers face moral-hazard and adverse-selection problems in choosing among alternative sellers of products (Holmstrom 1985). Interestingly, trust has been found to affect the behavior of customers even in situations where the buyer's switching costs are low (Chow and Holden 1997). In the online space, firms engender customer trust by providing explicit statements of privacy policies, operating highly reliable Web sites, and prominently displaying information on return policies and the availability of customer service via e-mail or telephone (Urban, Sultan, and Qualls 2000). This, in turn, may induce online purchasing decisions. Thus, efforts to enhance customer confidence or trust would attract new customers and retain existing customers, thereby resulting in reduced customer acquisition costs, increased sales, and higher future profitability.

Relationship services (REL). Relationship services capture a firm's ability to create electronic relationships with customers through personalization and virtual communities. Virtual communities are online forums that include contributions from, and encourage discourse among, specific sets of like-minded "netizens." Hagel and Armstrong (1997) note that online communities that serve the need for communication, information, and entertainment attract customers and heighten their involvement with the firm. Thus, virtual communities can enhance online buying experiences and help differentiate an online firm.

Personalization is another important approach to differentiation that many firms undertake to generate repeat buying (e.g., Amazon.com, CDNow, and Yahoo). Firms that closely meet the needs of their buyers by offering greater personalization satisfy a larger number of customers (Kotha 1995; Nayyar

1995). Personalization actions such as frequent buyer incentives, one-click support for repeat buying, and the capability to make service calls online, for example, the “Eyes” program run by Amazon.com (Kotha 1998) enhance online firms’ ability to induce customers to buy on their site and to increase the customer’s costs of switching to competitors. Thus, personalization creates loyal customers, leading to lower customer acquisition costs and better future profitability.

Inimitability of TRUST and REL. Reed and DeFilipi (1990) argue that firms sustain advantages by investing in causally ambiguous competencies and that such competencies result from three characteristics—tacitness, complexity, and specificity. “Tacitness” refers to the implicit and noncodifiable accumulation of skills that generally results from “learning by doing” (Polanyi 1966). “Complexity” results from having a large number of interdependent skills and assets (Porter 2001), while “specificity” refers to the transaction-specific skills and assets that are utilized in the production processes and in the provision of services to particular customers. Reed and DeFilipi (1990, p. 91) note that central to the idea of specificity is a symbiosis between the firm and the customer that produces mutually profitable, long-term relationships. Any of these competency characteristics can produce ambiguity between the firm’s business actions and outcomes that create its advantage. Ambiguity makes a firm’s actions less susceptible to imitation by the competition.

Trust and relationship building actions are dependent on competencies that have causally ambiguous characteristics because such actions tend to be tacit, complex, and specific to customer segments in which a firm operates. In many ways, developing trust is intricately intertwined with efforts to build a firm’s reputation, and extant research has shown that a firm’s reputation results from complex processes that are only imperfectly tractable and imitable (Dierickx, Cool, and Barney 1989). The processes and routines used to build trust and customer relationships are path dependent and specific to a firm. For example, Rindova and Kotha (2001) illustrate the degree of complexity, tacitness, and specificity involved in Amazon.com’s efforts to build their reputation on the Internet. They also show how Barnes & Noble and CDNow, despite significant efforts, were unable to imitate Amazon.com’s approach successfully.

While the guidelines for building easy-to-use Web sites have been codified, the competencies that an Internet firm employs to build and nurture relationships with its customer segments through personalization strategies and virtual communities are causally ambiguous. Many of the technologies, processes, and procedures used by firms such as Amazon.com to collect, sort, and analyze personal information to respond better to their customers’ needs are based on in-house know-how that has evolved through learning by doing. These technologies remain largely proprietary to the firm, which in turn creates barriers to imitation. In sum, the complexity of social processes through which trust and relationships are built makes them an inimitable competitive advantage, which leads to the following hypothesis (stated in alternate form):

HYPOTHESIS 2. A strategy focused on trust and relationship services is positively related to future profitability.

C. Price Leadership (COST)

The price aspect of the online buying experience focuses on the cost competitiveness of purchasing a typical basket of goods or services online vis-à-vis traditional physical retailers. It is argued that customers primarily choose to shop online because of the lower price that online retailers offer. For firms such as Buy.com that compete on low price, online technologies provide a low-cost, extremely efficient way to display merchandise, attract customers, and handle orders. *Ceteris paribus*, if the firm makes up for the lower prices with greater volume, a price-leadership strategy would be positively associated with long-run profitability (Porter 1980). Extant research has shown that a well-executed strategy of cost leadership does lead to long-run profitability (Kotha and Vadlamani 1995).¹ However, Porter (2001), a strong proponent of the cost leadership strategy, has observed that, on the Internet, both costs and revenues are “fuzzy” at best. For instance, although Buy.com pursues a price leadership strategy, it may not have the capabilities and/or scale economies necessary to optimize its value-chain activities in order to successfully support such a strategy. As arguments relating price leadership to future profitability are ambiguous, we propose the following hypothesis (in alternate form):

HYPOTHESIS 3. A strategy focused on price leadership is related to future profitability.

III. Data and Empirical Specifications

A. Data

We begin with the universe of firms for which Gomez provides quarterly online buying experience scorecards. Gomez tracks a Web site if the firm operates in the national market in an industry that meets certain (undisclosed) minimum standards of service in terms of the breadth and depth of products sold. Gomez collects data by directly examining the Web site, monitoring the performance of the firm’s secure and nonsecure Web pages every 5 minutes, and conducting transactions and customer service interaction over the telephone and the Internet. Such transaction data are supplemented via a questionnaire filled out by the covered firms. Data thus collected feed into 150–250

1. Under the price leadership strategy, a firm that successfully drives down costs per unit of output competes on price and still manages to earn gross margins that are higher than the industry average, *ceteris paribus* (e.g., Wal-Mart and Southwest Airlines). To achieve lower costs, the firm establishes tight control systems, minimizes overhead, and pursues scale economies (Porter 1980). A firm configures its value-chain activities for efficiency and ensures that such activities mutually reinforce each other in achieving cost minimization. Although rivals can mimic any of these activities individually, it is much more difficult to imitate the entire system of competing via low cost (Porter 2001).

criteria for every ranked firm and are condensed into a score for each of the five dimensions of online buying experience (see appendix).

