

# Assurance Seals, On-Line Customer Satisfaction, and Repurchase Intention

*Insu Park, Amit Bhatnagar, and H. Raghav Rao*

**ABSTRACT:** This study explores how third-party assurance seals, a privacy service provided by vendors to mitigate customers' fears, has an impact on on-line customer satisfaction and repeat-purchase intention. It asks the following research questions: Do assurance seals influence on-line service experience? If so, how do they affect consumers' satisfaction and repeat-purchase intention? The study shows, first, that seals provide a frame such that a consumer's overall satisfaction and repeat-purchase intention would be higher when vendors provide assurance seals than when they do not. Second, applying the concept of diminishing sensitivity, it shows that consumers would be subjectively less sensitive to service performance of vendors who provide seals than vendors who do not provide seals. The hypotheses are tested on data obtained from Bizrate.com. The empirical analysis supports the hypotheses.

**KEY WORDS AND PHRASES:** Assurance seals, framing effect, privacy, privacy services, satisfaction, service experience, service science.

In traditional markets, consumers' service experience is regarded as an important indicator for estimating their satisfaction and repeat-purchase intention [1, 4, 6, 19]. Like consumers in off-line markets, consumers in on-line markets constantly experience services provided by retailers throughout the purchasing products/services processes. As in the case of off-line consumers, consumers' experiences of provided services are a key factor in forming their satisfaction and repeat-purchase intention in on-line marketplaces [47, 49]. However, unlike off-line consumers, on-line consumers need to consider additional trust or privacy issues when evaluating their satisfaction/repeat-purchase intention [43]. This is because consumers in on-line markets perceive high levels of risk (fraud, information abuse, etc.) during their purchases.

According to past research, concerns about security, trust, authentication, fraud, and risk of loss are the most significant barriers to the growth of e-commerce [15]. For instance, according to the Associated Press, 61 percent of adult Americans said they were very or extremely concerned about the privacy of personal information when buying on-line, an increase from 47 percent in 2006 ([www.itfacts.biz/57-of-americans-still-very-concerned-with-credit-card-safety-online/9542](http://www.itfacts.biz/57-of-americans-still-very-concerned-with-credit-card-safety-online/9542)). Such concerns arise during the purchase process because private information can be easily collected, processed, and exploited by various parties not directly linked to the transaction. The spatial separation between consumers and vendors further increases consumers' fears regarding opportunism by sellers [3]. Consumers concerned about privacy risks are more likely to patronize stores that have features that guarantee their privacy. Although most on-line

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vendors detail the steps they take to protect the privacy of their customers in their privacy policy, asymmetries of information make it impossible for consumers to know whether an on-line vendor would actually adhere to its policy.

One way to address the fears and concerns of on-line consumers is to establish a level of trust between consumers and on-line businesses. A remedy that could alleviate concerns and establish trust is a privacy service provided by vendors, that is, third-party assurance seals [38]. Through such seals, on-line vendors can reassure their customers regarding their commitment to protecting customers' privacy [25]. Third-party assurance seals are provided by the vendors through a third party (after an independent audit and investigation) and serve to guarantee the privacy policy of the on-line vendors. Such seals are an IT-enabled service provided by vendors to mitigate the fears of customers regarding privacy and can be viewed as privacy signals that serve to differentiate privacy-respecting sites from their competitors [53]. Despite the potential impact of assurance seals on consumer satisfaction and loyalty, little research has been conducted on this topic.

To better understand the effect of third-party assurance seals on on-line consumer satisfaction and repeat-purchase intention using vendor services, this study asks the following questions: (1) Do assurance seals influence on-line service experience? If so, (2) how do assurance seals affect consumers' satisfaction and repeat-purchase intention? Specifically, important issues are: Will the inclusion of assurance seals provide a frame for consumers' expectations for service performance so that service performance differently affects overall satisfaction/repeat-purchase intention among on-line vendors? How is the effect of service performance changed by assurance seals in terms of influencing overall satisfaction and repeat-purchase intention? These research questions may be critical for on-line retailers in order to understand whether assurance seals efficiently generate satisfaction and repeat-purchase intentions, as well as in deciding whether assurance seals are more profitable than other strategies, such as service guarantees.

By focusing on the psychological effect of assurance seals, this study articulates that assurance seals not only provide a psychological mechanism that frames the evaluation of consumer satisfaction, but also influence the relationship between the main constructs: consumer satisfaction/repeat-purchase intention and service performance. Unlike much research, which focuses on students' responses, this paper utilizes actual buyers of on-line goods, a more generalized subject pool. The study increases our understanding of the impact of IT-enabled and IT-driven service on individuals' overall satisfaction and repeat-purchase intention and also of the impact of assurance seals on the relationship between vendor's service performance and consumers' overall satisfaction/repeat-purchase intention.

## **Literature Review**

### ***Consumer Satisfaction and Repeat-Purchase Intention***

Satisfaction has been defined and measured in different ways over the years [41]. For instance, it has been defined in terms of transaction-specific product

episodes, as well as the customer's overall experiences to date—as cumulative satisfaction or attitudes [17]. According to Shankar, Smith, and Rangaswamy, consumer satisfaction is relationship-specific, derived from the effect of a series of discrete service encounters or transactions with on-line vendors over a certain time period, including searching, buying, and using a product [49]. An important advantage of the cumulative satisfaction construct is that it is better able to predict subsequent behaviors and economic performance [17]. It reflects the customer's feelings about multiple experiences or encounters with service vendors.

Repeat-purchase intention is equally important as a key indicator of loyalty [23]. Research reveals that an important determinant factor of consumer repeat-purchase intention is service quality [10, 12]. Since the information they gather from their experiences with a vendor can alter their subsequent purchasing behavior, consumers consider the services the vendor provides as a factor in subsequent decision-making [5]. The important determinant of the repeat-purchase intention can be understood in relation to service quality, since consumers tend to depend more upon their experiences after they conduct an initial transaction rather than upon the reputation or the recognizability of a store brand. In other words, in contrast to the consumer's initial purchase behavior, repeat-purchase intention can be explained by service performance that consumers have experienced through the transactions [2].

### ***On-Line Vendors' Service***

Traditionally, services have been researched in such areas as marketing and on-line and off-line transactions. The concept of service quality is one of the most important issues in the research on services. Service quality is defined as the outcome of an evaluation process whereby consumers compare their expectations for the particular service they have received [11]. Parasuraman, Zeithaml, and Berry viewed service quality as the gap between consumers' expectations and their perceptions of the actual service [42]. Past research has clearly demonstrated that service quality is an antecedent of satisfaction and behavioral intention [48, 56]. That is, customers who are satisfied with the quality of a service are more likely to return to the service outlet and make repeat purchases from the provider.

In examining the effect of service quality, past studies show how customers evaluate service encounters as a summation during the transaction. First, according to the satisfaction literature, consumption emotions are one's affective responses to one's perception of the series of attributes that comprise a product or service performance [29]. Second, the consumer satisfaction literature assumes implicitly that people remember their numerous and varied experiences through the entire duration of a product or service consumption and somehow combine these to form retrospective reports of the emotions [24, 39]. Third, Boulding et al. showed not only that overall satisfaction is an aggregation of all previous transaction-specific evaluations and is updated after each specific transaction, but also that quality is multidimensional, and different dimensions of quality are averaged together to produce an overall assessment of quality [7].

