

THIRD-PARTY ASSURANCES: MAPPING THE ROAD TO TRUST IN E-RETAILING

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ABSTRACT

Consumer trust of Internet vendors is a major factor influencing the success of e-commerce. To enhance consumer trust, many e-retailers are experimenting with various trust-building strategies, including participation in third-party assurance programs. This study presents a model describing the relationship between third-party assurance seals, trust, and online purchasing intentions. Five manipulations of a simulated retail website were used to test eight model-derived hypotheses. Initial results do support hypothesized relationships between disposition to trust, trust of the e-retailer, perceived risk, attitude toward purchasing from the e-retailer, and intention to purchase. Hypotheses addressing a positive relationship between the viewing of assurance seals and consumer trust of a specific e-retailer are not supported. Contrary to early studies, post hoc results reveal that one seal type, the privacy assurance seal, did have a small, but significant, positive impact on consumer trust of an unfamiliar e-retailer.

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INTRODUCTION

The Better Business Bureau (2001) reports that people who choose not to buy products or services online do so for two main reasons: 1) lack of trust regarding the security of online shopping, and 2) lack of trust regarding the reliability of businesses on the Web. Other surveys--academic, practitioner, and government-sponsored--reveal similar reasons why consumers choose not to make purchases online (Beer 1999; Ernst and Young 1999; Hoffman and Novak 1998; Hoffman and Novak 1999; Keen 1997; National Consumers League 2000; U.S. Department of Commerce 1998). This suggests an underlying gap between online retailers' interest in attracting shoppers to their electronic storefronts and many consumers' trust in those e-retailers. In response to this recognized gap, third-party assurance services (i.e., TRUSTe, BBBOnline, Verisign) have entered the e-commerce playing field. E-retailers hope to build consumer trust and stimulate increased online sales by displaying such third-party assurance seals on their websites (Huang 2001; Schoder and Yin 2000).

Research on the theoretical foundation of trust and the role of trust in fostering consumer acceptance of e-commerce has only recently begun to produce conceptual and empirical results (Gefen 2000; Huang 2001; Jarvenpaa et al. 2000; Noteberg et al. 1999). The utility of third-party assurance seals for building and maintaining trust between consumers and online merchants has received substantial support from those in the e-commerce industry, but academic research has lagged behind practitioner interest. The few published results of empirical research incorporating third-party assurance seals have tested the impact of assurance

seals on intention to purchase or consumer expectations of specific merchant behaviors. This study expands that research stream by addressing the following two research questions:

1. What impact does viewing third-party assurance seals have on a consumer's trust of an unfamiliar e-retailer?
2. What impact does trust have on a consumer's intention to purchase from an unfamiliar e-retailer?

RESEARCH MODEL AND PRIOR RESEARCH

The exploratory research model that serves as the foundation for this study is presented in Figure 1. The left portion of the model depicts proposed antecedents to trust: seal notice,

CONTRIBUTION

This paper presents the early results of data analyses in an experimental study of trust, purchase intentions, and their antecedents in an e-commerce setting. To our knowledge, this study is the first published, empirical study of the effect of third-party assurance seals specifically on consumer trust in an e-retailer.

Initial results lend support to the importance of trust in reducing consumer-perceived risk and building positive attitudes toward buying from an e-retailer. Perceived risk and attitude, in turn, explain more than 58% of the variance in a consumer's intention to purchase from an unfamiliar e-retailer. In addition, early results support the role of disposition to trust as a significant antecedent to consumer trust in an e-retailer. Results fail, however, to support two hypothesized relationships between third-party assurance seals and consumer trust. Exploratory post hoc results suggest that certain types of assurances, for example the display of a privacy assurance seal such as TRUSTe, may have a positive influence on customer trust.

These results will be of interest to e-commerce researchers working directly with trust in electronic markets, as well as to those studying e-commerce strategy and business models, customer relationship management, Internet governance and regulation, and other areas of e-commerce. This work also has clear crossover appeal to IS managers and practitioners who have professional responsibilities for e-commerce decision-making, specifically about investing in, supporting, or offering third-party assurance services.

attention to seal, and disposition to trust. The right half of the model depicts the relationship between consumer trust in an e-retailer and intention to purchase mediated by perceived risk and attitude toward purchasing from an e-retailer. This portion of the model is adapted from Jarvenpaa, et al. (2000). Table 1 presents definitions of each component included in the model. Model constructs, related prior research, and the hypothesized relationships between components are discussed in the following sections.

