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# Are the Drivers and Role of Online Trust the Same for All Web Sites and Consumers? A Large-Scale Exploratory Empirical Study

The authors develop a conceptual model that links Web site and consumer characteristics, online trust, and behavioral intent. They estimate this model on data from 6831 consumers across 25 sites from eight Web site categories, using structural equation analysis with a priori and post hoc segmentation. The results show that the influences of the determinants of online trust are different across site categories and consumers. Privacy and order fulfillment are the most influential determinants of trust for sites in which both information risk and involvement are high, such as travel sites. Navigation is strongest for information-intensive sites, such as sports, portal, and community sites. Brand strength is critical for high-involvement categories, such as automobile and financial services sites. Online trust partially mediates the relationships between Web site and consumer characteristics and behavioral intent, and this mediation is strongest (weakest) for sites oriented toward infrequently (frequently) purchased, high-involvement items, such as computers (financial services).

The Internet has evolved into an important marketing medium and channel and is now an integral part of a multichannel strategy for firms. E-business has risen strongly since the collapse of the Internet bubble. For example, the *USA Today* Internet 50 index was up by 8.8% in 2004 from 2003 (www.usatoday.com). The Dow Jones Internet index was up by 24% in 2004 from 2003, compared with an increase of only 9% in the Standard & Poor's 500-stock index (www.spglobal.com). Under the current challenging economic conditions, however, managers must allocate scarce marketing resources efficiently across all channels and within the Internet channel to develop sustainable customer relationships.

To create long-term customer relationships, firms need to build customer trust (e.g., Doney and Cannon 1997; Dwyer, Schurr, and Oh 1987; Ganesan 1994). Customer trust is particularly important in the online context because customers increasingly rely on the Internet for information and purchases and can be more loyal online (Shankar, Smith, and Rangaswamy 2003). To formulate a successful e-business or Internet marketing strategy, companies need a deeper understanding of how trust is developed and how it affects consumer behavioral intent in the online context.

Web site design is a critical part of Internet marketing strategy and an important element in building trust (e.g., Hoffman, Novak, and Peralta 1999; Shankar, Urban, and Sultan 2002; Urban, Sultan, and Qualls 2000). The design strategies of different Web site categories emphasize different site characteristics, such as privacy, navigation, and advice to build trust. For example, consider the different Web site design characteristics used by Autochoiceadvisor (automobile category), Orbitz (travel category), Intel (computers category), and Dell (computer and electronics category) to build trust. Autochoiceadvisor and Orbitz stress advice, Intel emphasizes navigation and presentation, and Dell focuses on customization. Do some Web site characteristics build trust more effectively for some categories of Web sites or some consumer segments than others? How should managers of different Web site categories and those targeting particular segments allocate site design resources to improve trust and positively influence behavioral intent? We address these critical Internet strategy issues.

Although previous academic studies have emphasized the significance of trust in Internet strategy (e.g., Hoffman, Novak, and Peralta 1999; Urban, Sultan, and Qualls 2000) and have suggested potential determinants and consequences of online trust (e.g., Belanger, Hiller, and Smith 2002; Shankar, Urban, and Sultan 2002; Yoon 2002), there has been no systematic, large-scale empirical investigation of the differences in the drivers (Web site characteristics) and role of trust in e-business across different categories and consumer segments. The primary purpose of this study is to examine differences across Web site categories. The

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secondary goal is to investigate consumer heterogeneity in drivers of online trust to provide some generalizable insights into these issues.

Specifically, we examine the following research questions: What Web site and consumer characteristics influence consumer trust in a Web site and to what extent? Does trust mediate the relationships between the factors that influence Web site trust and behavioral intent? Most important, how do the role of antecedents and the role of trust vary by Web site category and by consumer segment? To address these questions, we propose a conceptual framework and perform an empirical analysis of responses from 6831 consumers to 25 Web sites across eight categories using structural equation modeling (SEM) with a priori and post hoc segmentation.

There is a significant body of related prior research (e.g., Belanger, Hiller, and Smith 2002; Fogg et al. 2001; Shankar, Urban, and Sultan 2002; Yoon 2002). Shankar, Urban, and Sultan (2002) provide a broad conceptual overview and framework of antecedents and consequences of online trust from multiple stakeholder perspectives. They identify a wide range of Web site characteristics (e.g., navigation, community features) as potential drivers of online trust. Yoon (2002) studies antecedents of online trust based on surveys of Korean college students and finds that company awareness and reputation are significantly associated with Web site trust. Belanger, Hiller, and Smith (2002) examine privacy and security as antecedents of online trust and find that consumers value security features more than privacy seals or statements. Fogg and colleagues (2001) study Web site characteristics that constitute online credibility based on a large-scale survey, and they conclude that real-world feel, ease of use, and expertise are among the most influential Web site elements in boosting the credibility of a site. However, to our knowledge, our study is the first to offer insights into the differences among online trust determinants across Web site categories and consumers.

Our study complements that of Shankar, Urban, and Sultan (2002) in three ways. First, our effort is empirical, whereas their work is conceptual. Second, we examine variations in relationships across Web site categories and consumers. Third, we examine trust from a consumer standpoint, whereas they focus on the perspectives of all stakeholders.

Our study also adds to that of Yoon (2002). First, we develop a more comprehensive framework that includes a broader set of Web site and consumer antecedents. Second, our study is a large-scale empirical study of real consumer perceptions of known U.S. Web sites. In contrast, Yoon's work is a study of college students' perceptions of Korean online shopping-mall sites. Finally, we examine differences across Web site categories and consumers in the drivers of online trust.

Our work also extends that of Belanger, Hiller, and Smith (2002) in four ways. First, whereas Belanger, Hiller, and Smith consider only privacy and security, we examine a more comprehensive set of antecedents. Second, their measures of Web site characteristics comprise only five items, whereas we have measures of more than 100 items. Third, their analysis is based mainly on partial correlations and relative ranks, whereas our analysis involves SEM. Finally, we examine variations in drivers of online trust across Web site categories and consumers.

## Online Trust: Its Drivers and Its Mediating Role

### *Online Trust*

For the purpose of this study, we adopt the following well-accepted definition of trust: "Trust is a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behaviors of another" (Rousseau et al. 1998, p. 395). Intrinsically, trust implies a party's willingness to accept vulnerability but with an expectation or confidence that it can rely on the other party (Lewicki, McAllister, and Bies 1998; Moorman, Zaltman, and Deshpandé 1992; Morgan and Hunt 1994). In the marketing literature, trust has been studied primarily in the context of relationship marketing (Doney and Cannon 1997; Dwyer, Schurr, and Oh 1987; Ganesan 1994; Ganesan and Hess 1997; Morgan and Hunt 1994). In studies of buyer–seller relationships, trust in a sales agent evolves over time and is based on a buyer's observation of a sales representative's honesty, reliability, consistency, and trustworthiness (Anderson and Narus 1990; Doney and Cannon 1997; Ganesan 1994).[1] This view of trust is consistent with Schlosser, White, and Lloyd's (2003) conceptualization of behavioral trust.

We focus on online trust, or Web site trust, which differs from offline trust in important ways. Unlike offline trust, the object of online trust is the Web site, the Internet, or the technology. A firm's Web site could be viewed as a store from the standpoint of building customer trust, extending Jarvenpaa, Tractinsky, and Vitale's (2000) salesperson metaphor. A customer's interaction with a store is somewhat similar to his or her interaction with a Web site, and consumers develop perceptions of trust in a Web site based on their interactions with the site. To the extent that a consumer has positive impressions of a site and accepts vulnerability, he or she develops trust with that site. A consumer's perception of a site's competence to perform the required functions and his or her perception of the firm's good intention behind the online storefront contribute to the perception of trust in that site. Thus, online trust includes consumer perceptions of how the site would deliver on expectations, how believable the site's information is, and how much confidence the site commands. Many antecedents may drive these perceptions.

### *Category Factors That Influence the Effects of Drivers of Online Trust*

Although online trust has several possible antecedents and consequences (for a detailed review, see Shankar, Urban, and Sultan 2002), we focus on Web site and consumer characteristics as the antecedents and on behavioral intent as the key consequence because of the potential managerial impli-

[1]For a detailed review of trust in different disciplines, see Shankar, Urban, and Sultan (2002).

cations we previously outlined. On the basis of pilot studies, we chose privacy, security, navigation and presentation, brand strength, advice, order fulfillment, community features, and absence of errors as the Web site characteristics. In addition, we chose familiarity with the Web site, online savvy/expertise, Internet shopping experience, and entertainment or chat experience as the consumer characteristics. We propose a conceptual framework in which the effects of Web site and consumer characteristics on Web site trust and of trust on behavioral intent are positive. We argue that the strength of the positive relationships between Web site characteristics and online trust varies across Web site categories, depending on the following underlying Web site factors:

- *Financial risk*: This refers to the uncertainty of incurring monetary losses while interacting on a Web site (Betman 1973; Biswas and Biswas 2004; Grewal, Gotlieb, and Marmorstein 1994).
- *Information risk*: This refers to the uncertainty associated with providing information on a Web site and is related to the risk of personal information being exposed. This is similar to the transaction risk construct in Biswas and Biswas's (2004) study of online shopping signals.
- *Involvement with or ticket price of the product or service on the Web site*: This refers to the level of the consumer's engagement with the product or service offered on the Web site. Moorthy, Ratchford, and Talukdar (1997) also treat price level and involvement similarly.
- *Information on the Web site*: This refers to the depth of information content on a Web site. This factor is consistent with the usage of this construct by Pan, Ratchford, and Shankar (2002, 2003) and Shankar, Rangaswamy, and Pusateri (2001) in their studies of e-tailer price dispersion and online price sensitivity, respectively.
- *Search for the product or service on the Web site*: This refers to the degree of information search typically required for the product or service on the Web site. This factor is consistent with those of Moorthy, Ratchford, and Talukdar (1997) and Ratchford, Pan, and Shankar (2003) in their studies of consumer search behavior and online price dispersion, respectively.