In on-line marketplaces, both researchers and practitioners have increasingly recognized that e-service is one of the key determinants in successful e-commerce. Since consumer evaluations in an on-line environment and in the off-line context are quite different, consumer satisfaction involves a complex, meaning-laden, long-term process [43]. Understanding the role of e-service is significantly important because consumers' experiences of inadequate e-service might, in fact, stall the growth of on-line e-commerce [21, 47]. E-service refers to the role of service in cyberspace [47], and e-service quality is defined as "encompass[ing] all phases of a customer's interactions with a Web site: *the extent to which a web site facilitates efficient and effective shopping, purchasing, and delivery*" [43, p. 217, emphasis in original]. According to previous research, service attributes related to a vendor's Web site have a similarly positive effect on consumer satisfaction and retention, just as traditional service features affect consumer satisfaction [5, 20]. In addition, consumer repeat-purchase intentions with regard to a particular vendor are a consequence of satisfaction and the vendor's service features related to the Web site [52].

In the realm of e-commerce, consumers may use two processes: (1) a prepurchase phase that involves a decision to choose one of many on-line vendors, and (2) a postpurchase phase that involves evaluating the aforementioned decision [55]. In general, while it is not clear whether evaluative-specific criteria (attributes) can remain constant across the pre- and postpurchase phases in consumers' minds, the goal of the vendor choice at the time of prepurchase may be different from the goal of postpurchase. As a result, different criteria may be needed to perform the processing tasks associated with choosing among alternatives versus evaluating the decision [9]. In particular, consumers' satisfaction with an on-line vendor largely depends on the services offered by the vendor's Web site enabled by IT artifacts (hardware/software, combined systems and networks) across the pre- and postpurchase steps. IT artifacts can make it easier for consumers to move out to other vendors who sell the same-brand product/services to take advantage of what is offered by the other vendor, such as convenience, ease of use, and so on. Therefore, in an on-line context, consumers may determine their overall satisfaction by integrating their evaluation of preservice performance into postservice performance of the vendor's services.

Using the pre- and postservice model in the on-line shopping context of customer satisfaction has several theoretical and managerial benefits for both a conceptual and an empirical understanding of a customer's overall satisfaction with an on-line vendor. First, at the level of the product/service, consumers are more prone to provide evaluations of their overall satisfaction by integrating pre- and postservice experiences. Second, a time-based (pre- and post-) approach enables researchers to conceptualize commonly observed phenomena. Consumers can experience mixed feelings of both satisfaction and dissatisfaction with different aspects of a vendor service across time (pre- and postphases). For example, on a vendor Web site, a customer may be highly satisfied with preservices, including the Web site design, but at the same time also may be highly dissatisfied with postservices, such as the clarity of product information. Along with service dimensions, this study conceptualizes overall satisfaction with the e-retailing service provider over

a given period as the cumulative effect of a set of service attributes during the transaction process.

### ***Third-Party Assurance Seals***

In the context of on-line shopping, firms can attempt to reduce consumers' perceived risk in several ways, one of which is the use of seals of approval from third parties that are trusted by the public [13]. Consumers who notice the seals are then assured that a certain standard of privacy will be met. E-retailers align themselves with a trusted third party in an attempt to gain the trust/confidence of potential consumers. Therefore, assurance seals could potentially increase consumers' confidence in e-retailers and their decisions to choose these e-retailers, rather than hesitate about engaging in on-line shopping [22].

When initially purchasing products/services from an on-line store, the consumer's choice of vendors is affected by assurance seals, which act as a means to guarantee consumers' private information. Third-party assurance seals are designed to inform the consumer of the e-retailer's trustworthiness and communicate that the e-retailer complies with the assurator's specific standards or requirements and, as a result, can be trusted by the consumer [22].

Since assurance seals are an extrinsic property of e-retailers, consumers will not be satisfied with an e-retailer only because of its assurance seals. The seal is meant to instill trust by verifying that the Web site has a policy about the collection and use of personally identifiable information [35]. Third-party assurance is accepted to relieve on-line consumers from their privacy concerns and to increase their willingness to purchase [36]. While e-commerce has not changed the basic nature of the commercial transaction, a trust gap has developed in business-to-consumer (B2C) e-commerce transactions. This trust gap centers primarily on the privacy of personally identifiable items of information, such as name and address, which are essential elements of B2C transactions [35, 44]. Web users typically express concern over the safety of giving credit card numbers over the Web, the likelihood that Web sites will sell their personal details, and the legitimacy of Web sites [13].

Recent research shows mixed results on the effect of third-party assurance seals [22, 31]. McKnight, Charles, and Vivek have shown that third-party seals do not have a significant impact on consumer trust [31]. Houston and Taylor found that a particular assurance seal (WebTrust) does not provide additional assurance, whereas Kovar, Burke, and Kovar, in contrast, showed that the WebTrust seal has a direct effect on consumer' purchase intention [14, 22]. In addition, Miyazaki and Krishnamurthy found that seal logos increase patronage rates only for consumers with relatively high on-line shopping risk [34].

The reasons for the mixed results on the affect of assurance seals in prior research may be that third-party issues have mostly been studied with regard to the direct effects of assurance seals. Although an assurance seal has an affect on customers' trust, the impact is less than that of other factors, such as service quality or store reputation [31]. Another reason could be that empirical studies, focusing on the relationship between assurance seals and trust or perceived risks, do not explore the moderational linkage of consumer satisfaction.

## Theoretical Background and Hypotheses

### **Prospect Theory**

Prospect theory is a dominant paradigm for decision-making under risk and has been applied in several studies of consumers' behaviors in different scenarios [18, 33]. This theory is concerned with whether an outcome (as a result of consumers' decision-making) is viewed as a gain or a loss [27]. Outcomes are coded as gains or losses relative to a reference point; the value function is concave for gains and convex for losses [18]. Accordingly, decision-makers are risk-averse in the gain domain and risk-seeking in the loss domain. To explain the idea of gains and losses, the present study used one of the key concepts of prospect theory: framing effect.

### *Framing Effect*

Exposing subjects to scenarios that were numerically equivalent but framed in terms of losses and gains, Tversky and Kahneman demonstrated how small, subtle changes in the content of presentation significantly altered the meanings attributed by individuals and dramatically affected their behavior [51]. This was labeled as the framing effect. The term "framing" is concerned with the notion that a choice problem is presented to a consumer in ways that conceptualize the same objects as either gains or losses [8]. Previous research has shown that the framing effect results from changes in attitudes toward risk or uncertainty in the transaction [26]. The frame that a consumer adopts is controlled partly by the formulation of the problem facing the consumer and partly by the norms, habits, and personal characteristics of the consumer [51]. The framing effect is mainly used to explain consumers' inconsistent behaviors with respect to reference price, product attributes, and decision process [46].

Past research has examined various ways to frame consumers' decisions. *Attribute framing effects* occur when evaluations of an object or event are more favorable if a key attribute is framed in positive rather than negative terms. For example, consumers' ratings of ground beef differ depending on whether it is labeled "80% lean" or "20% fat" [26]. *Goal framing effects* occur when the appeal of a persuasive message depends on whether it stresses the positive consequences of performing an act to achieve a particular goal or the negative consequences of not performing the act. For example, women were more apt to engage in breast self-examination (BSE) when presented with information stressing the negative consequences of not engaging in BSE than when presented with information stressing the positive consequences of engaging in BSE [32]. *Risky choice framing effects* occur when the willingness to take a risk (e.g., elect a medical procedure with variable potential outcomes) depends on whether the potential outcomes are positively framed (e.g., in terms of success rate) or negatively framed (e.g., in terms of failure rate). The "Asian disease problem" described by Tversky and Kahneman is a classic example of the framing effect [51]. For instance, people are more willing to take risks with negatively framed outcomes than with positively framed outcomes.