TRUST

Trust has received considerable attention in the business and social science literature. Based on a comprehensive review of trust research, Rousseau, Sitkin, Burt and Camerer (1998) suggest a definition of trust that integrates common dimensions from various disciplines. Rousseau et al. (1998

pg. 395) define trust as "...a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another." A working definition of consumer trust has been tailored from Rousseau, et al.'s more general definition. For this study, trust in an e-retailer is specifically defined as a consumer's willingness to accept vulnerability in an online transaction based on their positive expectations regarding an e-retailer's future behaviors. This definition clearly places trust within the context of social exchange theory (SET), which states that people make decisions about social relationships based on predicted future behaviors of others, anticipated rewards and costs, perceived dependence, and control in relationships (Blau 1964). Theory suggests that expectations of a party's future behaviors are determined by an evaluation of that party's past behaviors, in conjunction with social cues regarding the intentions, capabilities, and values of the party.

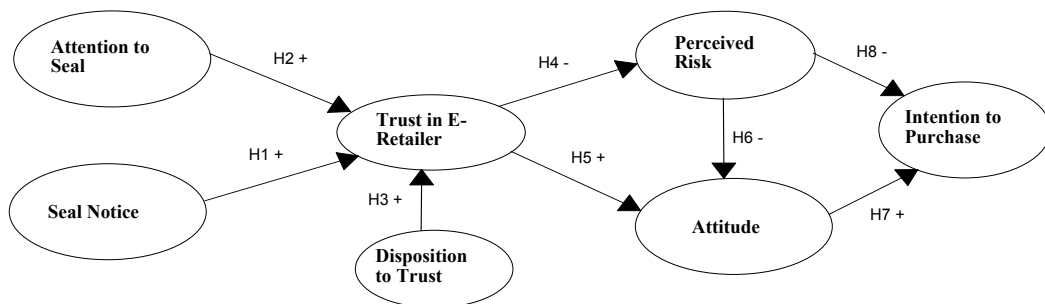


Figure 1. Research model.

Table 1. Model Constructs and Definitions.

Model Constructs	Definitions
Seal Notice	Whether an individual did or did not notice an assurance seal
Attention to Seal	Intensity of an individual's attention to an assurance seal
Trust	Consumer's willingness to accept vulnerability in an online transaction based on positive expectations of the future behavior of an e-retailer
Disposition to Trust	Extent to which an individual is willing to depend on others across a broad spectrum of situations
Perceived Risk	Individual's assessment of the relative probability of positive and negative outcomes of a given transaction
Attitude	Individual's attribution of generalized positive characteristics to buying from an e-retailer
Intention to Purchase	Consumer's willingness to buy from a particular e-retailer

In the marketing literature, the importance of trust as a facilitator of successful buyer-seller relationships is well documented. Trust has been characterized as the most precious asset any business can possess (Benassi 1999; Zucker 1986). Organizations within a distribution channel have been shown to be more cooperative with trusted partners (Moorman et al. 1992; Morgan and Hunt 1994). Trust has also been shown to reduce perceptions of risk associated with transactions (Morgan and Hunt 1994), enhance satisfaction with exchange outcomes (Anderson and Narus 1990), and positively influence purchase decision-making (Schuur and Ozanne 1985).

Consistent with a social exchange perspective, a number of researchers have studied how trust is initiated and developed in interpersonal and exchange relationships. Three trust-building processes, particularly relevant to relationships between consumers and e-retailers, include: 1) building trust through the accumulation of knowledge (Lewicki and Bunker 1996), 2) building trust through third-party intermediaries and institutions (Zucker 1986), and 3) building trust through trust transfer (Doney et al. 1998). Lewicki and Bunker (1996) describe knowledge-based trust as a form of trust that develops over time as one party learns about the intentions, capabilities, and past behaviors of another. Knowledge about an exchange partner's standards for performance, their technical or organizational capabilities, and how they have fulfilled obligations in the past form the foundation for predictions of future behaviors. Knowledge that leads to positive expectations supports the development of trust between the parties. While Lewicki and Bunker (1996) focus on prior interaction as the primary means of knowledge development, knowledge about an exchange partner can also be gained through formal (i.e., industry reports or reviews, educational material, audit disclosures) or informal (i.e., general reputations or recommendations) third-party information sources.