Every quarter Gomez publishes a score on these five aspects on a scale of 1–10. We hand collect the scorecards for winter 1999, spring 2000, summer 2000, and fall 2000 from Gomez's Web site (<http://www.gomez.com>). Because Gomez releases scores for each industry-firm on different dates throughout a quarter, we match these scores with the firm's fiscal quarter in which the scores are released.² The market value of equity is measured on the last day of the fiscal quarter in which the scores are released. Thus, market values corresponding to the spring 2000 quarter are as of March 31, 2000.

We obtain Gomez scores for 622 online and offline firms. Of these, we find only 51 firms that operate predominantly online and trade in public markets. Following Hand and Lev (2000) and Trueman, Wong, and Zhang (2000), we classify a publicly traded firm as a pure online firm if the firm is a part of the Internet stock list compiled by <http://www.internet.com>. We eliminate three firms that derive less than 50% of revenues from online operations and two firms for which financial information is unavailable. Table 1 provides the final list of 46 pure Internet firms used in the study.

We hand collect all financial information variables from Securities and Exchange Commission (SEC) 10-K and 10-Q filings from the SEC's EDGAR database at the <http://www.sec.gov> Web site. We obtain stock prices from <http://www.yahoo.com> and Bloomberg data services. Since stock price data for some firms are unavailable, we are left with 111 usable firm-quarter observations.

B. Empirical Specifications

In our specifications we use the Tobin's q measure as a proxy for the firm's performance and competitive advantage (see Lang and Litzenberger 1989). Economists and strategy researchers have employed Tobin's q extensively to study the effects of intangible assets such as market share, focus, brand, research and development, information technology, and advertising on firms' long-term value (e.g., Cockburn and Griliches 1988; Montgomery and Wernerfelt 1988; Hall 1993; Lang and Stulz 1994; and Bharadwaj, Bharadwaj, and Konsynki 1999). The Tobin's q measure is a direct, forward-looking, and cross-sectionally comparable measure of long-term profitability (Bhardwaj et al. 1999). Moreover, for Internet companies, other performance measures such

2. Two points about the data need mention. First, as an illustration of the timing of disclosures and market data, note that spring 2000 scores for mortgage brokers were released on February 11, 2000. Hence, for a calendar-year mortgage broker, spring 2000 scores are considered as belonging to the first calendar quarter of 2000. Second, for six firms (Amazon.com, Buy.com, Netbank, Value America, Yahoo, and Barnesandnoble.com) in our sample, Gomez provides scores in multiple product categories. For example, Gomez scores for Amazon.com are available for books, music, videos, toys, electronics, and auctions. In such cases, we use the equally weighted average of these scores as the independent variable in our empirical specifications. Because segment disclosures of product-wise sales are patchy or nonexistent, we cannot use weighted average scores.

TABLE 1 Sample of Firms

Name		Name	
1	1-800-flowers.com	24	Insweb
2	Adam.com	25	Mortgage.com
3	Amazon.com	26	Netbank
4	Ameritrade	27	Onhealth
5	Autoweb.com	28	Outpost
6	Autobytel.com	29	Peapod
7	Barnesandnoble.com	30	Pets.com
8	Bigstar.com	31	PlanetRx.com
9	Blue Fly	32	Quotesmith.com
10	Buy.com	33	Realtor.com
11	CDNow	34	SmarterKids.com
12	drKoop.com	35	Sportsline.com
13	Drugstore.com	36	Streamline
14	E*Trade	37	Theglobe.com
15	Ebay	38	Travelocity
16	E-Loan	39	Uniglobe.com
17	eToys.com	40	Value America
18	Expedia	41	varsitybooks.com
19	fatbrain.com	42	Utrade
20	Fogdog	43	Web Street
21	FTD	44	WebMD
22	HealthCentralRX.com	45	Webvan
23	HomeSeekers.com	46	Yahoo

as reported or forecasted earnings are often negative and are, hence, uninterpretable as a measure of long-run value.

The use of Tobin’s q for capturing intangible value stemming from online buying experiences is based on the assumption that the long-run equilibrium market value of a firm must be equal to the replacement value of its assets, thus ensuring a q of one. Instances where q is greater than one are interpreted as signifying an unmeasured source of value and are generally considered as contributing to a firm’s long-run competitive advantage and, hence, long-run value. We estimate the following regression specification:

$$\begin{aligned}
 \text{Tobin's } q_{jt} = & \gamma_0 + \gamma_1 \text{DIMENSION}_{jt} + \gamma_{2i} \text{IND}_{ijt} + \gamma_{3K} \text{QTR}_{kjt} \\
 & + \gamma_4 \text{GM}/\text{TA}_{jt} + \gamma_5 \text{PD}/\text{TA}_{jt} + \gamma_6 \text{MKTG}/\text{TA}_{jt} \quad (1) \\
 & + \gamma_7 \text{GA}/\text{TA}_{jt} + \varphi_{jt}.
 \end{aligned}$$

Consistent with Chung and Pruitt (1994), we measure Tobin’s $q = (\text{MVE} + \text{PS} + \text{DEBT})/\text{TA}$, where $\text{MVE} = (\text{closing price of common shares at the end of the fiscal quarter}) \times (\text{number of common shares outstanding})$; $\text{PS} = \text{book value of the firm’s outstanding preferred stock}$; $\text{DEBT} = \text{long-term debt} + (\text{short-term liabilities} - \text{short-term assets})$; and $\text{TA} = \text{book value of total assets}$. The variable DIMENSION represents one of the dimensions of online buying experience discussed in Section II (i.e., EASE , SELECTION , TRUST , REL , and COST); IND represents an industry dummy that reflects a firm’s membership in each of eight markets (i.e., $i =$

1, ..., 8: personal finance, shopping, health, computers and office equipment, auto, travel, home and garden, and auctions); and QTR represents quarter dummies. Subscripts j and t are firm and time subscripts, respectively.