The expected influences of these underlying Web site factors on the strength of relationships between different drivers and online trust appear in Table 1. Subsequently, we discuss the expected effects of the antecedents of trust on trust and their differences across Web site categories based on these underlying factors. We also expect that the effects of the drivers of online trust vary across consumer segments, which is consistent with Mittal and Kamakura's (2001) findings that the attribute drivers of repeat purchase intent differ systematically by consumer demographics. Because we have no a priori expectations of how the effects of antecedents of online trust might vary by consumer groups, we treat this variation as an empirical issue in this article.

### *Category Differences in the Effects of Web Site Characteristics on Online Trust*

*Privacy*. Privacy refers to the protection of individually identifiable information on the Internet, and it involves the adoption and implementation of a privacy policy, notice, disclosure, and choice/consent of the Web site visitors (www. privacyalliance.org). Privacy is a key driver of online trust (Hoffman, Novak, and Peralta 1999), and its influence on trust may differ across Web site categories. It is likely to be higher for categories that involve high information risk. Thus, when determining whether a travel or community Web site is trustworthy, a consumer may consider privacy more important than he or she would for a computer site. This is because a travel purchase may require and contain more personal information, such as the whereabouts and activities of a person, than would a computer purchase. Similarly, users of a community Web site often share high levels of personal information. Therefore, we expect that the importance of privacy in determining Web site trust is greater for Web site categories with personal information at risk than it is for other Web site categories.

*Security*. Security on a Web site refers to the safety of the computer and credit card or financial information. Consumers consider security important in purchasing goods or services on the Internet (Belanger, Hiller, and Smith 2002). Seals of approval, such as Better Business Bureau, Verisign, and TRUSTe, are considered indicators of security by consumers, have been adopted by many Web sites, and have a positive effect on trustworthiness (Cheskin/Sapient and Stu-

**TABLE 1**
**Expected Influence of Underlying Web Site Category Factors on the Effects of Drivers of Online Trust on Online Trust**

| | Underlying Web Site Factors | | | | |
|---|---|---|---|---|---|
| **Driver of Online Trust** | **Financial Risk** | **Information Risk** | **Involvement/ Ticket Price** | **Information on the Site** | **Search Good/Service** |
| Privacy | | + | | | |
| Security | + | | | | |
| Navigation and presentation | | | | + | |
| Brand strength | | | + | | + |
| Advice | + | + | | + | + |
| Order fulfillment | | | + | | |
| Community features | | + | | + | |
| Absence of errors | + | + | + | + | + |

Notes: The "+" sign indicates that the effect of a driver of online trust (e.g., privacy) on Web site trust is greater for Web site categories that are dominant with this Web site characteristic (e.g., information risk).

dio Archetype/Sapient 1999). However, the relationship could be different for different Web site categories. Security is related to financial risk on Web sites (Biswas and Biswas 2004). Some Web site categories, such as transaction-oriented financial services, computer and travel Web sites, and those with high involvement or ticket prices, entail greater financial risk than other categories. When consumers purchase from Web sites that have products or services that are high-involvement items, they are typically concerned about the exposure of financial information. For such Web sites, we expect that the impact of security on online trust is greater than it is for other Web sites.

*Navigation and presentation*. Navigation and presentation refer to the appearance, layout, and possible sequence of clicks, images, and paths on a Web site. Navigation and presentation are directly related to the flow construct (Hoffman and Novak 1996) and to the Web site's perceived ease of use. Factors such as navigation and presentation, convenience, and ease of use drive trustworthiness (Belanger, Hiller, and Smith 2002; Cheskin/Sapient and Studio Archetype/Sapient 1999). The positive association of navigation and presentation is likely to be different across Web sites. Navigation and presentation are particularly important for Web sites with high information content, such as community, e-tailer, portal, and sports Web sites. When consumers visit Web sites with high information content, they may perceive that the Web sites that have a good appearance and layout and that are capable of taking visitors to their desired destination with a minimum number of clicks are trustworthy. Thus, we expect that the relationship between navigation and presentation and online trust is stronger for Web site categories with high information than it is for other categories.

*Brand strength*. A brand is a trust mark for all intangible trust-generating activity, and absent human touch, it can be a symbol of quality and assurance in building trust (Keller 1993). In the absence of all relevant information for comparison, brands can provide greater comfort online than offline in customer choice (Degeratu, Rangaswamy, and Wu 2000; Yoon 2002). For example, Amazon.com has high brand strength and enjoys a greater level of trust than rival book e-tailers (Pan, Ratchford, and Shankar 2003). The importance of brand strength in building trust may vary by Web site category. We expect that the effect of brand strength on Web site trust is greater for categories for which consumer involvement or the ticket price of the product or service purchased is high. For sites dealing with high-involvement items, such as automobiles, financial services, and computers, brand is an important attribute in that brand association with the item and the Web site may be quite strong. Thus, brand strength may be a more effective driver of online trust for such categories than for other categories. Brand strength is also expected to be a more influential determinant of online trust for high-search goods or services Web sites than for other Web sites. When consumers undertake a high degree of search for an item on a Web site, they may rely more on the brand behind the Web site to be able to trust the information, item quality, and performance.

*Advice*. Advice is a Web site feature that informs and guides a consumer toward appropriate solutions for problems and issues on a Web site. Urban, Sultan, and Qualls (2000) demonstrate that the presence of "virtual advisors" can enhance trust in a Web site in the situation of purchasing pickup trucks. We expect that the effect of advice on Web site trust differs across Web site categories and customer groups. For Web sites marked by high financial risk and information risk, such as automobile, e-tailer, financial services, and computer Web sites, the existence of an advisory mechanism could assuage a consumer's concerns about that site and increase consumer perceptions of trust. Suggestions and assistance that a Web site offers to its visitors to narrow the choices or to arrive at the desired location faster may be taken more seriously for products with high financial risk. Advice can also enhance credibility on a Web site when consumers believe that sharing information with that site could be at risk. Thus, advice is expected to be a stronger determinant of online trust for Web site categories that are characterized by a high level of Web site information and high search efforts than it is for other categories.

*Order fulfillment*. Order fulfillment refers to the delivery of a product or service relative to orders placed by consumers, and it is an essential aspect of Web sites with transactional ability. Order fulfillment reliability is related to prices on a Web site (Pan, Ratchford, and Shankar 2002, 2003). The importance of order fulfillment as a builder of online trust is likely to vary across Web sites; we expect it to be greater for sites with high involvement or high ticket prices (e.g., travel, financial services, computer, e-tailer sites) than for other Web sites. When consumers deeply care about the products they buy on a Web site and are unsure about trusting that Web site, they may rely on the order fulfillment track record of that Web site. Thus, order fulfillment may be an important determinant of online trust for high-involvement items.

*Community features*. This construct refers to the opportunities available to visitors to a Web site to interact with other visitors to the same Web site by participating in a bulletin board, chat group, or similar online forum. A brand community in a computer-mediated environment has a structured set of social interactions based on a shared consciousness, rituals and traditions, and a sense of moral responsibility (Muniz and O'Guinn 2001). These community features promote information exchange and knowledge sharing and offer a supportive environment for the consumer, thus increasing consumer trust in the site. The effect of community features on consumer trust may be different for different categories of Web sites. Community features are particularly useful for trust formation in situations in which the expected uncertainty about sharing and gathering of information on a Web site is high. In such situations, the shared consciousness and sense of moral responsibility and affinity enhance the consumer's level of trust in a Web site. Therefore, we expect that the dominance of community features' impact on online trust is greater for Web sites characterized by greater information risk and information on the Web site, such as community Web sites.

*Absence of errors*. This construct refers to the lack of mistakes on a site in response to consumers' actions on that site. Consumers expect a site not to have errors, such as

wrong information or incorrect processing of inputs and orders. To the extent that a site is devoid of such errors, we expect that its trust among consumers is high. Because errors may not be acceptable to consumers on any site, we do not expect the impact of absence of errors on online trust to differ across sites.

### *Effects of Consumer Characteristics on Online Trust*

Consumer characteristics likely have significant effects on Web site trust. We do not have any a priori theoretical expectations for the variation of these effects by Web site category, so we view this variation as an empirical issue.

*Familiarity with the Web site*. Some consumers are more familiar than others with a given Web site. This familiarity could result from prior visits to that site and satisfactory experiences with either the site or the provider of the product or service on the site. Yoon (2002) shows that Web site trust is influenced by consumer familiarity and prior satisfaction with e-commerce. Familiarity builds consistent expectations of a Web site that may positively affect trust for that Web site.

*Online savvy/expertise*. Consumer expertise with the Internet may influence Web site trust. An expert user of the Internet is more likely to have greater confidence on the Internet than a novice user. Therefore, online trust may be greater for an expert or Internet-savvy consumer.

*Internet shopping experience*. Customer experience in the online environment is important in determining customer behavior on a Web site (Novak, Hoffman, and Yung 2000). Prior experience affects individual trust propensity (Lee and Turban 2001) and drives customer satisfaction (Boulding, Kalra, and Staelin 1999; Shankar, Smith, and Rangaswamy 2003), and satisfaction is related to trust (Singh and Sirdeshmukh 2000). Consumers may use shopping experience as an inoculation against potential feelings of regret that might arise from a negative outcome of behavioral intent on the Web site to justify their intent on a Web site, thus implicitly building Web site trust (Inman and Zeelenberg 2002). Thus, a consumer's Internet shopping experience may be positively related to online trust.