## ***Framing Role of Assurance Seals in Evaluating Overall Satisfaction***

### *Asymmetric Effects of Service Performance*

The visual mode of assurance seals can have a framing effect on consumers in that the seals are repeatedly exposed to consumers who are searching for information on-line. When a vendor provides assurance seals and consistently exposes them to a consumer, the consumer has positive feelings about the vendor, as compared to other vendors who do not provide assurance seals but only provide a privacy policy. Exposure to a particular prior feature (e.g., assurance seals) aids consumers in retrieving information already existing in their memories (e.g., initial trust) and eventually affects their evaluations of on-line vendor performance. Mendel and Johnson, for example, show that consumers change their choices after being exposed to Web-page backgrounds that act as visual cues [28]. In this case, assurance seals act as a frame that makes the consumer perceive a vendor's attribute as two different concepts (superior and inferior). When evaluating two vendors, customers consider the vendor with assurance seals as superior and the vendor without assurance seals as inferior, all else being equal [see 37]. This is because assurance seals, as an added attribute that enhances the product or service, can add value for the vendor.

When a vendor does not provide assurance seals, consumers are relatively more concerned about privacy or security and so might be more sensitive to the effect of service performance on overall satisfaction than when a vendor provides the seal. As many studies demonstrate, negative messages indicating the presence of risks are trusted more and have a greater impact on risk perceptions than positive messages suggesting the absence of risks [50]. Eventually, the absence of seals results in consumers focusing more on other attributes of the vendor besides the presence of seals, such as a high level of services or low prices. Therefore, when consumers shop with vendors without assurance seals, their satisfaction is more affected by vendors' service attributes than when they have transactions with vendors who incorporate assurance seals. Thus, everything else being equal, the consumer perceives the vendor who provides assurance seals as relatively superior, and perceives a vendor that does not provide assurance seals as relatively inferior.

Consumers are likely to use this dichotomous frame regarding uncertainty or risks from on-line transactions in evaluating their overall satisfaction of a vendor, even though an on-line vendor provides service attributes that can be used by consumers to evaluate overall satisfaction. This frame makes consumers rate differently the effect of service performance on overall satisfaction in the context of alleviating risk, whenever consumers evaluate their overall satisfaction with a given vendor. This is because people tend to accept the frame presented in a situation and evaluate the outcomes in terms of that frame. In this context, assurance seals, as a promotional tool, inform consumers about the assurance of privacy policy that most vendors present to consumers to provide confidence in their Web site and thus enhance the consumer's confidence in the vendor.

From the consumer's point of view, a vendor without assurance seals belongs to an inferior frame, whereas a vendor with assurance seals belongs to a superior frame (this conceptualization is similar to the predictions of prospect theory that consumers typically divide vendors into gain and loss). People are likely to either avoid or seek risk from uncertain on-line shopping channels, depending on whether a privacy policy is described with explicit or symbolic information such as assurance seals. For example, a superior frame implies that when vendors present assurance seals on their Web sites, they reduce the risk and increase the consumer's confidence in making transactions because consumers are risk averse and tend to avoid loss even if this means accepting higher risk. As a result, consumers with a superior frame take relatively little notice of service performance in evaluating their satisfaction than consumers with the inferior frame (transacting with the vendor without seals). In contrast, in the context of an inferior frame, consumers have a relatively negative attitude toward the vendor. This leads them to depend more on the high performance of the on-line vendor's service attributes, such as the vendor's services or low prices, to reduce their risk perceptions rather than depending on the vendor with seals.

In sum, the presence or absence of the assurance seal creates a situation in which service performance has a differential impact on consumers' evaluations of overall satisfaction, depending on the consumers' attitudes toward risk. The different effect of service performance is caused by the moderating effect of the assurance seal. This leads to the first hypothesis:

***Hypothesis 1a (Third-Party Assurance Seal Impacts on Overall Satisfaction Hypothesis):*** Overall satisfaction will be affected differently by service performance depending on the presence or absence of third-party assurance seals. Specifically, service performance affects overall satisfaction for the inferior vendor more than for the superior vendor.

In the same manner, service performance also has different impacts on repeat-purchase intention based on the absence or presence of assurance seals. Consumers are likely to need higher services from inferior vendors to compensate for those vendors' lack of privacy and security. However, consumers believe that vendors who provide assurance seals (superior vendors) will protect their private information from being released, and this belief likely leads to consumers being less dependent on service performance when they decide to repeat purchase. Hence, it is argued that for the superior vendor, consumers are less affected by the same magnitude of service performance than for the inferior vendor, even though the assurance seals still have a direct effect on repeat-purchase intention.

***Hypothesis 1b (Third-Party Assurance Seal Impact on Repeat-Purchase Intention):*** Repeat-purchase intention will be affected differently by service performance depending on the presence or absence of third-party assurance seals. Specifically, service performance affects repeat-purchase intention for the inferior vendor more than for the superior vendor.

### *Diminishing-Sensitivity Effect of Assurance Seals*

The concept of diminishing sensitivity describes people who are more sensitive to changes near their status quo (reference point) than to changes remote from their status quo (reference point). For example, a consumer is likely to be more sensitive to an increase in a change of temperature from 41 to 51 than from 141 to 151. That is, an alternative vendor that is superior (more trustworthy/riskless) to another vendor is expected to react less sensitively to service performance. According to Nowlis and Simonson, this argument is based on the idea that sensitivity to changes along a particular dimension is reduced as the magnitude of the dimension increases [37]. It can be used to explain attitudes toward risks with concavity of value function (risk aversion) in economics.

In an on-line shopping context, consumers' overall satisfaction has more sensitivity with marginal decrease (convexity) for the inferior vendor (no-seals vendor) than for the superior vendor (seals vendor). Compared to the superior vendors, consumers perceive shopping with vendors who do not provide seals (inferior vendor) as relatively risky. In addition, the absence of assurance seals, as a negative feature of a vendor (inferior vendor), is likely to be salient and leads to a relatively large affect on overall satisfaction. For this reason, consumers feel that the subjective impact for a unit of service performance by an inferior vendor is larger than for the same unit of service performance by a superior vendor. This causes consumers to evaluate more sensitively their satisfaction for the same unit of evaluation for service performance by an inferior vendor than by a superior vendor. For example, for the same magnitudes of satisfaction, consumers have greater repeat-purchase intention for inferior vendors than superior vendors.

Accordingly, consumers have different value functions for overall satisfaction between superior and inferior vendors in terms of their service performance. This leads to the second hypothesis of the study:

***Hypothesis 2a (Consumer Satisfaction Diminishing Intensity Hypothesis):*** *Consumers' satisfaction for vendors with seals has less diminishing sensitivity, as service performance increases, than for vendors without seals.*

***Hypothesis 2b (Repeat-Purchase Diminishing Intensity Hypothesis):*** *Repeat-purchase intention for vendors with seals has less diminishing sensitivity, as service performance increases, than for vendors without seals.*

## **Methodology**

Real-life data were used to test the four hypotheses developed in the previous section. A description of the data will be followed by a discussion of the results of the empirical analysis.