Zucker (1986) describes a second process for building trust, which he refers to as institutional-based trust, that may be particularly important in e-commerce contexts.

Institutional-based trust relies on the creation of a "trust infrastructure" (Luo 2002, p. 117), of socially recognized, third-party intermediaries that certify the trustworthiness of parties in a commercial exchange or actually enforce trustworthy behaviors on the part of one or both partners. These intermediary parties are not primary participants to an exchange, but they do act to facilitate the exchange process by validating a party's capabilities, e.g., membership in a professional organization, possession of a license to practice, or use of specific technology or processes, enabling the safe exchange of financial resources, e.g., holding funds in escrow or processing credit or payments, or providing some form of oversight to deter, punish, or remedy inappropriate self-serving behavior by one or both parties, e.g., industry self-regulations, third-party satisfaction guaranties, or auditing services. Zucker (1986) suggests that the creation of such institutional entities may be particularly important to deter untrustworthy behavior in risky exchange contexts where traditional legal deterrence is inadequate and knowledge-building mechanisms are underdeveloped.

The third trust-building process, trust transfer, is explained by Doney, Cannon, and Mullen (1998) as occurring when one party (the trustor) ascribes trustworthiness to an unfamiliar exchange partner based on that partner's association with a trusted third-party. Trust transfer is theoretically rooted in social comparison theory and can be understood as a cognitive process that reduces the dissonance associated with holding divergent beliefs about other parties perceived to be similar to one another (Festinger 1954). For transfer-based trust to operate effectively, the trustor must clearly perceive the third-party as a trustworthy entity and accept the association between the trusted third-party and the unfamiliar exchange partner. Like institution-based trust, the effects of trust transfer in an exchange relationship will be more important when knowledge about an exchange partner is limited and legal controls over the exchange are inadequate. In addition, trust transfer will be more salient when institutional sources of trust are not fully established.

THIRD-PARTY ASSURANCES

In recent years, a variety of e-commerce assurance services have emerged to facilitate trust between consumers and e-retailers. Merchants who agree to meet a third-party assessor's standards, use an assessor-certified technology, or agree to be bound in some way by the assessor's procedures or oversight are registered by the assessor and permitted to display an identifying logo, or assurance seal, on their website. This seal is designed to communicate to consumers that the e-retailer complies with the assessor's specific standards or requirements and, as a result, can be trusted by the consumer. The seal on the website can be clicked by the consumer to reveal specific validation of the merchant's good-standing with the assessor or additional disclosures related to the merchant's business practices or history.

While all assurance seals are designed to inform the shopper and to promote the seal-displaying e-retailer as a trustworthy party, the details of each seal's standards and representations vary in terms of scope and focus. While some overlap between categories exists, three general assurance categories can be defined to clarify the underlying content of most of the seals:

1. *Privacy assurance*: assurance that the merchant discloses and complies with privacy policies (for example, TRUSTe and Better Business Bureau Online Privacy);
2. *Process assurance*: assurance regarding the merchant's compliance with the assessor's standards for internal business processes (for example, WebTrust, Better Business Bureau Online Reliability, and BizRate); and
3. *Technology assurance*: assurance that specific technologies are employed by the merchant or his/her agents to enable secure or reliable order and payment handling (for example, Verisign, MasterCard Shop Smart, and Thawte).

Hypothesis 1 predicts that third-party assurance seals will have a positive influence on consumer trust of an e-retailer based on their contribution to one or all of the three identified trust-building processes: knowledge accumulation, institution building, and trust

transfer. An assurance seal is one source of formal third-party information about an e-retailer's past behaviors, intentions, and capabilities. While a shopper may lack personal experience with an e-retailer, the seal's disclosures represent relevant and, typically, positive information about the e-retailer's values, behavioral intentions, adherence to specific policies or certification standards, technical capabilities, or even satisfaction of prior customers. With better access to information about the e-retailer, potential customers are able to forecast the e-retailer's future behavior with greater accuracy and confidence, determine the e-retailer's ability to meet its obligations to the buyer, and interpret the e-retailer's values and motives in the exchange. Positive evaluations of behaviors, abilities, and intentions will lead to higher levels of trust.