The industry dummies control for unmodeled variables that might covary with the firm's industry membership, and quarter dummies control for period effects. To control for certain components of net income that may contain information about future profitability, we include gross margin (GM/TA), that is, the sales minus cost of goods sold, product development expenses (PD/TA), marketing expenses (MKTG/TA), and all other administrative expenses (GA/TA; see Demers and Lev 2001). All the financial variables are represented as a percentage of total assets and act as controls for the firm's current gross margins and intensity of research, marketing, and administrative spending. We control for these expenditures because a high level of online buying experience without reference to costs incurred to make such experience possible should not, by itself, imply a competitive advantage.

Our primary coefficient of interest is γ_1 . Hypothesis 1 predicts that γ_1 for EASE and SELECTION is zero. Hypothesis 2 predicts γ_1 for REL and TRUST to be positive, while hypothesis 3 states that γ_1 for COST is either positive, negative, or zero. However, it is important to note that coefficient γ_1 is not likely to be a cross-sectional constant and is bound to vary with the competitive environment facing the firm. Modeling the effect of the competitive environment on γ_1 is also important for understanding the extent to which the long-term advantage stemming from each dimension of online buying experience is competed away or sustained as per the three hypotheses.

The impact of competition. As posited before, the extent to which firms are able to obtain superior returns by providing better online buying experiences depends on the barriers to imitation (Tirole 1988; Varian 2002). However, barriers to imitation are never insurmountable (Porter 1980) and depend on the source of advantage, the industry, and the extent of competition. We posit that the higher the level of competition (i.e., the larger the number of rivals in the firm's product market space), the greater the likelihood that benefits accruing to firms will be competed away through imitation, especially for the EASE and SELECTION dimensions. We use the number of firms in the industry (COMP) that operate on the Internet, as classified by the Gomez database, as a proxy for the level of competition. We posit that firms with fewer competitors in their product market space are more likely to reap future benefits from providing superior online buying experience.

To guard against the possibility of other factors affecting the impact of competition on γ_1 , we consider and elaborate below the effects of the probability of a firm's survival and of the NASDAQ crash in Internet stocks.

The probability of survival. A firm that has limited capital to keep up with its expenditure (i.e., one with a higher "cash burn") will be less likely to survive and reap the excess rents from strategies designed to improve the online buying experience. Following Demers and Lev (2001), we use the ratio of cash flow from operations to the cash balance at the end of the quarter

(BURN) as our proxy for cash burn. Since most firms' cash flow from operations is negative, a high negative number indicates extensive cash burn and a lower likelihood of survival. For firms with positive cash flow from operations, we set BURN to zero. The higher the BURN variable, the higher the likelihood of survival and, hence, the higher the potential future benefits from providing superior online buying experiences.

The April 2000 crash. To ensure robust results, we examine how the stock market crash in e-commerce stocks in April 2000 affected the relation between online buying experience and Tobin's q . Recent research finds that the pricing of various factors such as Web traffic significantly declined after the April 2000 sell-off (e.g., Demers and Lev 2001; Keating, Lys, and Magee 2003; Rajgopal, Venkatachalam, and Kotha 2003). If the relation between online buying experience quality and Tobin's q results from systematic overvaluation prior to the crash, we should observe significant declines in this relationship after the crash. We capture the impact of April 2000 sell-off using a dummy variable (POST) that is set to one if the observation corresponds with a quarter ending after April 1, 2000, and zero otherwise.

The above discussion leads to the following model, which captures the cross-sectional differences in γ_1 :

$$\gamma_1 = \alpha_0 + \alpha_1 \text{COMP} + \alpha_2 \text{BURN} + \alpha_3 \text{POST}. \quad (2)$$

For parsimony, we substitute equation (2) into equation (1) and estimate equation (3) as follows:

$$\begin{aligned} \text{Tobin's } q_{jt} = & \gamma_0 + \gamma_1 \text{DIMENSION}_{jt} + \gamma_{1a} \text{DIMENSION}_{jt} \times \text{COMP}_{jt}, \\ & + \gamma_{1b} \text{DIMENSION}_{jt} \times \text{BURN}_{jt} + \gamma_{1c} \text{DIMENSION}_{jt} \times \text{POST}_t, \\ & + \gamma_2 \text{COMP}_{jt} + \gamma_3 \text{BURN}_{jt} + \gamma_4 \text{POST}_t + \gamma_{5i} \text{IND}_{ijt}, \\ & + \gamma_{6k} \text{QTR}_{kjt} + \gamma_7 \text{GM/TA}_{jt} + \gamma_8 \text{PD/TA}_{jt} + \gamma_9 \text{MKTG/TA}_{jt}, \\ & + \gamma_{10} \text{GA/TA}_{jt} + \varphi_{jt}. \end{aligned} \quad (3)$$

We include the main effects of COMP, BURN, and POST for completeness.³ We expect the coefficient on the interaction term (γ_{1a}) for the level of competition to be negative. Since a higher BURN represents a higher likelihood of survival than does a lower cash burn, we expect γ_{1b} to be positive. Finally, if the relation between the online buying experience quality and Tobin's q results from systematic overvaluation prior to the crash, coefficient γ_{1c} will be negative.

We use a panel data set that has multiple observations for the same firm over a few time periods, and our inferences can be potentially affected by

3. Our inferences are unchanged if we estimate eq. (3) excluding the main effects of COMP, BURN, and POST variables.

serial correlation in the error terms. To control for serial correlation, we use the generalized least squares procedure to estimate all our models.

IV. Descriptive Statistics, Results, and Discussion

A. Descriptive Statistics

Panel A of table 2 provides descriptive statistics for the variables used. Note that we have only 50 firm-quarter observations for the COST dimension. Gomez does not rate the COST dimension for many industries (e.g., apparel, furniture, gifts, health advice, home buying, insurance, and sporting goods). It is evident from panel A that the scores display modest variation. The standard deviation scaled by the mean score ranges from about 20% for the ease of use (EASE) dimension to 29% for the relationship (REL) dimension. We also compute an equally weighted average score of the four dimensions excluding COST (CSCORE).⁴ This variable displays the least cross-sectional variation (SD divided by the mean is 18%). Limited variation among scores might dampen the power of the empirical tests in detecting significant relations between the scores and the performance measures. Such limited variation probably results from (i) our exclusive focus on pure Internet firms and (ii) Gomez's choice to cover well-followed Web sites that meet certain minimum thresholds of customer confidence and reliability. Hence, self-selection in firm coverage possibly precludes more cross-sectional variation in reported scores.