## **Data Collection**

The data were obtained from Bizrate.com, a well-known price-comparison Web site. Bizrate.com agglomerates several on-line vendors across hundreds of product categories. Whenever a customer completes a purchase at one of these vendors, Bizrate.com invites the customer to complete an on-line survey. In the on-line survey, individuals are required to rate the vendor on a series of retail attributes, such as ease of finding product information, selection of products, clarity of product information, prices relative to other merchants, overall look and design, shipping charges, variety of shipping options, charges stated clearly before order submission, availability of product, order tracking, on-time delivery, product met expectations, and customer support. Each attribute is rated on a 10-point scale. For each vendor, Bizrate.com provides the average rating of each attribute across all respondents. The Bizrate ratings of on-line vendors on different service attributes are widely used in on-line markets. For example, Shopper.com, Shopping.com, and Price.com refer to the ratings of Bizrate.com. In addition, numerous vendors certified by Bizrate.com announce this fact on their Web sites to signal their credibility (e.g., CircuitCity.com, Motorola.com, CD Universe.com, Euclid Computers.com).

## **Measurement**

### *Overall Satisfaction and Repeat-Purchase Intention*

In the on-line survey conducted by Bizrate.com, respondents are asked to state their overall satisfaction with the Web site and also whether they would shop at that store again. Both variables were measured on a 10-point scale. Consumer responses to these two variables are the dependent variables in the data. Although both measures are single-item scales, there is considerable precedence for using single-item measures in satisfaction studies. Yi's research shows that the reliability of single-item scales for customer satisfaction is acceptable [54].

### *Service Performance*

As explained earlier, Bizrate.com provides the average evaluation of each on-line vendor on a series of retail attributes. On-line vendors' performance on these attributes should determine consumer satisfaction and willingness to purchase again from those vendors. However, rather than consider the vendor's performance on individual attributes, cumulated service performance is used to measure the effect of services on overall satisfaction and willingness to purchase again. Following Mittal et al., the cumulative service score for each retailer was calculated by determining the average score of 10 attributes for each retailer provided by Bizrate.com [33].

### *Third-Party Assurance Seals*

Assurance seals are provided by a number of companies, such as Trust-E, Web trust, BBB, and VeriSign. The Web sites of each vendor were visited and checked to see whether they had an assurance seal.

### *Control Variable*

The conceptual model was tested by controlling for the following three variables that could potentially affect the relationships between the vendor's service performance and customer satisfaction and repeat-purchase intention: perceived price, perceived shipping charges, and product category. The model controlled for perceived price because it is known to influence consumers' satisfaction. Since the full price paid by a consumer at an on-line store includes the shipping charges, they were considered to be one of the control variables. Bizrate.com has the consumer's evaluation of on-line vendor on perceived price and shipping charges. Both of these variables were measured by a 10-point scale. Third, the model controlled for the product category. Information about vendors of four different categories was collected based on the degree of standardization: The first two categories (books and magazines, and DVDs and videos) had very little variance in features and quality, whereas the second two categories (clothing and accessories, and gifts, flowers, and food) were differentiated in price and quality. Similar categories have been used in similar studies by other researchers (see [16]). Table 1 shows the measures for this study.

### ***Manipulation Check of Assurance Seals***

The first test investigated whether there were differences between on-line vendors who had seals and on-line vendors who did not have seals. The mean of all the variables included in the study was calculated for on-line vendors with seals and then for vendors without seals. A *t*-test was then conducted to see if the means between the two groups were significantly different. Levene's test for equality of group variances was also conducted. The results of this analysis are shown in Table 2. The mean values of different variables for the vendors with seals were found to be significantly different from the vendors without seal.

## **Analysis and Results**

### ***Model***

The relationship between service performance and satisfaction and repeat-purchase intention was tested with the help of the following regression equation,

**Table 1. Measures and Their Explanation (www.Bizrate.com).**

Measure	Explanation
Service performance	
Charges statement	Total purchase amount (including shipping/handling charges) displayed before order submission
Look and design	Overall look and design of site
Ease of finding	How easily were you able to find product you were looking for
Clarity of product information	How clear and understandable was product information
Selection of products	Types of products available
Order tracking	Ability to track orders until delivered
On-time delivery	Product arrived when expected
Customer support	Availability/ease of contacting, courtesy and knowledge of staff, resolution of issue
Availability of product	Product was in stock at time of expected delivery
Product met expectations	Correct product was delivered and worked as described/depicted
Overall satisfaction	Overall rating (overall experience with this purchase)
Repurchase intention	Would shop here again (likelihood to buy again from this store)
Control variables	
Perceived price	Prices relative to other on-line merchants
Shipping costs	Shipping charges

$$Y_i = a + b_1x_i + b_2z_i + b_3z_ix_i + b_4c_i + \dots + b_8g_i + e_i, \quad (1)$$

where  $Y_i$  is the average customer satisfaction (or repeat-purchase intention) score for vendor  $i$ ;  $x_i$  is the average score of vendor  $i$  across all the attributes, that is, service performance;  $z_i$  is a dummy variable, which is 1 if the assurance seal was present at vendor  $i$ , and 0 otherwise;  $c_i$  to  $g_i$  are control variables, namely perceived price and perceived shipping charges, respectively;  $a$  is the intercept term that measures the mean satisfaction score; and  $b_1$  and  $b_2$  are the coefficients that measure the impact of service performance on satisfaction and repeat-purchase intention, respectively.

From the above equation, one can see that when seals were not present ( $z_i = 0$ ), the relationship between service performance and consumer response variables was measured by  $b_1$ . When seals were present ( $z_i = 1$ ), the relationship between service performance and consumer response variables was captured by  $b_1 + b_2 + b_3$ . Therefore,  $b_3$  measured the change in the relationship brought about by the presence of seals. If  $b_2$  was not significant, then there was no difference between the two groups, that is, vendors with seals and vendors without seals. However, if  $b_2$  was significant, then there was a difference between the two groups.

### **Relative Impact of Service Performance**

#### *Performance*

The regression equation (1) was estimated twice, once with the satisfaction score as the dependent variable, and the second time with the intent to repeat

Table 2. Descriptive Statistics.

Variable	Mean		Mean comparison		Levene's test for equality of variances F-value
	Vendors with seals (SD) (N = 161)	Vendors without seals (SD) (N = 383)	Mean difference	t-value	
Perceived price	8.58 (.34)	8.49 (.35)	-0.0905	-2.765**	0.017 <sup>n.s.</sup>
Shipping cost	7.72 (.89)	7.51 (.84)	-0.21	-2.59*	6.29**
Service	8.58 (.33)	8.51 (.36)	-0.074	-2.26*	0.722 <sup>n.s.</sup>
Satisfaction	8.45 (.54)	8.31 (.61)	-0.135	-2.43*	DV
Reintention	8.53 (.54)	8.36 (.62)	-0.169	-2.94**	DV

Notes: DV = dependent variable; \*  $p < 0.05$ ; \*\*  $p < 0.01$ ; n.s. = not significant.