*Online entertainment or chat experience*. Many consumers use the Internet for online entertainment, and many use online chat rooms to share their experiences, obtain information from other consumers on products and services, and increase their confidence in Web sites. Greater confidence is associated with reduced uncertainty and greater trust (Ganesan 1994). Therefore, the greater entertainment and chat experience on the Internet may lead to greater trust in a Web site.

The presence or significance of the underlying Web site factors for the Web site categories in our study appears in Table 2. Automobile, financial services, and computer Web sites involve high-search goods with financial risk and involvement. Community Web sites are characterized by high information risk and deep information on the site. Portals and sports sites carry a high degree of information. Travel sites involve high information risk, and e-tail Web sites have high information risk and are associated with high financial risk.

### *Mediating Role of Online Trust*

Prior studies suggest that trust affects behavioral intent (e.g., Shankar, Urban, and Sultan 2002; Yoon 2002). Behavioral intent may include willingness to conduct tasks, such as clicking through further on a Web site, abandoning or returning to the site, sending e-mail messages, downloading files, and ordering from the site. Trust affects the consumer's attitude and risk perception, which in turn influences the willingness to buy in an electronic store (Jarvenpaa, Tractinsky, and Vitale 2000). Pan, Shankar, and Ratchford (2002) find that online trust has a positive impact on Web site traffic and visits to Web site categories, such as gifts, flowers, and computer hardware. Trust may also have a significant effect on prices that consumers pay (Ratchford, Pan, and Shankar 2003).

Geyskens, Steenkamp, and Kumar (1998) and Singh and Sirdeshmukh (2000) examine the role of trust as a moderator or mediator in relationship situations, though not in the context of Web sites. Schlosser, White, and Lloyd (2003) find that the effect of Web site investments on consumer purchase intentions may be moderated by consumer trust in the company's competence, not in the Web site. However, prior studies have not examined whether trust mediates the relationships between trust antecedents such as Web site and consumer characteristics and behavioral intent related to the Web site. Little is known about whether such

**TABLE 2**
**Levels of Underlying Web Site Factors for Each Web Site Category**

| | Underlying Web Site Factors | | | | |
|---|---|---|---|---|---|
| **Category** | **Financial Risk** | **Information Risk** | **Involvement/ Ticket Price** | **Information on the Site** | **Search Good/Service** |
| Automobile | X | | X | | X |
| Community | | X | | X | |
| Financial services | X | | X | | X |
| Computer | X | | X | | X |
| Portal | | | | X | |
| Sports | | | | X | |
| Travel | | X | | | |
| E-tailer | X | | | X | |

Notes: X indicates the presence or significance of the underlying Web site factor for the Web site category.

mediation is stronger for certain Web site categories than for others. If it is, managers of those Web site categories can formulate strategies aimed at directly influencing consumers' intentions to act on the Web site.

The mediating relationship (if it exists) may be stronger for some categories (e.g., infrequently purchased, high-involvement/high-ticket-price items) than for others. Consumers typically go through a longer buying process for infrequently purchased, high-involvement items, and consumers in these Web site categories are typically engaged in a problem-solving task of moderate to high complexity. For such tasks and buying processes, trust formation is more likely to be an intermediate event that precedes the formation of behavioral intent, such as a decision to purchase. For example, products such as computers and electronic items are high-involvement/high-ticket-price items, whereas banking products and services are transaction-oriented products that require more frequent use by consumers. Therefore, we expect that the mediating role of trust is stronger for computers and electronic items than for financial services.

## Methodology, Data, and Model

### *Initial Exploratory Analysis, Qualitative Research, and Questionnaire*

We developed measures of trust determinants, trust, and behavioral intent based on an initial exploratory study and a qualitative study. We conducted a pilot study of MBA students in the spring of 2000 to help identify specific Web site characteristics that could affect respondents' perceptions of trust in a site. With the assistance of a market research firm, we conducted a qualitative study comprising 24 one-on-one, in-depth interviews (each lasting 45 minutes) over a three-day period in the fall of 2000 in Boston.

Respondents were asked to examine a particular Web site, after which the moderator asked general questions about their experience (e.g., likes, dislikes, overall impressions, fulfillment of expectations) and specific questions about site layout, navigation, and content. The questions also covered other issues such as security, privacy, and trust. Respondents were asked to circle words or phrases in the questions or items they found confusing, reword statements in their own words, and make any other general comments about the statements. To control for expert bias and to ensure closer representation of an average consumer, respondents whose immediate family worked in public relations, marketing, or Web site design/production were eliminated from the sample. On the basis of this process of qualitative research, we decided on the measures of the antecedents and dimensions of trust and finalized the questionnaire.

The final questionnaire has 126 close-ended measures of the constructs (for a full list of the questions, see the Appendix). Unlike previous studies, we used a comprehensive set of items to cover Web site and consumer characteristics and other measures articulated by consumers. For example, Fogg and colleagues (2001) predefined their site factors and designed the scale items a priori, not empirically as we do in our study. Although our measures were driven exclusively by research conducted before 2000, they are consistent with existing theory. In particular, the measures of trust somewhat reflect the dimensions of credibility and benevolence used in prior research on trust. They are also consistent with, though not the same as, those of Lynch, Kent, and Srinivasan (2001), particularly with regard to delivering on promises and confidence in the site. The items on delivery against promise and believability of information reflect the credibility dimension, and the items on confidence and overall trust indicate the benevolence dimension. The behavioral intent measures include purchase, recommendation, information sharing, bookmarking, and registration.

We constructed a large sample from National Family Opinion's online panel and administered a survey on this sample during March 2001. At that time, the National Family Opinion online panel comprised 550,000 U.S. households, or 1.4 million people, representing a cross-section of the U.S. population, including men and women, old and young, urban and rural, and affluent and low-income households. We administered the survey in two stages. In the first stage, we sent out 92,726 prescreener invitations, and in the second stage, we sent out 575–855 panelist invitations per Web site. We obtained 6831 usable responses, of which we randomly selected 4554 for model estimation and retained the remaining 2277 for model prediction and validation.

We investigated 27 Web sites that we chose from eight categories of industries, but two of the Web sites went out of business during the study period. The remaining 25 sites belonging to eight categories appear in Table 3. We chose industry categories from the list of the 18 most popular categories among household consumers, as reported by Nielsen//NetRatings during 2001, on the basis of their having a business-to-consumer focus or including shopping/order fulfillment features. In each category, we chose the two most popular sites. We also chose other, lesser-known sites or those with characteristics such as advisors and

**TABLE 3**
**List of Web Sites Examined**

| | |
|---|---|
| **Automobile** | **Travel** |
| •Carpoint.com | •aa.com |
| •gmbuypower.com | •travelocity.com |
| •kbb.com | •cheaptickets.com |
| •carsdirect.com | |
| | **E-Tailer** |
| **Finance** | •amazon.com |
| •etrade.com | •cdnow.com |
| •marketwatch.com | •proflowers.com |
| •schwab.com | •ebay.com |
| **Computer** | **Community** |
| •dell.com | •ancestry.com |
| •microsoft.com | •foodtv.com |
| **Sports** | **Portal, Search Engine, and Shopbot** |
| •nba.com | •aol.com |
| •sportsline.com | •lycos.com |
| •nike.com | •Webmd.com |
| | •mysimon.com |

decision-making aids so that we could test the predictions on the proposed drivers of trust.

Each respondent was assigned one Web site that he or she evaluated using the questionnaire after a browsing "tour" of that Web site. Respondents examined their assigned Web site according to this tour and were given time to examine the Web site further as they chose before completing the online survey questionnaire.

### *Model Formulation and Estimation*

Our analysis consists of four parts: (1) SEM analysis of an overall model linking Web site and consumer characteristics to trust and behavioral intent, (2) mediation analysis of trust, (3) analysis of differences across Web sites, and (4) analysis of consumer heterogeneity. To estimate the relationships between site and consumer characteristics and trust, we estimated a measurement model that involves the antecedents and consequences of trust and an SEM that links Web site and consumer factors to trust and behavioral intent. For the mediation analysis, we performed partial and full mediation tests, as Baron and Kenny (1986) propose. We analyzed the differences across site categories using multigroup SEM analysis. We estimated a separate model for each site category and examined the mediating role of online trust separately for each category.

We performed the consumer heterogeneity analyses using a priori and post hoc segmentation methods. According to Wedel and Kamakura (2000), SEMs estimated on an aggregate sample may lead to serious biases if there are significant differences in model parameters across unobserved segments of population. There are two basic approaches to address this problem: a priori segmentation (in which consumers can be assigned to segments a priori on the basis of some demographic and psychographic variables) and post hoc segmentation. We performed the a priori segmentation using multigroup SEM analysis. A priori segmentation is typically useful, but it does not address unobserved heterogeneity. A finite mixture SEM analysis may be a more appropriate post hoc segmentation method for uncovering unobserved heterogeneity (Jedidi, Jagpal, and DeSarbo 1997).

In the finite mixture model framework, heterogeneous consumer groups are identified simultaneously with the estimation of the SEM in which all the observed variables are measured with error. This approach extends the classic multigroup SEM to the case in which group membership is unknown and cannot be determined a priori. The method enables us simultaneously to uncover customer segments and estimate segment-specific path coefficients in our main model. After the sample was partitioned into a finite number of groups, we performed a follow-up analysis to relate segment membership to observed demographic variables to identify marketing recommendations for various customer segments.