Third-party assurance seals also contribute to the institutional infrastructure in the virtual e-commerce marketplace. Some assurance seals provide avenues for complaint handling or resolution in case of consumer dissatisfaction with services or products. Accepting perceived vulnerability in an exchange is an easier choice for a consumer when processes are in place to remedy any possible future behaviors that might be deemed as untrustworthy. In addition, untrustworthy behavior on the part of an e-retailer may be deterred by participation in the assurance program, because violation of the assessor's requirements could result in revocation of the e-retailer's right to display the seal or other serious penalty. Referring specifically to institution-based trust mechanisms in an e-commerce environment, Luo (2002) singles out TRUSTe, BBB-Online, and Verisign third-party assurance seals as prime examples of institution-based trust-building intermediaries. He states that "...certification third parties or intermediary mechanisms can balance the power and create the needed trust between the e-vendor and customers" (Luo 2002, p. 115).

Finally, third-party assurance seals may operate through trust transference to build consumer trust in a specific e-retailer. The display of a third-party seal on an e-retailer's website signals a linkage between the e-retailer

and the assuring third-party organization. To the extent that the consumer perceives the assuring organization as a credible and trustworthy entity and recognizes the seal as representing a meaningful association between the assurator and the e-retailer, the consumer will extend their attribution of trustworthiness from the assuring organization to the seal-displaying e-retailer. Based on the potential of third-party assurances to build knowledge-, institution-, and transfer-based trust, the first hypothesis predicts that noticing a third-party assurance seal will have a positive impact on a consumer's trust of a e-retailer.

A review of the literature has revealed little, if any, research directly examining the relationship between third party assurance seals and consumer trust. Kovar, Burke, and Kovar (2000b) evaluate the effectiveness of one third-party assurance seal, WebTrust, on transaction expectations, a construct which captures the consumer's predictions concerning secure processing of personal and financial information, efficient handling of returns and warranty issues, and accurate order fulfillment processes (Kovar et al. 2000b). While they do not directly measure consumer trust, their results do demonstrate that viewing of a third-party assurance seal affects the consumers' expectation of positive future behaviors on the part of the e-retailer. This is certainly suggestive of a potential relationship between third-party assurance seals and consumer-perceived trustworthiness of a seal-displaying e-retailer. Houston and Taylor (1999) report that one assurance seal, again the WebTrust seal, is perceived by study consumers to provide security- and privacy-related assurances above and beyond a statement of standard business policies. They also find that viewing the WebTrust seal is positively related to consumer perceptions of product and service quality, an assurance that is not legitimately provided by the Webtrust service.

Hypothesis 2 goes on to predict that the relationship between assurance seals and consumer trust in an e-retailer will vary in strength based on the intensity of the consumer's attention to the assurance seal. This prediction is consistent with Kovar et al.'s, (2000a) findings of a positive marginal effect of

clicking a website's WebTrust seal on transaction expectations. Assurance seals influence consumer trust via their potential to convey positive information and social cues about the seller's trustworthiness to the potential buyer. The elaboration likelihood model of persuasion states that persuasive communications have a stronger and more lasting impact on consumer expectations when the communication contains more information and the consumer spends more time considering the information (Petty and Cacioppo 1986). A consumer is likely to learn more about both the e-retailer and the assurance seal's representations when that consumer devotes more time and attention to the displayed seal. Also, the association between the assurator and the e-retailer will be stronger for consumers who are more attentive to the seal. Therefore, it is reasonable to predict that the amount of attention devoted to the seal will determine how strongly the consumer will be influenced by the seal's presence. Consumers who devote more attention to an assurance seal—reading the seal text, clicking the seal to follow the hyperlink, or reading the revealed disclosures—will be more strongly influenced by the seal than will those consumers who did not notice or gave only cursory attention to a seal on an e-retailer's website.

H1: Seeing a third-party assurance seal will have a positive effect on the consumer's trust in an e-retailer.

H2: Increased attention to a third-party assurance seal will be positively related to a consumer's trust in an e-retailer.