**Table 3. Regression Coefficient: Overall Satisfaction.**

Variable	<i>b</i>	SE	$\beta$	<i>t</i>	Model
Intercept	-5.124	0.367		-13.969***	$R^2 = 0.845,$
Service performance	1.838	0.040	0.986	45.933***	$F_{8,534} = 363.61$
Seals (1)	1.325	0.610	1.015	2.172*	
Seals $\times$ service	-0.151	0.071	-0.995	-2.123*	
Perceived price	-0.253	0.033	-0.149	-7.619***	
Shipping costs	-0.006	0.013	-0.009	-0.474	
Cat 1 <sup>a</sup>	0.025	0.033	0.017	0.754	
Cat 2	0.025	0.030	0.021	0.839	
Cat 3	-0.021	0.033	-0.015	-0.636	

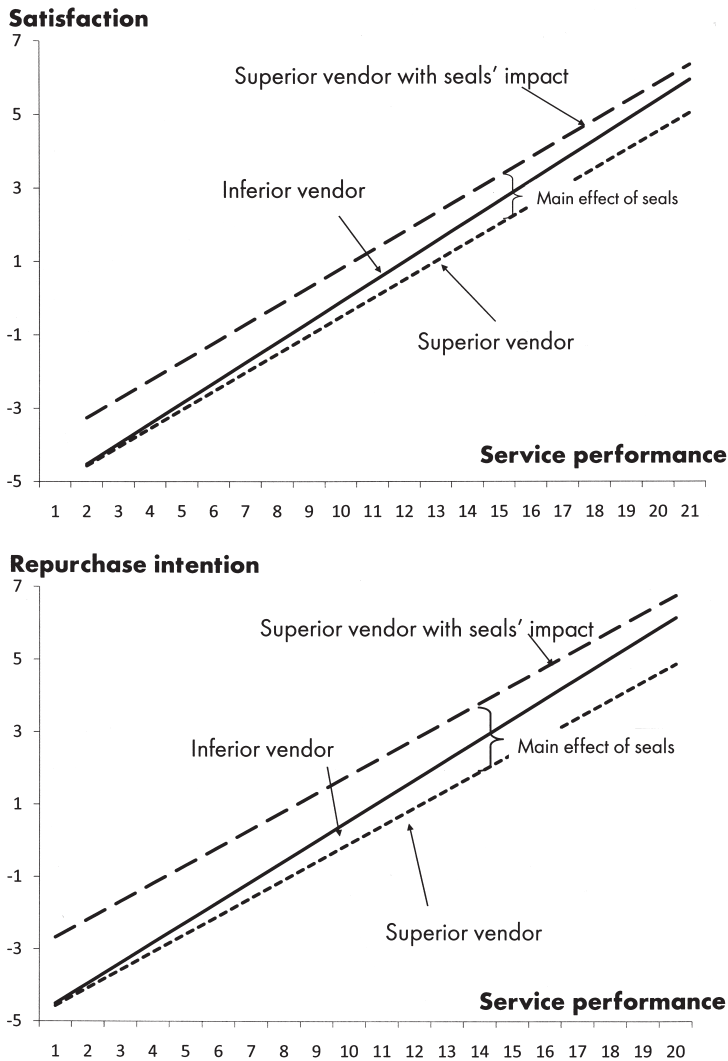
Notes: In order to compare the effect of each product category, the variable was designated as three comparison groups. In general, G-1 dummy variables are needed, where G is the number of groups (or levels of the categorical variable). In comparing the other three product categories, the DVD product group was baseline. Each dummy variable was coded as follows: Cat. 1 (Book) as 100, Cat. 2 (Clothing) as 010, Cat. 3 (Gifts) as 001, and DVD as 000. Dummy variables: Seals: seals group = 1, nonseals group = 0. <sup>a</sup> Cat. 1: books and magazines, Cat 2: clothing and accessories, Cat 3: Gifts, flowers, and food. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

**Table 4. Regression Coefficient: Repurchase Intention.**

Variable	<i>b</i>	SE	$\beta$	<i>t</i>	Model
Intercept	-5.169	0.419		-12.335***	$R^2 = 0.811,$
Service performance	1.873	0.046	0.970	40.978***	$F_{8,534} = 286.72$
Seals (1)	1.902	0.697	1.408	2.730**	
Seals $\times$ service	-0.214	0.081	-1.359	-2.628**	
Perceived price	-0.293	0.038	-0.166	-7.705***	
Shipping costs	0.002	0.015	0.003	0.125	
Cat. 1	0.093	0.038	0.063	2.462*	
Cat. 2	0.120	0.034	0.094	3.479**	
Cat. 3	0.036	0.037	0.025	0.969	

Notes: Dummy variables: seals group = 1, nonseals group = 0. \*\*\*  $p < 0.001$ ; \*\*  $p < 0.01$ ; \*  $p < 0.05$ .

purchase as the dependent variable. The results of the first estimation are reported in Table 3, and those of the second in Table 4. H1a, the Third-Party Assurance Seal Impacts on Overall Satisfaction Hypothesis, predicted that overall satisfaction would be higher in the no-seals group than in the seals group. The model fit for the satisfaction model was very good ( $F_{8,534} = 363.61$ ,  $p < 0.000$ ). According to the results, the interaction term, which tests the null hypothesis ( $|b_{ns}| = |b_s|$ ), was  $-0.151$  ( $t = -2.123$ ,  $p < 0.05$ ) and statistically significant, indicating that the coefficient  $SP_{ns}$  was significantly different and, further, had greater impact than  $SP_s$ . In the same manner, for the repeat-purchase intention, the service performance of the superior vendor was 1.659 from adding  $SP_{ns}$  (1.873) to the interaction term ( $-0.214$ ), showing that both coefficients were statistically significant (see Table 4). Thus, overall the data provided strong support for the hypotheses regarding the asymmetric effects



**Figure 1. Asymmetric Impact of Service Performance**

of service performance, including H1a and H1b. Figure 1 shows the effects of assurance seals on satisfaction and repeat-purchase intention.

### ***Diminishing Sensitivity of Service Performance on Satisfaction***

In order to test the Consumer Satisfaction Diminishing Intensity Hypothesis (H2a) and the Repeat-Purchase Diminishing Intensity Hypothesis (H2b), Eq. (1) was extended to estimate the following regression model:

$$Y_i = a + b_1x_i + b_3z_i + (b_2 + b_4z_i)x_i^2 + b_5c_i + \dots + b_9g_i + e_i \quad (2)$$

By using the *squared term* ( $x_i^2$ ), the equation tested whether the relationship between service performance and consumer response was curvilinear or not. The same method was used to test Hypothesis 2 as was used for Hypothesis 1. In Tables 5 and 6, the results show that a *dampening effect*, created by  $b_2$ , led each model to be concave, which means diminishing sensitivity. In addition, the interaction term ( $z_i x_i^2$ ) shows the difference between superior and inferior vendors' diminishing sensitivities. In other words, the slope of a linear model with only  $b_1$  is slightly decreased exactly as much as the value of  $b_2$ . This is because the magnitude of  $b_2$  stemming from the *squared term* is always smaller than the value of  $b_1$ . Further, the value of  $b_3$  makes the *squared term's* value change according to the existence of the seals. For instance, the model for satisfaction not only increased as much 3.893 which was the value of  $b_1$  (*service* in Table 5) but it also decreased exactly as much,  $-0.122$  ( $-0.122 \times 1$ ), as satisfaction was increased by one unit, and  $-0.244$  ( $-0.122 \times 2$ ) when service performance was two units. In addition, the interaction effect reduced the superior's diminishing sensitivity as much as 0.009 ( $t = 2.038, p < 0.05$ ).

For overall satisfaction, the standardized coefficient of *service performance*<sup>2</sup> was  $-0.122$  ( $t = -1.875, p < 0.1$ ), indicating a degree of diminishing sensitivity that was statistically significant. The difference between the *squared term* "*service performance*<sup>2</sup> for the inferior vendor ( $SP_{ns}$ )" and "*service performance*<sup>2</sup> for the superior vendor ( $SP_s$ )" was estimated by adding the coefficient of interaction term to the coefficient of *service performance*<sup>2</sup> ( $-0.122$  [slope for  $SP_{ns}^2$ ] +  $0.009$  [seals  $\times$  *service*<sup>2</sup>] =  $-0.113$  [slope for  $SP_s$ ]). As stated in H2, it was expected that when vendors provided assurance seals, consumer satisfaction would have a less diminishing shape with service performance because of trade-offs between perceived safety and performance. Hence, even if vendors provided low service (low performance), overall satisfaction would be high due to the positive effect of assurance seals. As expected in H2a, the result showed what was expected from the relationship among the variables.