The finite mixture SEM is identified as long as the multigroup model for known groups is identified and the data for the unknown groups follow multivariate normal distributions. After establishing identification, we estimated the model using a modified EM algorithm (Dempster, Laird, and Rubin 1977). We then obtained converged estimates of model parameters with their asymptotic covariances. We can use the estimates to assign each consumer to one of the segments identified by the results. We used the MPlus 3.01 software to implement the EM algorithm estimation for the finite mixture modeling approach. For greater details on this methodology and its application, see Jedidi, Jagpal, and DeSarbo (1997) and Titterington, Smith, and Markov (1985). To estimate our model, we used two-thirds (4554) of our sample (6831).[2]

## Results and Discussion

### *Overall Results*

For the measurement model, in line with the work of Anderson and Gerbing (1988), we conducted a confirmatory factor analysis (see Table 4). The model fit is good, and the convergent validity and reliabilities for the scale items of the constructs are high.[3] We assessed the discriminant validity of the constructs using two different procedures, one proposed by Bagozzi, Yi, and Phillips (1991) and the other by Fornell and Larcker (1981). Both procedures yielded similar results.[4] Because at least one procedure supports strong discriminant validity, we conclude that, in general, our scales measure distinct model constructs. The correlation matrix of these 14 constructs appears in Table 5.

The results of the structural model for partial mediation, no mediation, and full mediation in the overall sample appear in Table 6. The partial mediation model fit metrics

[2]Location of Internet usage is a potential control variable because it is possible that consumers have different degrees of trust in a Web site if they log in primarily from home or business, depending on their perceptions of the levels of security, firewall function, and how the information is exchanged on a Web site. This construct lacked the necessary validity and reliability in our data, so we do not include it in our final model. Therefore, as part of the measurement purification process, we dropped three variables (Q101, Q103, and Q104 in the questionnaire in the Appendix, relating to whether the consumer purchased on the Web site and the primary location from which the Internet is accessed—business or home) from the analysis.

[3]The chi-square statistic is significant ($p < .01$). The model fit is fairly good (e.g., root mean square error of approximation = .06, comparative fit index = .92). Moreover, all loadings on hypothesized factors are highly significant ($p < .001$) and substantively large (35 of 39 items have loadings greater than .70), which establishes convergent validity. Almost all the reliabilities of the individual scales we report in Table 4 are above recommended levels, ranging from .61 to .92 for Cronbach's alpha (Bagozzi and Yi 1988) and for composite reliability (Baumgartner and Homburg 1996) (for 12 of 14 constructs, greater than .83).

[4]In the first procedure that Bagozzi, Yi, and Phillips (1991) propose, each pair of constructs is analyzed through a pair of measurement models with and without the correlation between the constructs fixed to unity. We found that the chi-square statistic for the unconstrained model is significantly lower than that of the constrained model for each of 91 pairs in our model (difference in $\chi^2$ ranges from 1505.24 to 9000.66, degree of freedom = 1, $p < .001$). In the second procedure, consistent with Fornell and Larcker's (1981) test for discriminant validity, the average variance extracted is greater than .5 for 12 of 14 constructs, and the average extracted variances were greater than the squared correlations for all but one pair of constructs (trust and intent).

**TABLE 4**
**Measurement Model Results (N = 6831)**

| Item | Mean | Standard Deviation | Navigation and Presentation | Brand Strength | Privacy | Security | Advice | Order Fulfillment | Absence of Errors | Community Features | Shopping Experience | Entertainment Experience | Online Familiarity | Expertise | Behavioral Intent | Trust |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Q2 | 5.23 | 1.39 | .89 | | | | | | | | | | | | | |
| Q4 | 5.30 | 1.42 | .86 | | | | | | | | | | | | | |
| Q10 | 5.12 | 1.45 | .71 | | | | | | | | | | | | | |
| Q19 | 4.99 | 2.13 | | .75 | | | | | | | | | | | | |
| Q20 | 5.27 | 1.45 | | .95 | | | | | | | | | | | | |
| Q23 | 5.18 | 1.31 | | .73 | | | | | | | | | | | | |
| Q27 | 5.29 | 1.52 | | | .88 | | | | | | | | | | | |
| Q28 | 5.31 | 1.48 | | | .95 | | | | | | | | | | | |
| Q32 | 4.93 | 1.54 | | | .77 | | | | | | | | | | | |
| Q35 | .55 | .50 | | | | .82 | | | | | | | | | | |
| Q36 | .54 | .50 | | | | .94 | | | | | | | | | | |
| Q37 | .57 | .49 | | | | .87 | | | | | | | | | | |
| Q52 | 4.02 | 1.70 | | | | | .68 | | | | | | | | | |
| Q54 | 4.40 | 1.58 | | | | | .91 | | | | | | | | | |
| Q55 | 4.33 | 1.57 | | | | | .90 | | | | | | | | | |
| Q71 | .82 | .39 | | | | | | .90 | | | | | | | | |
| Q72 | .76 | .42 | | | | | | .89 | | | | | | | | |
| Q74 | .87 | .34 | | | | | | .87 | | | | | | | | |
| Q77 | 5.63 | 1.82 | | | | | | | .84 | | | | | | | |
| Q78 | 5.97 | 1.51 | | | | | | | .92 | | | | | | | |
| Q79 | 6.13 | 1.32 | | | | | | | .86 | | | | | | | |
| Q89 | .52 | .50 | | | | | | | | .84 | | | | | | |
| Q90 | .27 | .45 | | | | | | | | .73 | | | | | | |
| Q91 | .41 | .49 | | | | | | | | .86 | | | | | | |
| Q96 | .91 | .29 | | | | | | | | | .95 | | | | | |
| Q102 | .86 | .34 | | | | | | | | | .74 | | | | | |
| Q98 | .87 | .33 | | | | | | | | | | .68 | | | | |
| Q99 | .38 | .48 | | | | | | | | | | .65 | | | | |
| Q100 | .40 | .49 | | | | | | | | | | | .83 | | | |
| Q109 | 6.05 | 16.81 | | | | | | | | | | | .54 | | | |
| Q105 | 5.12 | 1.48 | | | | | | | | | | | | .78 | | |
| Q106 | 4.85 | 1.50 | | | | | | | | | | | | .86 | | |
| Q107 | 5.42 | 1.34 | | | | | | | | | | | | .86 | | |
| Q118 | 4.67 | 1.78 | | | | | | | | | | | | | .83 | |
| Q119 | 4.99 | 1.66 | | | | | | | | | | | | | .89 | |
| Q122 | 4.22 | 1.97 | | | | | | | | | | | | | .82 | |
| Q124 | 5.11 | 1.28 | | | | | | | | | | | | | | .88 |
| Q125 | 5.40 | 1.23 | | | | | | | | | | | | | | .87 |
| Q126 | 5.10 | 1.27 | | | | | | | | | | | | | | .90 |
| Variance extracted | | | .68 | .66 | .76 | .77 | .69 | .79 | .76 | .66 | .73 | .44 | .49 | .70 | .72 | .78 |
| Reliability | | | .86 | .85 | .90 | .91 | .87 | .92 | .91 | .85 | .84 | .61 | .65 | .87 | .88 | .91 |
| Cronbach's alpha | | | .85 | .84 | .90 | .91 | .86 | .92 | .91 | .85 | .83 | .61 | .62 | .87 | .88 | .91 |

**TABLE 5**
**Correlations Among Latent Constructs (N = 6831)**

| Construct | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Privacy | 1.00 | | | | | | | | | | | | | |
| 2. Security | .14 | 1.00 | | | | | | | | | | | | |
| 3. Navigation and presentation | .64 | .14 | 1.00 | | | | | | | | | | | |
| 4. Brand strength | .46 | .07 | .50 | 1.00 | | | | | | | | | | |
| 5. Advice | .48 | .41 | .49 | .30 | 1.00 | | | | | | | | | |
| 6. Order fulfillment | .16 | .51 | .17 | .10 | .40 | 1.00 | | | | | | | | |
| 7. Community features | .13 | .52 | .11 | .08 | .34 | .53 | 1.00 | | | | | | | |
| 8. Absence of errors | .48 | .00$^{n.s.}$ | .52 | .44 | .33 | .10 | –.03 | 1.00 | | | | | | |
| 9. Familiarity | .09 | .14 | .16 | .45 | .04 | .12 | .05 | .14 | 1.00 | | | | | |
| 10. Online expertise | .28 | .03 | .26 | .30 | .19 | –.02$^{n.s.}$ | .02$^{n.s.}$ | .32 | .17 | 1.00 | | | | |
| 11. Shopping experience | .08 | –.05 | .12 | .16 | .03$^{n.s.}$ | .06 | .14 | –.08 | .22 | .32 | 1.00 | | | |
| 12. Entertainment experience | .09 | .13 | .12 | .14 | .13 | .10 | .21 | .09 | .06 | .41 | .15 | 1.00 | | |
| 13. Behavioral intent | .53 | .21 | .61 | .56 | .50 | .28 | .18 | .49 | .47 | .30 | .30 | .17 | 1.00 | |
| 14. Trust | .59 | .16 | .63 | .64 | .49 | .20 | .13 | .57 | .33 | .39 | .25 | .20 | .86 | 1.00 |

Notes: All correlations, except those with n.s. (not significant), are significant ($p < .05$).

(e.g., root mean square error of approximation, comparative fit index) are superior to those of the no mediation and full mediation models.[5] Three coefficients (absence of errors, privacy, and entertainment experience) are insignificant in the behavioral intent equation. Although brand strength has a small but negative and significant impact on behavioral intent in the behavioral intent equation, this result could be due to heterogeneity among consumers and across Web site categories, which we subsequently discuss. The effects of consumer characteristics are also consistent with our expectations. However, our interest is in exploring differences in these effects across Web site categories and consumer groups.