The descriptive statistics related to financial measures reveal some interesting regularities. Consistent with recent research on Internet stocks, we find that the median firm incurs a loss of \$11.45 million with median sales at \$15.10 million. These losses are not surprising in light of the firms' high marketing and administrative expenses. The mean (median) marketing expenditure expressed as a percentage of total assets is 10% (8%), while the mean (median) administrative expenditures as a percentage of sales is 7% (4%). Despite the losses, these firms enjoyed significant market capitalizations and Tobin's q 's. The average (median) market value of firms in our sample was \$4.0 (\$0.3) billion, while the average (median) Tobin's q was 4.36 (1.99). The average (median) number of firms in an industry, that is, COMP, is 25 (21). This indicates that, on average, the level of competition is significant. Descriptive statistics presented in panel A of table 2 indicate that BURN is negative across all quartiles, suggesting that most of the firms have negative cash flows from operations.

Panel B of table 2 presents the Pearson correlation matrix of the overall score (CSCORE) and its component dimensions. Not surprisingly, CSCORE is highly correlated with component dimensions. Some of the individual dimensions also display high correlation with one another. For example, the

4. Gomez also provides a composite score of all the dimensions, but it is unclear how the composite score is determined. It is noteworthy that the average score that we compute is very highly correlated ($\rho = .96$) with the overall score provided by Gomez.

correlation between SELECTION and EASE is 0.54, and the correlation between REL and EASE is 0.47. This is possibly because firms that invest heavily in community building and site personalization are also likely to have navigable Web sites.

B. Results and Discussion

We present results from estimating equations (1) and (3) in adjacent columns to enable comparison. Results in table 3 indicate that the overall score (CSCORE), the average of the dimensions, is significantly associated (coefficient = 0.53; $t = 2.42$) with Tobin's q , suggesting that, on average, market participants view superior buying experience as a source of long-term advantage. These results obtain after controlling for expenditure that may influence the quality of online buying experiences. Moreover, the coefficients on product development expenses are, on average, positive and significant, suggesting that the market perceives such expenditures as assets even though they are expensed for accounting purposes.

In the right-hand column under CSCORE in table 3, we present results related to the full model developed in equation (3). Recall that equation (3) considers cross-sectional differences in the relation between online buying experience scores and Tobin's q . Here the coefficient on CSCORE, that is, the main effect, is positive and significant. However, the magnitude of this coefficient is substantially higher at 0.76 (t -statistic = 2.52) as compared with the coefficient of 0.53 reported in the left-hand column under CSCORE in table 3. Interestingly, the interaction between CSCORE and COMP is the only interaction term that is statistically significant. As expected, the coefficient on the interaction term is negative (coefficient = -0.01 ; $t = -2.03$). These results suggest that the quality of overall online buying experience is significantly associated with Tobin's q , although the extent of competition reduces the contribution of such experience to long-term profitability. We find that the interactions of CSCORE with POST and BURN are not significant, indicating (i) that the market views the quality of the online buying experience as a source of competitive advantage even after the April 2000 crash and (ii) that the extent of cash burn does not appear to affect the impact of the online buying experience on Tobin's q . Next, we report the association between Tobin's q and the five dimensions of the online buying experience.

Hypothesis 1—results. Our first hypothesis predicts that EASE and SELECTION dimensions of the online buying experience will have no relation to future profitability. We present the results of estimating equations (1) and (3) in adjacent columns of table 4. Results from estimating equation (1) indicate that EASE and SELECTION coefficients are not significant. This is consistent with hypothesis 1 that these dimensions do not endow the firm with a long-run competitive advantage.

By contrast, results from estimating equation (3) indicate that the two dimensions related to hypothesis 1 are positively related to Tobin's q . Note also

TABLE 2 Descriptive Statistics and Correlation Matrix

A. Descriptive Statistics						
Variable	<i>N</i>	Mean	SD	Median	First Quartile	Third Quartile
Gomez scorecard:						
Overall score (CSCORE)	111	6.39	1.16	6.41	5.57	7.49
Ease of use (EASE)	111	7.16	1.42	7.18	6.21	8.20
On-site resources (SELECTION)	111	6.36	1.56	6.37	5.31	7.69
Customer confidence (TRUST)	111	6.50	1.47	6.60	5.67	7.49
Relationship (REL)	111	5.53	1.69	5.56	4.30	6.90
Cost (COST)	50	7.29	1.80	7.48	6.30	8.88
Other variables:						
Market value of equity (MV) (\$ in millions)	111	4,038.32	15,549.44	264.39	77.75	942.03
Tobin's <i>q</i>	111	4.36	9.24	1.99	1.04	4.46
Net income (NI) (\$ in millions)	111	-28.74	61.98	-11.45	-29.21	-5.89
Sales (\$ in millions)	111	66.93	132.57	15.10	5.55	47.16
Gross margin as a percentage of total assets (GM/TA)	111	.04	.07	.02	.01	.07
Product development expenses as a percentage of total assets (PD/TA)	111	.02	.04	.02	.01	.03
Marketing expenses as a percentage of total assets (MKTG/TA)	111	.10	.10	.08	.04	.15
General and administrative expenses as a percentage of total assets (GA/TA)	111	.07	.11	.04	.00	.09
Cash burn (BURN)	111	-.36	.51	-.20	-.44	-.07
Level of competition (COMP)	111	24.19	13.78	21.00	14.00	31.00

B. Pearson Correlation Matrix

	CSCORE	EASE	SELECTION	TRUST
Ease of use (EASE)	.77*			
On-site resources (SELECTION)	.81*	.54*		
Customer confidence (TRUST)	.67*	.35*	.42*	
Relationship (REL)	.76*	.47*	.48*	.29*
Cost (COST)	.24*	.04	.33*	.31*

NOTE.— The variable EASE measures ease of Web site use, SELECTION measures on-site resources, TRUST measures customer confidence, REL measures relationship services, COST measures price leadership, and CSCORE is the average of EASE, SELECTION, TRUST, and REL. Tobin's q = the ratio of market value of equity plus preferred stock plus debt to total assets; BURN = the ratio of cash flows from operations to cash balance at the end of the quarter if cash flows from operations are negative, and zero otherwise; and COMP = number of online and offline firms competing in the industry in which the firm operates.