DISPOSITION TO TRUST

While the specific focus of this study is on the impact of third-party assurance seals on consumer trust, it is appropriate to include other factors that the research literature has identified as important antecedents of consumer trust. Disposition to trust is one such factor. Some trust researchers view trust largely as a personality-related trait of the trustor, with people being more or less psychologically predisposed to perceive others as trustworthy (Rotter 1967; Worchel 1979). Disposition to trust is defined as the extent to which an individual is willing to depend on others across

a broad spectrum of situations (Rotter 1967; Rotter 1971; Rotter 1980). Mayer, Davis and Shoorman (1995) citing earlier organizational research findings of a relationship between disposition to trust and trust-related behaviors (Conlon and Mayer 1994; Moore et al. 1987), suggest that disposition to trust should be included along with other variables in any model related to trust. They further suggest that because of the lack of other indicators of trustworthiness, disposition to trust is most influential when the relationship between trustor and trustee is new, as is the case between consumers and unfamiliar e-retailers. Gefen (2000) reports a significant influence of disposition to trust on consumer trust in his study of consumer trust in e-retailers. As a result, disposition to trust has been included in the model as one antecedent to consumer trust, and Hypothesis 3 predicts a positive relationship between this factor and consumer trust.

H3: The consumer's general disposition to trust will have a positive effect on the consumer's trust of an e-retailer.

PERCEIVED RISK

Perceived risk represents an individual's assessment of the relative probability of positive and negative outcomes of a given transaction or situation (Coleman 1990). Any transaction has risk factors specific to the transaction itself, including total potential financial gain or loss and information uncertainty, complexity, and asymmetry. Other factors more indirectly linked to the specific exchange, including interpersonal relationships, familiarity with the problem domain, social influences, and institutional controls, have been identified as affecting the level of perceived transaction risk (Sitkin 1992). Consistent with much of the current research on perceived risk, trust is modeled as one of the factors that influences how risk is evaluated and perceived. The level of riskiness inherent in a given exchange is offset by the level of trust held by one party for the other. As a result, perceived risk associated with an exchange is partially a function of the trust between parties. In studies, trust has been shown to reduce perceptions of risk (Fukuyama 1995; Morgan and Hunt 1994).

Trust is also linked with increased risk-taking behavior between individuals and firms (Mayer et al. 1995) and reduction in the need for investments in institutional and contractual deterrents to opportunistic behavior (Fukuyama 1995). In exchanges that are viewed as inherently risky, such as making a purchase from an unfamiliar e-retailer, trust between parties has been put forth as especially important for mediating the risk and permitting exchanges to take place (Fukuyama 1995). Hypothesis 4 predicts that trust will reduce the consumer-perceived risks associated with making a purchase from an unfamiliar e-retailer.

H4: Trust in an e-retailer will reduce the consumer's perception of risk associated with making a purchase from that e-retailer.

ATTITUDE

A positive attitude toward buying from an e-retailer reflects affect, or liking, of the merchant and the characterization of purchasing from that merchant in optimistic and positive terms. A negative attitude reflects the opposite. Consumers are more likely to have a positive attitude toward buying from a merchant they trust, because they can reasonably expect more advantageous long- and short-term outcomes from such an exchange. Macintosh and Lockshin (1997) report a positive impact of trust on consumers' attitudes toward different stores, while Schurr and Ozanne's (1985) study reveals a relationship between buyers' trust of a seller and buyers' attitudes and behaviors toward that seller. Jarvenpaa et al. (2000) confirm that trust has a positive impact on consumers' attitudes toward purchasing from different Internet stores. Based on these results, Hypothesis 5 suggests that trust will positively influence a consumer's attitude toward making a purchase from an e-retailer.

H5: Trust in an e-retailer will positively affect a consumer's attitude toward making a purchase from that e-retailer.

In addition to the direct relationship between trust and attitude toward buying from an e-retailer, it is reasonable to suggest that trust will indirectly influence attitude through its impact on perceived risk. Exchanges that

are deemed by consumers to have a high relative probability for positive outcomes will be characterized as more attractive and beneficial to the consumer than those exchanges with high probability for negative outcomes. As a result, perceived risk will be negatively related to consumer attitudes toward purchasing from an e-retailer. This relationship is included in Jarvenpaa, et al.'s (2000) trust model and is supported by their data.

H6: A consumer's perception of risk associated with purchasing from an e-retailer will negatively affect the consumer's attitude toward making a purchase from that e-retailer.