### *Differences in Drivers of Trust Across Web Site Categories*

We used multigroup SEM analysis on the total (calibration and validation) sample to examine whether there are significant differences in the factor loadings and path coefficients across the eight different categories of Web sites used in our study. We used a testing procedure similar to the one we described in the previous section, estimating chi-square difference tests for three cases: (1) Every parameter is restricted to be equal in all eight categories ($\chi^2$ = 81,176.86, degrees of freedom [d.f.] = 6069), (2) every parameter except path coefficients is restricted to be equal in all eight categories ($\chi^2$ = 80,450.78, d.f. = 5894), and (3) every parameter except path coefficients and factor loadings is restricted to be equal in all eight categories ($\chi^2$ = 74,645.54, d.f. = 5621).

Our data reject all null hypotheses of no significant differences in the effects of the drivers of online trust among the categories. We estimated the model separately for each category and analyzed the relative sizes of path coefficients in relation to our expectations. The maximum likelihood (ML) method typically used to report SEM results requires the sample covariance matrix to be positive and definite, which was not the case when we analyzed our data by separate categories. Therefore, following Wothke's (1993) suggestion, we also analyzed the data by the unweighted least squares method, which does not provide efficient estimates but offers consistent point estimates of the model parameters. The results show that the differences between these estimates are rather small, so we report only the ML estimates for the total sample in Table 7.

We discuss the results against the backdrop of our expectations and offer plausible explanations. First, privacy is highly influential for travel, and it is also important for e-tail and community Web sites. The findings for travel and community sites are consistent with our expectation that privacy is important for categories with high information risk. The frequent practice of providing personal information required for travel reservations and the common appearance of intrusive pop-up advertisements on travel Web sites exacerbate information risk for customers. Similarly, members of community Web sites share information freely with one another, so such Web sites are also susceptible to information risk. Furthermore, it appears that information risk may be high for some e-tail sites, making privacy important in this category.

Second, navigation is important for most categories of Web sites, but it is critical for sports, portal, and e-tail Web sites. Web sites in these three categories carry extensive information, and we expected navigation to be a more influential driver for such Web sites than for other Web sites. Therefore, this result supports our expectation. Consumers typically surf a sports-related Web site for quick information on their favorite event, sportsperson, or product, so navigation and presentation are critical. Because portals are information intensive, navigation is important for this category as well. Because e-tailers carry an array of items with deep information on their Web sites, good presentation of items and a quick path to desired items are important ele-

[5]Consistent with the work of Anderson and Gerbing (1988), our results reject the null hypothesis for both nested model pairs (comparison with the fully mediated model: $\Delta\chi^2$ = 646.99, d.f. = 12, $p < .01$; comparison with the nonmediated model: $\Delta\chi^2$ = 750.74, d.f. = 1, $p < .01$). Independent latent variables explain a considerable portion of the variance in the endogenous constructs (64% for trust and 81% for behavioral intent).

**TABLE 6**
**Results of the SEM of Trust and Behavioral Intent (N = 6831)**

| Relationship | Partial Mediation | No Mediation | Full Mediation |
|---|---|---|---|
| **Web Site/Consumer Characteristics Impact on Trust** | | | |
| Privacy → trust | .15 (.01)*** | .28 (.03)*** | .14 (.02)*** |
| Security → trust | .00 (.01) | –.17 (.03)*** | .00 (.01) |
| Navigation and presentation → trust | .17 (.02)*** | .15 (.03)*** | .19 (.02)*** |
| Brand strength → trust | .26 (.02)*** | –.30 (.04)*** | .25 (.02)*** |
| Advice → trust | .16 (.02)*** | .35 (.03)*** | .17 (.01)*** |
| Order fulfillment → trust | .02 (.01) | –.07 (.03)** | .03 (.01)* |
| Community features → trust | .00 (.02) | .03 (.03) | .00 (.01) |
| Absence of errors → trust | .18 (.01)*** | .24 (.02)*** | .17 (.01)*** |
| Familiarity → trust | .11 (.02)*** | .72 (.03)*** | .13 (.01)*** |
| Online expertise → trust | .09 (.01)*** | .01 (.03) | .07 (.01)*** |
| Shopping experience → trust | .08 (.01)*** | .05 (.02)* | .09 (.01)*** |
| Entertainment experience → trust | .04 (.02)* | .10 (.03)*** | .04 (.02)* |
| **Web Site/Consumer Characteristics Impact on Behavioral Intent, Mediated by Trust** | | | |
| Trust → behavioral intent | .70 (.02)*** | — | .87 (.01)*** |
| Privacy → behavioral intent | .02 (.01) | .36 (.05)*** | — |
| Security → behavioral intent | –.01 (.01) | –.32 (.05)*** | — |
| Navigation → behavioral intent | .12 (.02)*** | .20 (.04)*** | — |
| Brand strength → behavioral intent | –.08 (.02)*** | –.94 (.10)*** | — |
| Advice → behavioral intent | .11 (.01)*** | .56 (.05)*** | — |
| Order fulfillment → behavioral intent | .04 (.01)** | –.11 (.05)* | — |
| Community features → behavioral intent | .02 (.01) | .08 (.05) | — |
| Absence of errors → behavioral intent | –.01 (.01) | .24 (.04)*** | — |
| Familiarity → behavioral intent | .24 (.02)*** | 1.42 (.10)*** | — |
| Online expertise → behavioral intent | –.08 (.01)*** | –.16 (.04)*** | — |
| Shopping experience → behavioral intent | .09 (.01)*** | –.09 (.04)* | — |
| Entertainment experience → behavioral intent | .01 (.01) | .16 (.05)*** | — |
| $\chi^2$ (d.f.) | 10,295.03 (611) | 11,045.76 (612) | 10,942.02 (623) |
| RMSEA | .059 | .061 | .060 |
| NFI | .918 | .913 | .913 |
| NNFI | .906 | .900 | .902 |
| CFI | .922 | .917 | .917 |
| GFI | .896 | .889 | .890 |
| RMR | .048 | .049 | .051 |

*$p < .05$.
**$p < .01$.
***$p < .001$.
Notes: Standard errors are in parentheses. Chi-squared difference tests are significant at the .001 level. RMSEA = root mean square error of approximation, NFI = normed fit index, NNFI = nonnormed fit index, CFI = comparative fit index, GFI = goodness-of-fit index, and RMR = root mean residual.

ments for building trust. Web sites with more easy-to-use features and greater ability to take the visitor quickly to his or her desired destination are in a better position to build trust than others.

Third, brand strength is a significant determinant of online trust for all categories except portals, but it is most important for automobiles, financial services, computers, and community sites. We hypothesized that brand strength is an important driver of online trust for categories with high involvement/high ticket price and for those involving high search effort. Automobiles, financial services, and computers are examples of such high-involvement/high-ticket-price items that need high consumer search. Therefore, the differences in the effect of brand strength on online trust across Web sites are consistent with our hypothesis. Brand strength is also high for sports sites, most likely because Nike, a powerful brand, was included in this category in our data.

Fourth, advice is an influential driver of online trust for automobile, computer, and travel-related products and e-tailers. We expected advice to be a powerful driver of trust for information-intensive Web sites whose product categories require a high degree of consumer search. Depending on the needs of the individual, automobiles, computers, and travel products can be complex to purchase and may require information assistance from the Web site. Web sites with the right suggestions and recommendations build confidence and trust with prospective buyers. Likewise, search goods and services on e-tail Web sites comprise intensive information. For such categories, advice is a dominant determinant of online trust.

Fifth, order fulfillment is most influential for travel products and e-tailers. We expected order fulfillment to be a dominant driver of online trust for Web site categories with high involvement/high ticket price. Travel is one such category. Because confirmation of a reservation immediately

**TABLE 7**
**Results of Partially Mediated SEM by Web Site Category (N = 6831)**

| Relationship | ML | Automobile | Community | E-Tailer | Finance | Computer | Portal | Sports | Travel |
|---|---|---|---|---|---|---|---|---|---|
| Privacy → trust | .14*** (.01) | .16*** (.03) | .25*** (.06) | .22 (.08)*** | .09 (.05) | .14* (.07) | .12*** (.04) | .13*** (.04) | .34*** (.07) |
| Security → trust | .01 (.01) | .01 (.03) | .01 (.05) | .03 (.03) | .05 (.04) | .03 (.04) | .02 (.03) | −.02 (.04) | .03 (.04) |
| Navigation and presentation → trust | .18*** (.01) | .11*** (.04) | .12 (.08) | .27 (.04)*** | .20*** (.05) | −.06 (.09) | .29*** (.04) | .29*** (.04) | −.09 (.09) |
| Brand strength → trust | .27*** (.01) | .23*** (.03) | .42*** (.11) | −.12 (.21) | .35*** (.05) | .41*** (.07) | .06 (.05) | .28*** (.03) | .17* (.07) |
| Advice → trust | .16*** (.01) | .17*** (.04) | .04 (.08) | .23 (.06)*** | .07 (.05) | .26*** (.06) | .18*** (.04) | .02 (.05) | .22*** (.04) |
| Order fulfillment → trust | .02 (.01) | −.07 (.04) | .09 (.07) | .14 (.04)*** | −.07 (.04) | .08 (.05) | .01 (.02) | .04 (.03) | .44* (.20) |
| Community features → trust | .00 (.01) | .06 (.05) | −.04 (.05) | −.11 (.05)** | .11** (.04) | −.23*** (.05) | .04 (.03) | .05 (.04) | −.47* (.21) |
| Absence of errors → trust | .18*** (.01) | .22*** (.03) | .15** (.05) | .13 (.04)*** | .15*** (.03) | .20*** (.05) | .19*** (.03) | .13*** (.03) | .21*** (.03) |
| Familiarity → trust | .12*** (.01) | .19*** (.03) | −.04 (.07) | .45 (.20)* | .09** (.04) | .01 (.03) | .14*** (.04) | .14*** (.03) | .18** (.06) |
| Online expertise → trust | .08*** (.01) | .02 (.02) | .07 (.04) | .06 (.03)* | .14*** (.03) | −.05 (.05) | –05 (.03) | .06* (.03) | .02 (.06) |
| Shopping experience → trust | .05*** (.01) | .04* (.02) | .02 (.04) | .07 (.05) | .05* (.02) | −.03 (.03) | .11*** (.02) | −.02 (.03) | .04 (.05) |
| Entertainment experience → trust | .03** (.01) | .00 (.03) | −.01 (.04) | −.01 (.04) | .03 (.04) | .20** (.06) | .03 (.03) | .09** (.03) | −.01 (.04) |
| Trust → behavioral intent | .73*** (.02) | .71*** (.05) | .58*** (.09) | .67 (.12)*** | .44*** (.08) | .85*** (.09) | .72*** (.06) | .61*** (.06) | .71*** (.14) |
| Sample size | | 1087 | 513 | 1144 | 745 | 570 | 1105 | 848 | 819 |

*$p < .05$.
**$p < .01$.
***$p < .001$.
Notes: Standard errors are in parentheses.

becomes available to consumers for most travel services, fulfillment is particularly important for travel services. Because e-tail sites are purchase-oriented sites, fulfillment is an essential aspect for trust formation in the e-tail category as well. Although categories such as automobile and computers are also typically high-involvement categories, order fulfillment is not an influential driver of Web site trust in these categories. Furthermore, the influence of order fulfillment on trust is somewhat small for e-tailers. A possible reason for these findings is that our data did not include actual consumer purchases. Thus, the measure of order fulfillment may not reflect an experience-based rating.