* Statistically significant correlation coefficients at the 5% level of significance (two-tailed).

TABLE 3 GLS Regression Statistics Relating Overall Online Buying Experience to Tobin's q

	Predicted Sign	CSCORE	
		Eq. (1)	Eq. (3)
DIMENSION	+	.53* (2.42)	.76** (2.52)
DIMENSION × COMP	−		−.01* (−2.03)
DIMENSION × BURN	+		.15 (.23)
DIMENSION × POST	−		.10 (.23)
COMP	−		.84 (.49)
BURN	?		−.55 (−.15)
POST	−		.84 (.49)
GM/TA	+	8.10* (1.85)	11.80* (2.34)
PD/TA	?	14.57* (2.19)	13.89 (1.96)
MKTG/TA	?	1.58 (.60)	.73 (.24)
GA/TA	?	5.01 (1.82)	5.06 (1.74)
N		107	73
Adjusted R^2 (%)		85	73

NOTE.—Tobin's q = ratio of market value of equity plus preferred stock plus debt to total assets, GM/TA = gross margin as a percentage of total assets, PD/TA = product development expenditures as a percentage of total assets, MKTG/TA = marketing expenses as a percentage of total assets, and GA/TA = net general and administrative expenses as a percentage of total assets. The variable DIMENSION represents CSCORE, which in turn is the average of EASE, SELECTION, TRUST, and REL, where EASE measures ease of Web site use, SELECTION measures on-site resources, TRUST measures customer confidence, and REL measures relationship services. The variable COMP is the number of online and offline firms competing in the industry in which the firm operates; BURN is the ratio of cash flows from operations to cash balance at the end of the quarter if cash flows from operations is negative, and zero otherwise; and POST is a dummy variable that takes on the value of one if the observation belongs to a quarter that ends after April 1, 2000, and zero otherwise. Coefficients on industry (IND) and quarter (QTR) dummies are suppressed for convenience. The t -statistics are presented in parentheses. The t -values are White (1980) adjusted whenever the χ^2 test for homoskedasticity is rejected. Outliers representing observations with R -student greater than the absolute value of two were deleted.

* Statistically significant coefficients at the 5% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

** Statistically significant coefficients at the 1% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

that the DIMENSION and COMP interactions are negative and significant for both EASE and SELECTION. A comparison of results from the two estimation equations reveals two interesting findings. First, the coefficients on these dimensions are insignificant for equation (1) but are positive and significant for equation (3). Second, the interactions between COMP and both EASE and SELECTION are negative and significant. Hence, it appears that EASE and SELECTION provide an advantage that is competed away by rival firms. On the Internet, since every competitor is only a "click" away, information regarding the depth of product and service offerings (SELECTION) is highly

TABLE 4 GLS Regression Statistics Relating Online Buying Experience to Tobin's q as per Hypothesis 1

Variable	Predicted Sign	EASE		SELECTION	
		Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)
DIMENSION	0	.28 (1.48)	.79** (2.76)	.16 (1.00)	.54* (2.05)
DIMENSION \times COMP	–		–.01* (–2.12)		–.01* (–1.93)
DIMENSION \times BURN	+		.56 (1.05)		–.01 (–.02)
DIMENSION \times POST	–		–.17 (–.49)		–.25 (–.89)
COMP	–		.82 (.46)		.41 (.25)
BURN	?		–3.50 (–.93)		.47 (.18)
POST	–		.41 (.13)		.72 (.27)
GM/TA	+	8.17* (1.82)	4.01 (.78)	7.55* (1.68)	10.77* (2.11)
PD/TA	?	15.43* (2.28)	1.41 (.13)	15.24* (2.23)	15.37* (2.19)
MKTG/TA	?	.39 (.15)	4.72 (2.29)	.54 (.20)	.54 (.17)
GA/TA	?	3.457 (1.28)	11.30 (3.78)	3.695 (1.33)	4.13 (1.37)
N		107	107	107	107
Adjusted R^2 (%)		72	73	72	72

NOTE.—Tobin's q = ratio of market value of equity plus preferred stock plus debt to total assets, GM/TA = gross margin as a percentage of total assets, PD/TA = product development expenditures as a percentage of total assets, MKTG/TA = marketing expenses as a percentage of total assets, and GA/TA = net general and administrative expenses as a percentage of total assets. The variable DIMENSION represents each of the dimensions, EASE and SELECTION. The variable EASE measures ease of Web site use, and SELECTION measures on-site resources. The variable COMP is the number of online and offline firms competing in the industry in which the firm operates; BURN is the ratio of cash flows from operations to cash balance at the end of the quarter if cash flows from operations is negative, and zero otherwise; and POST is a dummy variable that takes on the value of one if the observation belongs to a quarter that ends after April 1, 2000, and zero otherwise. Coefficients on industry (IND) and quarter (QTR) dummies are suppressed for convenience. The t -statistics are presented in parentheses. The t -values are White (1980) adjusted whenever the χ^2 test for homoskedasticity is rejected. Outliers representing observations with R -student greater than the absolute value of two were deleted.

* Statistically significant coefficients at the 5% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

** Statistically significant coefficients at the 1% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

transparent. Moreover, the layout of the Web site and its functionality (EASE) can be readily studied and understood and is, hence, likely to be imitated by competitors. Taken together, the results provide strong evidence to suggest that Web site usability and wide product selection, while beneficial, get competed away in the presence of rival firms.