On the other hand, for repeat-purchase intention, the coefficients of *service performance*<sup>2</sup> ( $b = -0.023, t = -0.305, p > 0.1$ ) was not statistically significant, but the interaction effect was ( $b = -0.013, t = -2.637, p < 0.01$ ) (see Table 6). However, this result shows that even though there was a difference between the diminishing sensitivities of the two groups, the hypothesis (i.e., that sensitivity on service performance should significantly diminish) was not supported. Therefore, the results were mixed for the hypotheses regarding diminishing the sensitivity effect of assurance seals: They supported H2a with statistical significance but not H2b.

## Discussion and Conclusion

The objective of this study was to apply the concepts of framing effect and diminishing sensitivity to find evidence that privacy services, namely third-party assurance seals, affect overall satisfaction and repeat-purchase intention. The study used regression analysis to investigate how assurance seals affect relationships between on-line consumer satisfaction/ repeat-purchase intention and service performance. Overall satisfaction/ repeat-purchase intention were

**Table 5. Quadratic Regression for Satisfaction with Assurance Seals.**

Variable	<i>b</i>	SE	$\beta$	<i>t</i>	Model
Intercept	-13.760	4.643		-2.964***	$R^2 = 0.845$ ; $F_{9,533} = 322.55$
Service performance	3.893	1.098	2.088	3.547***	
Service performance <sup>2</sup>	-0.122	0.065	-1.106	-1.875*	
Seals (1)	0.660	0.312	0.506	2.117**	
Seals $\times$ service <sup>2</sup>	0.009	0.004	-0.490	2.038**	
Perceived price	-0.258	0.034	-0.151	-7.666***	
Shipping costs	-0.004	0.013	-0.006	-0.290	
Cat. 1	0.019	0.027	0.013	0.702	
Cat. 2	-0.004	0.028	-0.002	-0.131	
Cat. 3	-0.008	0.030	-0.005	-0.272	

Notes: Dummy variables: seals group = 1, nonseals group = 0. \*\*\*\*  $p < 0.001$ ; \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

**Table 6. Quadratic Regression for Repurchase Intention with Assurance Seals.**

Variable	<i>b</i>	SE	$\beta$	<i>t</i>	Model
Intercept	-6.680	5.340		-1.251	$R^2 = 0.809$ ; $F_{9,533} = 250.83$
Service performance	2.253	1.262	1.167	1.784*	
Service performance <sup>2</sup>	-0.023	0.075	-0.200	-0.305***	
Seals (1)	1.011	0.359	0.748	2.818***	
Seals $\times$ service <sup>2</sup>	-0.013	0.005	-0.704	-2.637***	
Perceived price	-0.295	0.039	-0.167	-7.630***	
Shipping costs	0.004	0.015	0.006	0.271	
Cat. 1	0.017	0.031	0.012	0.566	
Cat. 2	0.037	0.033	0.024	1.143	
Cat. 3	-0.076	0.034	-0.046	-2.225**	

Notes: Dummy variables: seals group = 1, nonseals group = 0. \*\*\*\*  $p < 0.001$ ; \*\*\*  $p < 0.01$ ; \*\*  $p < 0.05$ ; \*  $p < 0.1$ .

the dependent variables, and service performance was the independent variable. Several analyses utilizing data from Bizrate.com found evidence to support three out of the four hypotheses. The results are summarized below.

First, third-party assurance seals affect overall satisfaction (H1a) and repeat-purchase intention (H1b) in two different directions by providing a framing effect that is consistent with past research. Overall satisfaction is asymmetrically affected in the presence or absence of assurance seals. These results indicate that when assurance seals are not provided, consumers' confidence in their vendor transactions depends more on service performance. Assurance seals play the role of a baseline or standard against which subsequent factors are judged. Therefore, consumers have higher expectations for the vendor with seals, and this results in service performance having a relatively lower impact.

Second, consumers' overall satisfaction is more dependent on cumulative service performance with inferior vendors than with superior vendors. Indeed, an implication of diminishing sensitivity is that the perceived dependency on service performance for satisfaction is greater when the consumer is buying from a vendor without seals. Although inconsistent with the result of loss aversion, the result for overall satisfaction shows that assurance seals lead consumers to have high standards in evaluating their satisfaction with the vendor.

An important point in this regard is the issue of consumers' heterogeneity. Past research incorporating this aspect used panel data that focused mainly on reference price effects on consumer brand-choice decisions and, to a lesser extent, on purchase quantity and purchase-timing decisions [30]. However, in the case of assurance seals, the issue of heterogeneity does not arise. If a store uses assurance seals, then the assurance seals will be present for all of its customers, and if assurance seals are not used, then they would not exist for any customers. Therefore, the fact that two types of vendors have different slopes and sensitivity is because of the effect of seals. The *t*-tests on the parameter estimates confirmed that the difference was not due to chance. As can be seen from Tables 3–5, the relevant parameter estimates were statistically different from zero and therefore were not due to chance. In addition, in Table 6, the relevant parameter estimate was not statistically significant. It is therefore accepted that the parameter estimate can be due to chance.

### **Research Implications**

This study has several implications for research and practice. First, in investigating the effect of assurance seals, it employed the framing effect as a unique method to find evidence that third-party assurance seals give consumers a certain standard for their evaluations of on-line vendors. They enable consumers to evaluate superior vendors with a high level of standards, so that the service performance of these vendors has less effect on their overall satisfaction and repeat-purchase intention, whereas they evaluate inferior vendors (without seals) based on the status quo. These results make it possible to find out more about the effect of assurance seals on service performance as prediction factors and on consumers' overall satisfaction as dependent variables in on-line shopping contexts. They also lead to a theoretical extension of consumers' decision-making in on-line marketplaces and the predictability of consumers' repurchasing behaviors.

Second, the study advances the understanding of the role of assurance seals as a mechanism that affects overall satisfaction in on-line marketplaces. Prior research on assurance seals focused largely on whether assurance seals influence dependent variables, such as trust, privacy concerns, or purchase intention [22, 31]. By concentrating upon how the presence and absence of assurance seals differently affect consumers' ratings of overall satisfaction, the study suggests a new point of view to understand the role of assurance seals.

The study provides compelling evidence for the effect of third-party assurance seals by showing two different effects (i.e., increasing direct effect of the seals themselves and decreasing relative impact of service performance) on

consumers' satisfaction and repeat-purchase intention in certain circumstances. As revealed in the results, assurance seals have a direct effect on overall satisfaction in the model that is consistent with the findings of past research. In addition, the results also show that by decreasing the perceptions of the relative impact of service performance, assurance seals make consumers depend less on service performance to rate their satisfaction for a vendor with seals than for the vendor without seals.

Therefore, although service performance has a higher impact for the vendor without seals, this does not necessarily mean that consumers' overall satisfaction is greater for the vendor with seals than for the vendor without seals. Since consumers have a low baseline for the vendor without seals, their overall satisfaction cannot reach a point beyond the high baseline for the vendor with seals, according to the magnitude of service performance. Assurance seals serve as the major force causing an eventual "movement from level" that was initially formed as a framing effect [39]. That is, the consumer has two different levels from which to evaluate overall satisfaction with two vendors across the seals. Although the consumer has a high service performance with the vendor without seals, overall satisfaction is greater with the vendor who provides seals than with the former, simply because the baselines are set at different levels at certain levels of services. Given equal conditions (the same service performance for the two groups), the seals play a critical role in consumers' evaluations of the vendors.