Sixth, the absence of errors is consistently important for all Web site categories. We did not expect the effect of this Web site characteristic to differ much across Web sites. Consumers expect any Web site to be free of errors, so absence of errors could be a minimum expectation on the part of consumers, regardless of the Web site category.

Although we did not have any formal hypotheses for differences in the effects of consumer characteristics on Web site trust, our results show some differences. Familiarity with the Web site is a particularly important driver for automobile, travel, and e-tailer sites. Online expertise seems to matter for trust building only in financial Web site categories. Shopping experience is a strong determinant of trust for portal sites. Notably, entertainment or chat experience is strongly associated with trust for computers. Because we did not have a priori expectations of these effects, we treat these as notable empirical findings.

A summary of the expected and actual effects appears in Table 8. In most cases, the actual effects are consistent with the expected effects. However, some relationships are not in the expected directions. We can speculate about the reasons for these findings, but further research is necessary to address these issues. Community features are negatively associated with trust for travel and computer Web sites. Community features, such as bulletin boards and chat rooms, enable visitors to share and receive tips on travel and computer purchases or usage from other users. Sometimes, if negative comments and information dominate the Web sites, these features may be negatively associated with trust, thus possibly explaining the negative relationship. Surprisingly, security is not a significant determinant of trust for any Web site category. It is likely that the security level offered by each Web site in our study is above a threshold level for the consumers, so it is not a significant determinant of consumers' overall trust. Brand strength is a dominant driver of trust for community Web sites. We did not

**TABLE 8**
**Predicted and Actual Categories with Dominant Effects of Each Web Site Driver of Online Trust**

| Driver | Predicted Categories | Actual Categories | Possible Explanation |
|---|---|---|---|
| Privacy | Community, travel | Travel | — |
| Security | Financial services, computer, travel | None | Perhaps security is so basic for all sites that it does not explain any variance in the presence of other drivers. |
| Navigation and presentation | Community, e-tailer, portal, sports | E-tailer, portal, sports | — |
| Brand strength | Automobile, financial services, computer | Automobile, financial services, computer, community | — |
| Advice | Automobile, e-tailer, financial services, computer | Automobile, e-tailer, computer | — |
| Order fulfillment | Travel, financial services, computer, e-tailer | Travel, e-tailer | The effect of order fulfillment could be understated for financial services and computer categories because the measures of behavior did not include any purchase or orders. |
| Community features | Community | Computers (–), travel (–) | For computer and travel categories, community features such as user groups and bulletin boards may give rise to complaining behavior such as venting, leading to a snowballing negative effect on trust. |
| Absence of errors | All | All | — |

hypothesize this effect. We expected brand strength to be an important driver of trust at Web sites with high-involvement products and services. The community Web sites we used in the study were ancestry.com and foodtv.com. Consumer involvement tends to be high when consumers visit and interact with these particular sites. Therefore, it is not surprising that brand strength is a dominant driver for these two sites.

The mediating role of trust on the effects of drivers of online trust on behavioral intent is different for different Web site categories. The mediating effect of trust on behavioral intent is strongest for computer sites and weakest for financial services sites. However, even in the case of financial services Web sites, the mediating role of online trust on behavioral intent is stronger than any other direct effect of the drivers on behavioral intent. We hypothesized that the mediating role of online trust would be stronger for categories in which the involvement/ticket price is high and the product is infrequently purchased. Most of the activities at financial services Web sites involve frequent transactions in which consumers directly click on action buttons. Trust has less of a mediating role for such a situation than for infrequently purchased high-ticket items, such as computers, for which consumers may need to go through a longer intermediate phase involving trust formation.

### *Differences in Trust Drivers Across Consumer Segments*

We used multigroup SEM analysis on the total sample to examine whether there were significant differences in the path coefficients across different demographic groups. The chi-square tests revealed that there were significant differences mainly across the education and income demographic splits. Brand strength is more influential for consumers with high education than for those with low education ($p < .01$). These results are somewhat surprising because we would expect consumers with low education or low income to rely more on navigation and those with high education or high income to be critical and not rely on the brand when developing trust in a Web site. A possible explanation is that high-income or high-education consumers spend less time on the Internet, relying on factors such as brand and advice to shape their trust levels and behavioral intent in relation to the site. Furthermore, it may be that more educated people are well aware of brands on the Internet and their value and are willing to attribute trust to the brand behind a site. In contrast, less educated people may not have much experience with brands on the Internet and may be somewhat skeptical of relying on them when building their trust in a site.

The results of the post hoc latent class mixture model segmentation appear in Table 9. To obtain convergent solutions by this method, we dropped the dichotomous variables without loss of generality as both the methodology and the software recommend. A six-segment solution was the best fitting and most interpretable solution. The demographic profiles of these segments are not dramatically different, so we do not discuss differences among them.

Segment 1 consumers reveal a balanced influence of all the drivers of online trust. It is the largest segment, constituting approximately 60% of the sample. Brand strength has the largest effect, but other major Web site characteristics also have significant effects on trust. Thus, for a majority of consumers, most Web site characteristics are important drivers of trust in relation to that Web site.

For consumers in Segment 2 (5% of the sample), the primary drivers of online trust are advice and brand strength. Advice is of paramount importance to this segment. Internet expertise, privacy, and navigation and presentation are not significant determinants of trust for this group.

Segment 3 consumers are somewhat similar to Segment 2 consumers in that they are predominantly concerned with advice. Segment 3 also constitutes a small portion (approximately 3%) of the sample. There are also some differences between Segments 2 and 3 with respect to other determinants of trust. For example, although brand strength has a significant influence on trust for Segment 2, it is insignificant for Segment 3. Surprisingly, the navigation and presentation parameter is negative, significant, and large for this segment. Although this anomaly could be due to statistical chance, it deserves further exploration in future studies.

The perceptions of trust for Segment 4 consumers are driven by brand strength, privacy, and advice. Segment 4 has approximately 6% of all consumers in the sample. Surprisingly, navigation and presentation and online expertise

**TABLE 9**
**Results of Latent Class Finite Mixture Model of Post Hoc Segmentation**

| Web Site Characteristic | Segment 1 (60%) | Segment 2 (5%) | Segment 3 (3%) | Segment 4 (6%) | Segment 5 (6%) | Segment 6 (20%) |
|---|---|---|---|---|---|---|
| Privacy | .14*** (.02) | .25 (.11) | −.01 (.33) | .35** (.11) | .08 (.07) | .11* (.04) |
| Navigation and presentation | .21*** (.02) | .07 (.19) | −.87*** (.29) | −.07 (.17) | .33*** (.10) | .16** (.05) |
| Brand strength | .29*** (.01) | .26* (.09) | .22 (.13) | .50*** (.07) | .50*** (.08) | .37*** (.03) |
| Advice | .11* (.02) | .45** (.18) | .56** (.22) | .20* (.12) | −.25 (.27) | .25*** (.05) |
| Absence of errors | .12*** (.04) | −.07 (.56) | .40 (.61) | −.07 (.35) | .07 (.22) | .02 (.09) |
| Online expertise | .20*** (.02) | −.10 (.08) | −.18 (.17) | .09 (.09) | .23*** (.06) | .13** (.04) |

*$p < .05$.
**$p < .01$.
***$p < .001$.
Notes: Figures in parentheses of segments are relative sizes of the segments in the sample. Figures in parentheses of parameters are standard errors. The large significant coefficients are not absolute but reflect the relative differences in the influence of these variables across the different segments.

are not important drivers of trust for this segment. The concern for privacy differentiates this segment from the others.

Segment 5 consumers are mainly driven by brand strength in their perceptions of Web site trust. As with Segments 2, 3, and 4, Segment 5 is small, constituting approximately 4% of the sample. Although brand strength seems to be the most dominant driver for this segment, navigation and presentation and consumer online expertise or Internet savvy are also significant drivers. Advice, privacy, and absence of errors are not significant.

The trust perceptions of consumers in Segment 6 are driven by advice, brand strength, navigation and presentation, and privacy. Segment 6 is the second-largest segment, containing approximately 20% of the sample. As with Segments 1, 4, and 5, brand strength has the largest effect. However, unlike Segments 1, 4, and 5, advice has a sizable effect on online trust. Online expertise is also a significant and important determinant of trust for this segment. Absence of errors, however, is not a significant determinant of trust for this segment.