Hypotheses 2 and 3—results. In table 5 we present the results of testing hypothesis 2 relating to the TRUST and REL. Hypothesis 2 states that TRUST and REL are dimensions that are difficult to imitate and, hence, represent an advantage that is unlikely to get competed away. Consistent with hypothesis

TABLE 5 GLS Regression Statistics Relating Online Buying Experience to Tobin's q as per Hypotheses 2 and 3

	Predicted Sign	TRUST (Hypothesis 2)		REL (Hypothesis 2)		COST (Hypothesis 3)	
		Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)	Eq. (1)	Eq. (3)
DIMENSION	+H2/ +/-H3	.32* (2.07)	.86** (3.43)	.37** (2.48)	.73** (3.06)	.50** (3.08)	.93** (3.91)
DIMENSION × COMP	-		-.01* (-1.77)		-.02** (-2.96)		-.01 (-1.13)
DIMENSION × BURN	+		.73* (1.86)		.07 (.23)		.16 (.59)
DIMENSION × POST	-		-.32 (-.96)		.07 (.23)		-.33 (-1.13)
COMP	-		.66 (.41)		1.56 (.94)		-.63 (-1.13)
BURN	?		-3.80 (-1.61)		-.14 (-.10)		-1.01 (-1.13)
POST	-		1.09 (.41)		-1.56 (-.74)		1.75 (.50)

GM/TA	+	7.21 (1.63)	13.41** (2.55)	8.40* (1.92)	13.45** (2.76)	-3.14 (-.64)	5.24 (.71)
PD/TA	?	14.47* (2.15)	15.35* (2.24)	14.64* (2.20)	14.21* (2.10)	5.56 (.30)	-4.22 (-.20)
MKTG/TA	?	.35 (.14)	.03 (.01)	1.97 (.74)	.24 (.08)	-1.67 (-.49)	-.81 (-.18)
GA/TA	?	4.10 (1.52)	3.72 (1.28)	5.292 (1.91)	4.63 (1.61)	8.37* (2.15)	3.54 (.70)
<i>N</i>		107	107	107	107	47	46
Adjusted <i>R</i> ² (%)		73	74	73	74	46	51

NOTE.—Tobin's *q* = ratio of market value of equity plus preferred stock plus debt to total assets, GM/TA = gross margin as a percentage of total assets, PD/TA = product development expenditures as a percentage of total assets, MKTG/TA = marketing expenses as a percentage of total assets, and GA/TA = net general and administrative expenses as a percentage of total assets. The variable DIMENSION represents the dimensions TRUST, REL, and COST. The variable TRUST measures customer confidence, REL measures relationship services, and COST measures price leadership. The variable COMP is the number of online and offline firms competing in the industry in which the firm operates; BURN is the ratio of cash flows from operations to cash balance at the end of the quarter if cash flows from operations is negative, and zero otherwise; and POST is a dummy variable that takes on the value of one if the observation belongs to a quarter that ends after April 1, 2000, and zero otherwise. Coefficients on industry (IND) and quarter (QTR) dummies are suppressed for convenience. The *t*-statistics are presented in parentheses. The *t*-values are White (1980) adjusted whenever the χ^2 test for homoskedasticity is rejected. Outliers representing observations with *R*-student greater than the absolute value of two were deleted.

* Statistically significant coefficients at the 5% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

** Statistically significant coefficients at the 1% level of significance (one-tailed when the sign is predicted, two-tailed otherwise).

2, results from estimating equation (1) show that TRUST (coefficient = 0.32; $t = 2.07$) and REL (coefficient = 0.37; $t = 2.48$) are positively associated with Tobin's q .⁵

In estimating the full model in equation (3), we find that the DIMENSION and COMP interaction is negative and statistically significant. Nevertheless, the coefficient on the main effect, that is, the DIMENSION variable, is positive and statistically significant. Interestingly, the coefficient magnitudes of 0.86 and 0.73 for TRUST and REL, respectively, for equation (3), are almost three times the coefficients for equation (1) (0.32 and 0.37, respectively). The results suggest that the relationship services provide a long-run advantage to Internet firms and that this advantage, while susceptible to competition, is not fully imitable. This is because competencies needed for these strategies display causally ambiguous characteristics (Reed and DeFilipi 1990). These findings reinforce the importance of building relationships and customer confidence by an online firm for generating competitive advantage.

Regarding hypothesis 3, we find that COST is positive and statistically significant (coefficient = 0.50; $t = 3.08$). We conjecture that investors view the price leadership strategy for Internet firms as a sustainable advantage because the rapid growth and global reach of the Internet allow a firm to reap economies of scale and thus ensure that a price leadership strategy is a viable means of creating shareholder value, perhaps via increased market share.

An interesting extension to the above analyses is to examine the incremental contribution of each of the dimensions for Tobin's q , that is, to consider all the dimensions in a single estimation equation. However, the high correlations among the various dimensions of the online buying experience (see panel B of table 2) limit the extent to which the incremental contribution of one dimension to Tobin's q over the other dimension(s) can be assessed. One exception is the COST variable, which happens to be only mildly correlated with the other dimensions. Hence, we modify equation (1) to include COST with each of the other four DIMENSION variables. In unreported results, we find that the COST variable is positive and statistically significant in every specification. We find that the main effects on EASE, SELECTION, and TRUST are not significant, while for REL the coefficient is positive and

5. The empirical specification in eq. (1) is potentially susceptible to an omitted variables problem as correlated omitted factors could potentially influence the sign and significance of the included variables. To address such a concern, we implemented a changes version of eq. (1) in that we regress change in Tobin's q over a quarter with changes in the DIMENSION variables from previous quarter and changes in the financial statement variables. The changes specification substantially mitigates the omitted variable problem under the assumption that the omitted factors are reasonably stationary over time. The results of the change specification were similar to those obtained in table 2, suggesting the robustness of our findings with one exception. The COST dimension is now statistically insignificant, inconsistent with our predictions.

statistically significant.⁶ Given the limited number of observations relating to the COST dimension, we view this result as broadly consistent with our earlier findings.

Caveats. Our results are subject to several limitations. First, although our results hold after controlling for the costs of providing online buying experiences, such as expenditures on product development and marketing, we do not provide a full structural equation model where these expenditures and the online buying experience are treated as endogenous variables.⁷ This is because structural equation modeling is a large sample technique where both the estimation methods and tests of model fit are based on the assumption of large sample sizes (Kelloway 1998) of at least 200 observations (Marsh, Balla, and MacDonald 1988). As more data become available, future researchers could attempt to replicate our findings using full structural equation models.