### ***Practical Implications***

The study has important managerial implications. First, assurance seals enable managers to create effective strategies for their businesses. For example, price premiums that differentiate sellers represent a very important element for the survival, maintenance, and success of on-line marketplaces [45]. Consumers may have relatively lower price sensitivity in relation to the vendor with assurance seals than the vendor without the seals because their trust in an on-line vendor makes it possible for the vendor to price an item higher than would be the case for a distrusted vendor [3]. High satisfaction on the same service performance is a trade-off for high prices of products. Thus, by presenting assurance seals, on-line vendors can conduct price premiums by keeping the service performance at a threshold that does not exceed trade-offs between satisfaction and price that they perceive as relevant or rational.

Second, the study reveals that the effects of assurance seals are derived from the framing effect, which divides an on-line shopping experience into two different contexts: the presence and absence of assurance seals. When a consumer initially purchases products/services from an on-line store, the consumer's choice for vendors is affected by only a few modes of information presented by the vendor. In this situation, assurance seals act as a means to guarantee the consumer's private information. Therefore, the presence or absence of assurance seals by on-line vendors enables consumers to arrive at different perceptions of the services offered by the vendors even though originally they may have been perceived quite similarly.

## Limitations and Future Research

Future research could strengthen and extend the results of this study by removing several limitations. First, it should be clear that this research explores one of many possible relationships between assurance seals and satisfaction and repeat-purchase intention. Several issues could be considered to reinforce the results of the study. First, the results and implications of the research may be constrained by the research context of on-line shopping as well as by the fact that these results were not about specific products but for on-line vendors. In addition, the study can be enhanced by using an experimental design that gives the researchers more control of the circumstances.

Despite these limitations, the study contributes to an understanding of the impact of assurance seals on the relationship between consumer evaluation and vendor services, and it also provides suggestions for further investigation. The results suggest that third-party assurance seals enhance consumers' evaluations by trading-off vendors' efforts to achieve other attributes, such as service. Conceptually, the study incorporates some results from prospect theory into assurance seals to support hypothetical arguments. It also presents solid empirical results that support its hypotheses. The results suggest that the existence of third-party assurance seals is a critical cue in deciding whether to repeatedly choose a vendor. It is hoped that this study will encourage future research to examine and amplify the role of third-party assurance seals as an institution-based mechanism in various transactions in on-line contexts.

## REFERENCES

1. Anderson, E.W., and Sullivan, M.W. The antecedents and consequences of customer satisfaction for firms. *Marketing Science*, 12, 2 (spring 1993), 125–143.
2. Andreassen, T.W., and Lervik, L. Perceived relative attractiveness today and tomorrow as predictors of future repurchase intention. *Journal of Services Research*, 2, 2 (November 1999), 164–172.
3. Ba, S., and Pavlou, P.A. Evidence of the effect of trust building technology in electronic markets: Price premiums and buyer behavior. *MIS Quarterly*, 26, 3 (September 2002), 243–268.
4. Bardhan, I.; Demirkan, H.; Kannan, P.K.; Kauffman, R.J.; and Sougstad, R. An interdisciplinary perspective on IT services management and services science. *Journal of Management Information Systems*, 26, 4 (spring 2010), 13–65.
5. Bharati, P., and Chaudhury, A. An empirical investigation of decision-making satisfaction in Web-based decision support systems. *Decision Support Systems*, 37, 2 (May 2004), 187–197.
6. Bolton, R.N.; Kannan, P.K.; and Bramlett, M.D. Implications of loyalty program membership and service experiences for customer retention and value. *Journal of the Academy of Marketing Science*, 28, 1 (winter 2000), 95–108.
7. Boulding, W.; Kalra, A.; Staelin, R.; and Zeithaml, V.A. A dynamic process model of service quality: From expectations to behavioral intentions. *Journal of Marketing Research*, 30, 1 (February 1993), 7–27.

8. Fagley, N.S. A note concerning reflection effects versus framing effects. *Psychological Bulletin*, 113, 3 (May 1993), 451–452.
9. Gardial, S.F.; Clemons, D.S.; Woodruff, R.B.; Schumann, D.W.; and Burns, M.J. Comparing consumers' recall of prepurchase and postpurchase. *Journal of Consumer Research*, 20, 4 (March 1994), 548–560.
10. Gauri, D.K.; Bhatnagar, A.; and Rao, R. Role of word of mouth in online store loyalty: Comparing online store ratings with other e-store loyalty factors. *Communications of the ACM*, 51, 3 (March 2008), 89–91.
11. Gronroos, C. A service quality model and its marketing implications. *European Journal of Marketing*, 18, 4 (April 1982), 35–42.
12. Hellier, P.K.; Geursen, G.M.; Carr, R.A.; and Rickard, J.A. Customer repurchase intention: A general structural equation model. *European Journal of Marketing*, 37, 11/12 (winter 2003), 1762–1800.
13. Hoffman, D.L.; Novak, T.P.; and Peralta, M. Building consumer trust online. *Communications of the ACM*, 42, 4 (April 1999), 80–85.
14. Houston, R.W., and Taylor, G.K. Consumer perceptions of CPA WebTrust assurances: Evidence of an expectation gap. *International Journal of Auditing*, 3, 2 (August 2003), 89–105.
15. Jarvenpaa, S.L.; Tractinsky, N.; and Vitale, M. Consumer trust in an Internet store. *Information Technology and Management*, 1, 1/2 (March 2000), 45–71.
16. Johnson, E.J.; Moe, W.W.; Fader, P.S.; Bellman, S.; and Lohse, G.L. On the depth and dynamics of online search behavior. *Management Science*, 50, 3 (March 2004), 299–308.
17. Johnson, M.D.; Gustafsson, A.; Andreassen, T.W.; Lervik, L.; and Cha, J. The evolution and future of national customer satisfaction index models. *Journal of Economic Psychology*, 22, 2 (April 2001), 217–245.
18. Kahneman, D., and Tversky, A. Prospect theory: An analysis of decision under risk. *Econometrica: Journal of the Econometric Society*, 47, 2 (March 1979), 263–292.
19. Kannan, P.K. Introduction to the special Issue: Marketing in the e-channel. *International Journal of Electronic Commerce*, 5, 3 (spring 2001), 3–6.
20. Kim, D.J.; Ferrin, D.L.; and Rao, H.R. A trust-based consumer decision making model in electronic commerce: The role of trust, risk, and their antecedents. *Decision Support Systems*, 44, 2 (January 2008), 544–564.
21. Kim, D.J.; Ferrin, D.L.; and Rao, H.R. Trust and satisfaction, two stepping stones for successful e-commerce relationships: A longitudinal exploration. *Information Systems Research*, 20, 2 (June 2009), 237–257.
22. Kovar, S.E.; Burke, K.G.; and Kovar, B.R. Selling WebTrust: An exploratory examination of factors influencing consumers' decisions to use online distribution channels. *Review of Accounting Information Systems*, 4, 2 (July 2000), 39–52.
23. Lam, S.Y.; Shankar, V.; Erramilli, M.K.; and Murthy, B. Customer value, satisfaction, loyalty, and switching costs: An illustration from a business-to-business service context. *Journal of the Academy of Marketing Science*, 32, 3 (summer 2004), 293–311.
24. Lee, J., and Rao, H.R. Task complexity and different decision criteria for online service acceptance: A comparison of two e-government compliance service domains. *Decision Support Systems*, 47, 4 (2010), 424–435.