In summary, for the majority of consumers, online trust is driven by the Web site's advice, navigation and presentation, and brand strength. Brand strength has a greater influence on online trust levels for people with higher education than for those with lower education.

### *Robustness Checks*

We performed some robustness checks on the model results. First, we checked whether the partially mediated model of trust was true for a randomly chosen validation sample. We estimated the model separately on the calibration and validation samples (assuming invariant factor structure) and analyzed the differences between the path coefficients we obtained from the two samples overall and for each category. The factor correlations are fairly close, providing strong evidence for the predictive validity of our model.

Second, we used multigroup SEM analysis to perform a series of nested models estimations and respective chi-square difference tests for three cases: (1) Every parameter is restricted to be equal in both samples ($\chi^2$ = 16,523.91, d.f. = 1389), (2) every parameter except path coefficients is restricted to be equal in both samples ($\chi^2$ = 16,490.67, d.f. = 1364), and (3) every parameter except path coefficients and factor loadings is restricted to be equal in both samples ($\chi^2$ = 16,487.17, d.f. = 1325). Relaxing the restrictions on the path coefficients and factor loadings did not result in a significant improvement in model fit ($p > .10$), so we are confident about the predictive validity of the proposed model.

## Managerial Implications

The key implications of our study are related to Web site differentiation strategy by category and customer segment. A company could allocate greater resources to the drivers of trust that are most influential for its category of Web sites. For example, automobile sites could focus on brand, advice, and navigation; community, financial services, and sports sites could focus on navigation and brand; computer sites could focus on brand and advice; portals could focus on navigation, privacy, and advice; and travel sites could focus on privacy, advice, and fulfillment.

Although we studied only eight categories, we can reasonably generalize the implications to a wide array of Web site categories based on the underlying Web site factors. A summary of the expected dominant drivers of online trust for 18 broad Web site categories appears in Table 10. We also list examples of subcategories under each broad Web site category together with the primary underlying Web site factors that influence the effects of the drivers of online trust. If these expected differences among Web site categories can be supported by further research, a Web site manager can use this summary to identify the key drivers that he or she should focus on to improve consumer trust in the Web site. For example, the manager of a Web site for children may want to emphasize navigation and presentation, whereas the manager of a car rental Web site may want to focus on privacy and order fulfillment features to build trust.

Companies can also build trust by differentiating and personalizing the site for different consumers by identifying customer groups on the basis of survey data. Our results suggest that the influence of different trust drivers, such as advice, brand, navigation, and absence of errors, differs across customers and that companies can personalize their Web sites for these different customer groups. If companies cannot obtain these data because of resource or time constraints, they can personalize their sites by the income or education level of the visitors. Although for the majority of consumers the influences of different drivers on trust are balanced, there is a sizable segment of consumers for whom brand and advice are the primary determinants of trust. The influential drivers of trust are different for consumers with different levels of education, and a company can emphasize the right trust drivers for the right consumer segment. Emphasizing the brand could be an effective trust-building initiative for highly educated, high-income consumers. Improving order fulfillment and privacy could also be the appropriate trust-generating effort for other groups of consumers. Companies can also personalize navigation and advice to suit the user's needs. For example, companies can enable the user to increase screen space for a personal advisor while reducing complex menu bars or enable a user to choose from a range of navigation styles (e.g., fast and direct versus personal and advisor driven).

The results have implications for the examples we discussed in the beginning of the article. For example, General Motors' Autochoiceadvisor Web site is characterized by the underlying Web site factors of financial risk and involvement. It correctly uses high brand strength and advice to gain trust and positive behavioral intent. However, it may want to reexamine its resource distribution and allocate more resources to navigation and presentation, which are also influential drivers of online trust for the automobile category. Similarly, Orbitz's use of Orbot to find and compare prices is an example of trust building through advice, but Orbitz could enhance trust by building its brand strength, emphasizing that it is co-owned by leading airline brands, such as United Airlines, American Airlines, and Delta Airlines. It could also differentiate itself and boost

**TABLE 10**
**Expected Dominant Drivers of Online Trust for Each Web Site Category**

| Category | Examples of Subcategories | Primary Underlying Web Site Factor | Expected Dominant Drivers of Online Trust |
|---|---|---|---|
| Arts | Movies, television programs, writing, photography, painting | Information on the site | Navigation and presentation, advice, community features |
| Automobile | Finished vehicles, parts | Financial risk, involvement, search good | Security, absence of errors, brand strength, advice |
| Business | Marketing, e-commerce, entrepreneurship | Information on the site, financial risk | Security, absence of errors, navigation and presentation |
| Education | High schools, graduate schools, training, kids education | Information on the site, involvement | Brand strength, navigation and presentation |
| Electronics and computer | Computers, telecommunications, television sets, DVD players, camcorders | Financial risk, involvement, search good | Security, absence of errors, brand strength, advice |
| Finance | Banking, insurance, financial services, taxes | Financial risk, involvement, search good | Security, absence of errors, brand strength, advice |
| Family and community | Parenting, babies, kids, teens, genealogy, pets | Information on the site | Navigation and presentation |
| Fashion | Apparel, models, designs | Involvement, search good | Brand strength, advice, absence of errors |
| Health | Beauty, medicine, fitness | Information on the site | Navigation and presentation, advice, absence of errors, community features |
| Home | Real estate, gardening, moving | Financial risk, involvement, search good | Security, absence of errors, brand strength, advice |
| News and portal | Newspapers, magazines, auctions, search engines, shopbots | Information on the site | Navigation and presentation, advice, absence of errors, community features |
| Recreation | Humor, outdoors, games, toys | Involvement, information on the site | Brand strength, absence of errors, navigation and presentation, advice |
| Reference | Libraries, maps | Information on the site | Navigation and presentation, advice |
| Science | Space, biology, physics, chemistry | Information on the site | Navigation and presentation, advice |
| Shopping and e-tailer | Retail categories (grocery, drug, durables) | Financial risk | Security, absence of errors, order fulfillment |
| Society and community | Government, religion | Information risk, information on the site | Privacy, absence of errors, community features |
| Sports | Specific sports, athletics, sports news, sports apparel | Information on the site | Navigation and presentation |
| Travel | Airlines, hotels, car rentals, cruises | Information risk | Privacy, order fulfillment |

trust by emphasizing privacy and fulfillment, the factors that are the most influential drivers of trust for travel Web sites. Intel's Download Web site's decision assistance tips have positive effects on building trust through better navigation. Nevertheless, it could build stronger trust by emphasizing its brand and focusing more efforts on an advisor because these are two factors that are significant in building trust for computer-related Web sites. Finally, although Dell's online trust is enhanced by its strong brand, it may want to allocate more resources to advice because its current site is cluttered with promotions. In general, managers should emphasize navigation, advice, and brand in their site design but also extend this to the more creative presentation aspects.

The findings also have some broad implications. Managers must go beyond privacy and security and focus on factors such as navigation and presentation, advice, and brand strength to enhance trust for their Web sites. Collectively, navigation and presentation, advice, and brand strength are more influential predictors of online trust than are privacy and security.

Another important finding of our work is that trust partially mediates the relationship between Web site characteristics and behavioral intent more strongly for some Web site categories than for others. Therefore, incorporating Web site cues that enhance trust can result in a long-term favorable consumer relationship with the firm, and trust cues need to be explicitly incorporated in Web site design strategies. Managers should think not only of direct effects on behavioral intent (e.g., sales effects from promotions at the Dell Web site) but also of the relationship effects of trust building, especially because the mediating effect of trust is strongest for computer-related products. Dell's promotions may have a positive short-term effect of increasing behavioral intent of buying, but the long-term effects of enhanced Web site trust may be more important. Managers of such Web sites should consider trust an intervening state that consumers must move through and design their Web sites to build consumer trust through all the previously cited elements.

A final implication of our results is for multichannel trust building. Multichannel shopping and marketing are growing trends. We examined the Internet, but many of the same factors are present in other channels, such as e-mail, telephone, direct mail, and physical store formats. Navigation and layout of the physical store are analogous to site navigation and presentation. Advice can be given by sales personnel or telemarketing operators. Brand strength is relevant in all channels. Privacy and security are relevant in the store, on the telephone, and on the Internet. Presentation is evident in store design, telephone conversations, and channel layout. Furthermore, each channel has its association with some product categories and its own geodemographics. Channel–category associations interact with customer geodemographics to explain a sizable portion of the share of volume of different channels (Inman, Shankar, and Ferraro 2004). Managers should maintain a high level of coherence across the channels so that trust-building efforts are reinforced throughout the multichannel consumer experience.

## Limitations and Further Research

Our study has several limitations that further research could address. First, because our study is exploratory in nature, it could be replicated with other Web site categories and consumer groups, and some of the anomalies could be reexamined. Second, whereas online trust has an implicit dynamic nature, our study presents a cross-sectional view. Third, our study does not actually measure consumer action on the Web site in terms of actual purchase, so the effects of order fulfillment might be understated. Fourth, potential interactions among the drivers of Web site trust, such as that between brand strength and security, could be explored. Fifth, additional data on multidimensional measures of online trust and variables, such as number of years in business, reputation, offline presence, service quality, and length of relationships, could also help explore more potential antecedents of online trust. However, some of these variables are likely to be correlated among themselves and with the consumer and Web site characteristics in our study. Sixth, our research could be extended through behavioral and market experiments by sequentially altering specific Web site trust drivers we identified in our study to build an "Internet trust generator." Seventh, the indicators of the Web site characteristic constructs we used in the analysis are primarily reflective rather than formative, but formative indicators may provide a more comprehensive and richer representation of the constructs and potentially lead to fewer model misspecification errors (Jarvis, Mackenzie, and Podsakoff 2003).