Second, we recognize that third-party quality ratings such as those used in our study are likely to be influenced by measurement error and potential self-selection issues created by the methodology that the rating agency employs. Analogous to caveats involved in using equity analysts' forecasts or Association for Investment Management and Research's rankings of firms' disclosure practices, the experience scores used in this study may be influenced by undisclosed economic relationships, if any, between Gomez and the rated firms.

Third, several aspects of our sample, such as the short time series of Gomez scores (4 quarters of data) and the small sample of e-commerce firms, limit the generalizability of our findings. More research focusing on different e-commerce contexts and time periods is needed before we can claim greater generalizability for our findings. Finally, our inferences about the sustainability of competitive advantage because of superior online experiences are derived from the expectations embedded in market-clearing prices as measured by Tobin's q .⁸ An alternate measure would be future abnormal profitability. Because our sample firms do not have long operating histories, we are unable to correlate online buying experience scores with future profitability measures.

6. We also considered the possibility that various DIMENSIONS of online experience may be nonlinearly related to Tobin's q . In particular, we allowed for the possibility of increasing (decreasing) returns for the Gomez variables by augmenting eqq. (1) and (3) with squared versions of each DIMENSION. In unreported results we find that neither the DIMENSION nor squared DIMENSION variables were significant. This is because of extremely high correlations (in the range of 0.90 to 0.95) between the independent variable and their squared counterparts. We interpret these findings as indicating no support for nonlinearity.

7. The model as written out in eq. (3) assesses the incremental contribution of the online buying experience to Tobin's q after controlling for expenditure incurred to provide that level of buying experience. Hence, we provide a partial control for the endogeneity of online buying experience and marketing expenditures that may be incurred to create such experience.

8. Note that our inferences are unaffected by the general overpricing of Internet stocks by the market because our analyses rely on relative (i.e., cross-sectional differences) firm performance as measured by Tobin's q . Consistent with this notion, it is comforting to note that our inferences do not change even after accounting for the April 2000 crash in e-commerce stocks.

Nevertheless, the evidence presented here provides impetus for future research that could investigate whether ex post measures of operating profitability are indeed correlated with online buying experience scores when such profitability measures become available.

V. Conclusions

This study examines whether superior online buying experience offers pure Internet firms a long-run competitive advantage. Using third-party quality ratings provided by Gomez, we document a positive association between Tobin's q and a composite score of online buying experience quality. While this indicates that, on average, investments in improving online buying experience represent a viable long-term competitive advantage, a distinguishing feature of this study is that we make separate predictions related to the association between Tobin's q and several dimensions of online shopping experience. In particular, our evidence suggests that two of the hypothesized dimensions of buying experience, namely, customer confidence in the Web business and relationship services, appear to provide a competitive edge for Internet firms. Regarding two other dimensions, Web site usability and product selection, the evidence is consistent with the competition imitating away the potential contribution from such attributes, that is, these strategies do not provide a long-run competitive edge. Additional analyses indicate that the magnitude of the documented positive association decreases with the extent of competition in a firm's product market. Future research can triangulate our findings by correlating ex post realizations of future profitability with current online buying experience scores, once such ex post measures are available.

Appendix

Five Dimensions of Online Buying Experience Tracked by Gomez Advisors

Web Site Usability (EASE)

As per the Gomez rankings, top-rated firms in this category have an intuitive layout with tightly integrated content, useful demonstrations, and extensive online help. Gomez examines the functionality of the site, availability of online help, glossary of terms, list of FAQs (frequently asked questions), degree of simplicity of account opening and transactions, consistency in Web site design and navigation, and tight integration of data to provide efficient access to information that consumers commonly seek.

On-site Resources (SELECTION)

This dimension of Gomez's ranking process measures the range of products and services the ranked firm carries and, as such, captures the richness of product and service information (e.g., product reviews) a firm is able to assemble. Firms are also ranked on whether the Web site provides detailed information on the product through electronic forms and information look-up facilities.

Customer Confidence (TRUST)

As per Gomez rankings, the leading firms in this category operate highly reliable Web sites, maintain knowledgeable and accessible customer service organizations, and provide quality and security guarantees. Gomez investigates the posted availability of customer service via phone, e-mail, and branch locations; privacy policies; service guarantees; and fees and explanations thereof.

Moreover, test phone calls are made and e-mails are sent to customer service units covering simple technical and industry-specific questions. The responses are measured in terms of quality, speed, and accuracy. Each Web site is monitored every 5 minutes for the speed and reliability of both public and secure areas of the site. Other factors such as technological abilities, technological independence, years in business, years online, and membership in trade organizations also contribute to a higher rank on the customer confidence dimension.

Relationship Services (REL)

To operationalize this dimension, Gomez examines the availability of advice, tutorials, ability to customize a site, customer data reused to facilitate future transactions, and support of repeat buying, including frequent buyer incentives. This dimension measures a firm's ability to build electronic relationships through personalization, enabling customers to make service requests and inquiries online, and through programs that build customer loyalty and a sense of community.

Price Leadership (COST)

For the price leadership dimension, Gomez rates the cost competitiveness of purchasing a typical basket of goods or services. Costs include services, purchases, and added fees for shipping and handling. Firms with higher scores on this dimension offer goods and services at a lower cost.

References

- Barney, Jay. 1991. Firm resources and sustained competitive advantage. *Journal of Management* 17, no. 1:99–120.
- Bharadwaj, Anandhi S., Sundar G. Bharadwaj, and Benn R. Konsynki. 1999. Information technology effects on firm performance as measured by Tobin's *q*. *Management Science* 45, no. 7:1008–24.
- Brynjolfsson, Erik, and Michael D. Smith. 2000. Frictionless commerce? A comparison of Internet and conventional retailers. *Management Science* 46, no. 4:563–85.
- Chow, Simeon, and Reed Holden. 1997. Toward an understanding of loyalty: The moderating role of trust. *Journal of Managerial Issues* 9, no. 3:275–98.