25. Lee, P.-M. Behavioral model of online purchasers in e-commerce environment. *Electronic Commerce Research*, 2, 1/2 (January/April 2002), 75–85.
26. Levin, I.P., and Gaeth, G.J. How consumers are affected by the framing of attribute information before and after consuming the product. *Journal of Consumer Research*, 15, 3 (December 1988), 374–378.
27. Lim, R.G. A range-frequency explanation of shifting reference points in risky decision making. *Organizational Behavior and Human Decision Processes*, 63, 1 (July 1995), 6–20.
28. Mandel, N., and Johnson, E.J. When Web pages influence choice: Effects of visual primes on experts and novices. *Journal of Consumer Research*, 29, 2 (September 2002), 235–245.
29. Mano, H., and Oliver, R.L. Assessing the dimensionality and structure of the consumption experience: Evaluation, feeling, and satisfaction. *Journal of Consumer Research*, 20, 3 (December 1993), 451–466.
30. Mazumdar, T.; Raj, S.P.; and Sinha, I. Reference price research: Review and propositions. *Journal of Marketing*, 69 (October 2005), 84–102.
31. McKnight, D.H.; Charles, J.K.; and Vivek, C. Shifting factors and the ineffectiveness of third-party assurance seals: A two-stage model of initial trust in a Web business. *Electronic Markets*, 14, 3 (September 2004), 252–266.
32. Meyerowitz, B.E., and Chaiken, S. The effect of message framing on breast self-examination attitudes, intentions, and behavior. *Journal of Personality and Social Psychology*, 52 (March 1987), 500–510.
33. Mittal, V.; William, T.; Ross, J.; and Baldasare, P.M. The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions. *Journal of Marketing*, 62, 1 (January 1998), 33–47.
34. Miyazaki, A.D., and Krishnamurthy, S. Internet seals of approval: Effects on online privacy policies and consumer perceptions. *Journal of Consumer Affairs*, 36, 1 (summer 2002), 28–49.
35. Moores, T.T., and Dhillon, G. Do privacy seals in e-commerce really work? *Communications of the ACM*, 46, 12 (December 2003), 265–271.
36. Noteberg, A.; Christiaanse, E.; and Wallage, P. Consumer trust in electronic channels. *E-Service Journal*, 2, 2 (winter 2003), 46–67.
37. Nowlis, S.M., and Simonson, I. The effect of new product features on brand choice. *Journal of Marketing Research*, 33, 1 (February 1996), 36–46.
38. Odom, M.D.; Kumar, A.; and Saunders, L. Web assurance seals: How and why they influence consumers' decisions. *Journal of Information Systems*, 16 (fall 2002), 231–250.
39. Oliver, R.L. Measurement and evaluation of satisfaction processes in retail settings. *Journal of Retailing*, 57, 3 (fall 1981), 25–48.
40. Oliver, R.L. Cognitive, affective, and attribute bases of the satisfaction response. *Journal of Consumer Research*, 20, 3 (December 1993), 418–430.
41. Oliver, R.L. *Satisfaction: A Behavioral Perspective on the Consumer*. New York: McGraw-Hill, 1997.
42. Parasuraman, A.; Zeithaml, V.A.; and Berry, L.L. SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing*, 64, 1 (spring 1988), 12–40.
43. Parasuraman, A.; Zeithaml, V.A.; and Malholtra, A. E-S-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research*, 7, 3 (February 2005), 213–233.

44. Park, I.; Lee, J.K.; Upadhyaya, S.; and Rao, H.R. Emerging issues for secure knowledge management: Results of a Delphi study. *IEEE Transaction on Systems, Man and Cybernetics, Part A: Systems and Humans*, 36, 3 (May 2006), 421–428.
45. Pavlou, P.A., and Gefen, D. Psychological contract violation in online marketplaces: Antecedents, consequences, and moderating role. *Information Systems Research*, 16, 4 (December 2005), 372–399.
46. Puto, C.P. The framing of buying decisions. *Journal of Consumer Research*, 14, 3 (December 1987), 301–315.
47. Rust, R.T., and Lemon, K.N. E-service and the consumer. *International Journal of Electronic Commerce*, 5, 3 (spring 2001), 85–101.
48. Rust, R.T., and Oliver, R.L. Service quality: Insights and managerial implications from the frontier. In R.T. Rust and R.L. Oliver (eds.), *Service Quality*. Thousand Oaks, CA: Sage, 1994, pp. 1–19.
49. Shankar, V.; Smith, A.K.; and Rangaswamy, A. Customer satisfaction and loyalty in online and offline environments. *International Journal of Research in Marketing*, 20, 2 (June 2003), 153–175
50. Siegrist, M., and Cvetkovich, G.T. Better negative than positive? Evidence of a bias for negative information about possible health dangers. *Risk Analysis*, 21, 1 (May 2002), 199–206.
51. Tversky, A., and Kahneman, D. The framing of decisions and the psychology of choice. *Science*, 211, 4481 (January 1981), 453–458.
52. Van Riel, A.; Liljander, V.; and Jurriens, P. Exploring consumer evaluations of e-services: A portal site. *International Journal of Service Industry Management*, 12, 4 (December 2001), 359–377.
53. Vila, T.; Greenstadt, R.; and Molnar, D. Why we can't be bothered to read privacy policies: Models of privacy economics as a lemons market. In L.J. Camp (ed.), *The Economics of Information Security*. Norwell, MA: Kluwer Academic, 2004, pp. 143–154.
54. Yi, Y. A critical review of consumer satisfaction. In V. Zeithaml (ed.), *Review of Marketing*. New York: American Marketing Association, 1990, pp. 68–133.
55. Zeithaml, V.A. Service excellence in electronic channels. *Managing Service Quality*, 12, 3 (June 2002), 135–138.
56. Zeithaml, V.A.; Berry, L.L.; and Parasuraman, A. The behavioral consequences of service quality. *Journal of Marketing*, 60, 2 (April 1996), 31–46.

INSU PARK (insupark@buffalo.edu) is a Ph.D. candidate in management science and systems, School of Management at the State University of New York at Buffalo and Adjunct faculty of Management and Information Systems in the School of Business, Montclair State University. His research interests are decision-making in on-line marketplaces, electronic commerce, and information privacy in the on-line context. His publications have appeared in *Decision Support Systems*, *IEEE Transaction on Systems*, and *Man and Cybernetics*.

AMIT BHATNAGAR (amit@uwm.edu) is associate professor of marketing in the Lubar School of Business, University of Wisconsin, Milwaukee. He graduated from the School of Management, State University of New York at Buffalo. He specializes in marketing on the Web. His current research focuses on consumer information-search behavior on the Web, advertising models for the Web, benefits and risks of on-line shopping, and competition among retail formats. He also specializes in analyzing supermarket

scanner data. He teaches courses on international marketing and principles of marketing. Dr. Bhatnagar has published papers in the *Journal of Business*, *Marketing Letters*, *Journal of Advertising*, *Journal of Business Research*, *Journal of Retailing*, *European Journal of Operations Research*, and *International Journal of Research in Marketing*. He has served as a reviewer for the *Marketing Science*, *Marketing Letters*, *Journal of Retailing*, and *Journal of Business Research*, and is a member of the Institute of Operations Research and Management Sciences (INFORMS).

H. RAGHAV RAO (mgmtrao@buffalo.edu) is a professor of management science and systems in the School of Management, State University of New York at Buffalo. He graduated from Krannert Graduate School of Management at Purdue University. His interests are in the areas of management information systems, decision support systems, e-business, emergency response management systems, and information assurance. He has chaired sessions at international conferences and presented numerous papers. He also has co-edited four books, including one on information assurance in financial services. He has authored or co-authored more than 175 technical papers, of which more than 100 have been published in archival journals.

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