## Conclusion

This study empirically shows that the influences of Web site and consumer characteristics on trust and the role of trust in the relationships between trust drivers and behavioral intent are significantly different for different Web site categories and customer groups. Privacy and order fulfillment are the most influential determinants of trust for Web sites for which both information risk and involvement are high, such as travel sites. Navigation is strongest for information-intensive sites, such as sports sites, portals, and community sites. Brand strength is critical for categories with high involvement, such as automobile and financial services sites, and advice is the most powerful determinant for search good categories with high financial risk, such as computer sites. Online trust partially mediates the relationships between Web site and consumer characteristics and behavioral intent, and this mediation is strongest for sites with infrequently purchased, high-involvement items, such as computers. Conversely, it is weakest for sites that are oriented toward frequent transactions, such as financial services. The influences of different drivers on online trust are balanced for most customers, but there is a sizable segment of consumers for whom brand strength and advice are the primary determinants of online trust. Brand strength influences the online trust levels of people with higher education more than it does those of people with lower education. The results offer important implications for Web site design strategies.

## APPENDIX
## Questionnaire

**Web Site Characteristics**

1. The site is easy to use. *(Navigation)*
2. Overall layout of the site is clear. (Navigation)
3. The site layout is consistent across all pages. (*Navigation*)
4. The process for browsing is clear. (Navigation)
5. The site has legible images, colors, and text. (*Navigation*)
6. The site uses simple language. (*Navigation*)
7. The site uses a layout that is familiar. (*Navigation*)
8. There is a readily available site map (a summary of site links), which allows you to figure out where to go and what you can do at the site. (*Navigation*)
9. There are useful links to other sites that aid the primary purpose of coming to this site. (*Navigation*)
10. The site is visually appealing. (Navigation)
11. The visual appearance and manner of the site is professional (not amateur looking). (*Navigation*)
12. The site displays a high level of artistic sophistication/creativity. (*Navigation*)
13. This site features are state-of-the-art, better than most sites in this industry. (*Navigation*)
14. The site visually conveys a sense of honesty. (*Navigation*)
15. The site feels warm and comforting. (*Navigation*)
16. The site is engaging and captures attention. (*Navigation*)
17. The site is entertaining. (*Navigation*)
18. Information on the site can be obtained quickly. (*Navigation*)
19. I am familiar with the company whose site this is. (Brand)
20. The site represents a quality company or organization. (Brand)
21. The site carries products and services with reputable brand names. (*Brand*)
22. I am generally familiar with other brands (products and services) being advertised on the site. (*Brand*)
23. The quality of the brands being advertised on this site is consistent with the quality of the site's sponsoring company. (Brand)
24. The site is consistent with my image of the company whose site this is. (*Brand*)
25. The site enhanced how I feel about the company whose site this is. (*Navigation*)
26. The general privacy policy is easy to find on the site. (*Privacy*)
27. The text of the privacy policy is easy to understand. (Privacy)
28. The site clearly explains how user information is used. (Privacy)
29. Information regarding security of payments is clearly presented. (*Privacy*)
30. Informational text regarding the site's use of cookies is clearly presented. (*Privacy*)
31. I believe the company sponsoring this site will not use cookies to invade my privacy in any way. (*Privacy*)
32. The site explains clearly how my information will be shared with other companies. (Privacy)
33. I would be comfortable giving personal information on this site. (*Privacy*)
34. I would be comfortable shopping at this site. (*Privacy*)
35. There were signs or symbols on the site placed there by third-party companies indicating that the site had been reviewed or audited for sound business practices. (Security)
36. There were trust seals present (e.g., TRUSTe). (Security)
37. There were seals of companies stating that my information on this site is secure (e.g., Verisign). (Security)
38. Information is present indicating that this site has received a best site award. (*Security*)
39. Endorsement by celebrities is present. (*Community*)
40. Testimonial/endorsement by past users is present. (*Community*)
41. The site content is easy for me to understand. (*Navigation*)
42. The content appears to be up-to-date. (*Navigation*)
43. The site provides accurate and relevant information. (*Navigation*)
44. The site provides me with sufficient information to make a purchase decision on all products being offered. (*Advice*)
45. The illustrations for the products and services at the site are helpful in making a purchase decision. (*Navigation*)
46. The site has useful shopping support tools (such as a calculator or planner). (*Advice*)
47. The site provides an explanation of services and products being offered. (*Advice*)
48. The site set up can be personalized to my needs. (*Advice*)
49. The site can recommend products based on previous purchase. (*Advice*)
50. The site allows me to create products or services to exactly fit my needs. (*Advice*)
51. Products can easily be compared. (*Advice*)
52. Comparisons of all competing brands are presented. (Advice)
53. Good shopping tips are provided. (*Advice*)
54. To recommend products, easy to answer questions are asked about my preferences. (Advice)
55. Useful shopping recommendations are made based on my personal information and preferences. (Advice)
56. The site is helpful to me in reaching my buying decisions. (*Advice*)
57. The site presents both benefits and drawbacks of products and services. (*Advice*)
58. A toll free number is easily found for live help. (*Advice*)
59. Informative magazine articles or editorial content are present. (*Community*)
60. The site asks questions to determine needs and preferences. (*Advice*)
61. There is a search tool to help find information on the site. (*Order fulfillment*)
62. It is possible to interact on the screen with a shopping advisor. (*Community*)
63. It is possible to contact a shopping assistant through e-mail. (*Order fulfillment*)
64. It is possible to communicate via fax to an expert advisor. (*Community*)
65. The site appears to offer secure payment methods. (*Order fulfillment*)
66. The site accepts a variety of payment methods. (*Order fulfillment*)
67. Easy ordering and payment mechanisms exist. (*Order fulfillment*)

## APPENDIX
## Questionnaire

68. Service and product guarantees are clearly explained. (*Order fulfillment*)
69. Shipping and handling costs are listed up front. (*Order fulfillment*)
70. The site tells me immediately if something is out of stock, so time is not wasted going through the checkout process and finding this out later. (*Order fulfillment*)
71. Delivery options are available. (Order fulfillment)
72. Return policies or other measures of accountability are present. (Order fulfillment)
73. Once an order is placed, it can be tracked to see where it is in the shipping process. (*Order fulfillment*)
74. Order confirmation is given via e-mail. (Order fulfillment)
75. The items I looked at were in stock. (*Order fulfillment*)
76. The Internet links were in working order. (*Absence of errors*)
77. There were no errors or crashing. (Absence of errors)
78. There were no busy server messages. (Absence of errors)
79. There were no pages "under construction." (Absence of errors)
80. The download time was acceptable. (*Absence of errors*)
81. All text and menus displayed properly. (*Absence of errors*)
82. The site and its contents could be accessed without requiring too much personal information. (*Absence of errors*)
83. All features of the site could be used without the requirement to download programs (such as downloading a "flash" program to watch a video or to hear music). (*Absence of errors*)
84. It is easy to interact with other users of this site who may have bought things at the site before or who use the site frequently. (*Community*)
85. I enjoyed the overall experience of the site. (*Navigation*)
86. I found games/puzzles/freebies or gifts on the site. (*Community*)
87. I found photos of people/family/kids on the site. (*Community*)
88. I found bios of executives on the site. (*Community*)
89. The site allows user direct input or posting to site (e.g., bulletin board, e-mail, personals). (Community)
90. Evidence of the site participating in philanthropy/charity is present. (Community)
91. A chat room is available where consumers can discuss their experience with the site and/or its products. (Community)

**Customer/Consumer Characteristics**

94. I use the Internet as an information tool.[a]
95. I use the Internet for e-mail.[a]
96. I use the Internet for shopping. (Shopping experience)
97. I use the Internet for banking/investing. (*Shopping experience*)
98. I use the Internet for entertainment. (Entertainment or chat experience)
99. I have used the Internet to take part in chat rooms. (Entertainment or chat experience)
100. Before this survey, I was familiar with the site I have just evaluated. (Familiarity)
101. I have made a purchase on this site in the past. (*Familiarity*)[a]
102. I have purchased products or services at other sites by completing the transaction online. (Shopping experience)
103. I use the Internet primarily for business/work related activities.[a]
104. I use the Internet primarily for household related activities.[a]
105. I consider myself to be quite knowledgeable about Internet sites in general. (Online savvy/Expertise)
106. I am confident in my ability to assess trustworthiness of web sites. (Online savvy/Expertise)
107. I am confident in my ability to assess the quality of a site. (Online savvy/Expertise)
108. The number of hours I spend per week on the Internet are: (*Entertainment or chat experience*)
109. Before today, approximately how many times had you visited this site? (Familiarity)

**Demographics**

110. What is your gender?
111. What is your age?
112. What is your employment status?
113. What is the highest level of education you have completed?
114. Including yourself, how many people live in your household? (Select one)
115. What is your household's combined yearly income? Be sure to combine the total income for all household members living with you such as wages or salaries, income from self-employment, rents, dividends, etc.—BEFORE tax deductions. (Select one)
116. Where do you live? (Select one)

**Trust Items**

117. This site appears to be more trustworthy than other sites I have visited. (*Trust*)
123. The site represents a company or organization that will deliver on promises made. (*Trust*)
124. My overall trust in this site is. (Trust)
125. My overall believability of the information on this site is. (Trust)
126. My overall confidence in the recommendations on this site is. (Trust)

**Behavioral Intent Items**

118. I would purchase an item at this site. (Intent)
119. I would recommend this site to a friend. (Intent)
120. I am comfortable providing financial and personal information on this site. (*Intent*)
121. I would book mark this site. (*Intent*)
122. I would register at this site. (Intent)

[a]This item does not represent any particular construct in the SEM.

Notes: The construct onto which the corresponding item loads highest is in parentheses after that item. Corresponding constructs appear in italics for items not included in the SEM.

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