- Chung, K. H., and S. W. Pruitt. 1994. A simple approximation of Tobin's q . *Financial Management* 23, no. 3:70.
- Cockburn, Iain, and Zvi Griliches. 1988. Industry effects and appropriability measures in the stock market. *American Economic Review* 78, no. 2:419–23.
- Demers, Elizabeth, and Baruch Lev. 2001. A rude awakening: Internet value drivers in 2000. *Review of Accounting Studies* 6:331–60.
- Dierickx, Ingemar, Karen Cool, and Jay B. Barney. 1989. Asset stock accumulation and sustainability of competitive advantage. *Management Science* 35:1504–11.
- Economist*. 2000. Too few pennies from heaven. *Economist* 356 (July 1): 65–67.
- Evans, Philip, and Thomas S. Wurster. 1999. Getting real about virtual commerce. *Harvard Business Review* 77 (November–December): 84–94.
- Hagel, John III, and Arthur G. Armstrong. 1997. *Net gain: Expanding markets through virtual communities*. Cambridge, MA: Harvard Business School Press.
- Hall, Bronwyn H. 1993. The stock market's valuation of R&D investment during the 1980's. *American Economic Review* 83, no. 2:259–64.
- Hand, John R. M., and Baruch Lev. 2003. *Intangible assets: Values, measures and risks*. London: Oxford University Press.
- Hof, Robert D. 2001. Desperately seeking search technology. *Business Week*, September 24.
- Holmstrom, Bengt. 1985. The provision of services in a market economy. In *Managing the service economy: Prospects and problems*, ed. R. P. Inman, pp. 183–213. Cambridge: Cambridge University Press.
- Jarvenpaa, Sirkka L., Noam Trackinsky, and Michael Vitale. 2000. Consumer trust in an Internet store. *Information Technology and Management* 1, nos. 1–2:45–71.
- Lang, Larry H. P., and Robert H. Litztenberger. 1989. Dividend announcements: Cash flow signalling vs. free cash flow hypothesis? *Journal of Financial Economics* 24, no. 1:181–91.
- Lang, Larry H. P., and Rene M. Stulz. 1994. Tobin's q , corporate diversification, and firm performance. *Journal of Political Economy* 102, no. 6:1248–80.
- Keating, Elizabeth K., Thomas Z. Lys, and Robert P. Magee. 2003. The Internet downturn: Finding valuation factors in spring 2000. *Journal of Accounting and Economics* 34, nos. 1–3: 189–236.
- Kelloway, Kevin E. 1998. *Using LISREL for structural equation modeling*. Thousand Oaks, CA: Sage.
- Kotha, Suresh. 1995. Mass customization: Implementing the emerging paradigm for competitive advantage. Special issue, *Strategic Management Journal* 16:21–42.
- . 1998. Competing on the Internet: The case of Amazon.com. *European Management Journal* 15:239–65.
- Kotha, Suresh, and B. Vadlamani. 1995. Assessing generic strategies: An empirical investigation of two competing typologies in discrete manufacturing industries. *Strategic Management Journal* 16, no. 1:75–83.
- Lippman, S. A., and R. P. Rumelt. 1982. Uncertain imitability: An analysis of interfirm differences under competition. *Bell Journal of Economics* 13:418–38.
- Marsh, H. W., J. R. Balla, and R. P. MacDonald. 1988. Goodness-of-fit indexes in confirmatory factor analysis: The effect of sample size. *Psychological Bulletin* 88:245–58.
- Mayer, R. C., J. H. Davis, and F. D. Schoorman. 1995. An integrative model of organizational trust. *Academy of Management Review* 20, no. 3:709–34.
- McWilliam, Gil. 2000. Building stronger brands through online communities. *Sloan Management Review* 41 (Spring): 43–54.
- Montgomery, C., and B. Wernerfelt. 1988. Diversification, Ricardian rents, and Tobin's q . *Rand Journal of Economics* 19, no. 4:623–32.
- Nayyar, Praveen R. 1995. Stock market reactions to customer service changes. *Strategic Management Journal* 16, no.1:39–53.
- Neilsen, Jakob. 2000. *Designing Web usability: The practice of simplicity*. Indianapolis: New Riders.
- Polanyi, Michael. 1966. *The tacit dimension*. Garden City, NY: Doubleday.
- Porter, Michael E. 1980. *Competitive strategy*. New York: Free Press.
- . 2001. Strategy and the Internet. *Harvard Business Review* 79 (March): 63–79.
- Rajgopal, Shivaram, Mohan Venkatachalam, and Suresh Kotha. 2003. The value-relevance of network advantages: The case of e-commerce firms. *Journal of Accounting Research* 41: 135–62.

- Reed, R., and R. J. DeFilipi. 1990. Causal ambiguity, barriers to imitation, and sustainable competitive advantage. *Academy of Management Review* 15, no. 1:88–102.
- Rindova, Violina, and Suresh Kotha. 2001. Continuous “morphing”: Competing through dynamic capabilities, form, and function. *Academy of Management Journal* 44, no. 6:1263–80.
- Smith, M., J. Bailey, and E. Brynjolfsson. 2000. Understanding digital markets: Review and assessment. In *Understanding the digital economy*, ed. E. Brynjolfsson and B. Kahin, pp. 99–136. Cambridge, MA: MIT Press.
- Stigler, George. 1961. The economics of information. *Journal of Political Economy* 69, no. 3: 213–25.
- Stross, Randall E. 1997. Why Barnes and Noble may crush Amazon. *Fortune* 136 (September 29): 248–49.
- Taylor, William C. 1996. Who is writing the book on Web business? *Fast Company*, October–November, pp. 132–33.
- Tirole, Jean. 1988. *The theory of industrial organization*. Cambridge, MA: MIT Press.
- Trueman, Brett, M. H. Franco Wong, and Xiao-Jun Zhang. 2000. The eyeballs have it: Searching for the value in Internet stocks. *Journal of Accounting Research* 38, suppl.:137–62.
- Urban, G., F. Sultan, and W. J. Qualls. 2000. Placing trust at the center of your Internet strategy. *Sloan Management Review* 42 (Fall): 39–48.
- Varian, Hal R. 2002. *Intermediate microeconomics: A modern approach*. New York: Norton.
- Wernerfelt, B. 1995. The resource-based view of the firm: Ten years after. *Strategic Management Journal* 16, no. 3:171–75.
- White, Hal. 1980. A heteroskedasticity-consistent covariance matrix estimator and a direct test for heteroskedasticity. *Econometrica* 48:817–38.