INTENTION TO PURCHASE

While actual purchase behavior is of keen interest to merchants and researchers, it is frequently not possible or practical to experimentally study actual consumer purchasing. Such is the case for this study, and as a result, intention to purchase is adopted as an acceptable proxy for actual online purchase behavior. In consumer behavior research, intention to purchase is used extensively in lieu of actual purchase behavior (McQuarrie 1998). The theories of reasoned action (Ajzen and Fishbein 1980) and planned behavior (Ajzen 1991) claim that an individual's volitional behavior is primarily the result of the individual's intention to behave. The theory of reasoned action also contends that the predominant antecedent of behavioral intentions is the actor's attitudes toward that behavior (Ajzen and Fishbein 1980). In terms of consumer behavior, the primary predictor of the decision to purchase is the consumer's attitude toward purchasing. Accordingly, Hypothesis 7 predicts that an online consumer's attitude toward purchasing from an e-retailer will influence the consumer's intention to purchase from that e-retailer. This specific relationship is confirmed by Jarvenpaa, et al., (2000).

H7: A consumer's attitude toward purchasing from an e-retailer will positively affect their intention to purchase from that e-retailer.

The final relationship in this model is posited between perceived risk and intention to purchase. The theory of planned behavior

includes risk as one component of behavioral control, an important antecedent of intention to purchase. Behavioral control represents the individual's belief that they are able to fully determine the successful outcome of a task, event, or exchange (Ajzen and Fishbein 1980). As one aspect of behavioral control, perceived risk may directly influence intention to purchase, independent of its indirect influence through attitude toward the purchase. Jarvenpaa et al. (2000) report a direct negative relationship between perceived risk and willingness to buy from an Internet store. The final hypothesis predicts that perceived risk will reduce a consumer's intention to purchase from an e-retailer.

H8: A consumer's perception of risk associated with purchasing from an e-retailer will negatively affect their intention to purchase from that e-retailer.

RESEARCH METHOD

The research model was tested using an experimental research design, simulated retail websites, and online questionnaires. Subjects in the study consisted primarily of student from two Midwestern universities. College students were deemed appropriate subjects for this study, because they are generally consistent with online shopping demographics (Kotkin 1998, Organization for Economic Co-operation and Development 2000). Addressing the two demographic attributes on which college students may differ from the Internet shopper norm, Jarvenpaa and Todd (1996) have concluded that age and household income do not significantly influence attitudes toward Internet shopping. Most of the student subjects received class credit for participating in the study.

Paper instructions were distributed to subjects explaining the general nature of the study, describing the study scenario, and directing each subject to the URL of a simulated, unfamiliar retail website. The scenario explained to the subjects that they were to imagine buying a specific fondue pot requested as a wedding gift by a friend. The brand and model number of the fondue pot were identified in the scenario. The

instructions directed the subjects to assume that they had decided to definitely purchase the fondue pot, but had not yet decided on the specific purchase channel (i.e., department store, discount store, catalog, e-retailer, or other channel). Upon entering the specified study website, each subject was first presented with an online pretest survey form. The pretest questions focused on the subject's disposition to trust, experience with online shopping, and demographics.

Following completion and submission of the pretest, subjects were presented with one manipulation of a simulated retail website: Site 1 (technology assurance seal only - Verisign), Site 2 (privacy assurance seal only - TrustE), Site 3 (process assurance seal only - BBB Reliability), Site 4 (privacy policy statement, no assurance seal), or Site 5 (no privacy policy or assurance seal). The fourth manipulation, Site 4, was added to the experiment based on suggestions from other researchers (Huang 2001; Mauldin and Arunachalam 2001; Noteberg et al. 1999) that a privacy policy statement is similar to third-party assurance seals in its impact on consumers' expectations and intentions. Noteberg, et al. (1999) refer to such statements as "self-proclaimed assurance[s]" (p. 474). The websites, which were created specifically for this study, are identical with the exception of the seal manipulation. After following the instructions to browse the site and locate the specified product, each subject was presented with an online post-test instrument designed to capture information on trust toward the e-retailer, attitude toward purchasing from the e-retailer, perceived risk in purchasing from the e-retailer, and intention to purchase from the e-retailer. Finally, a post-treatment manipulation check survey was presented to measure which assurance seal, if any, the subject noticed on the website and the level of attention devoted to the seal. These questions were presented only after submission of the post-test to prevent any possible response bias.

Survey instruments used in this study were primarily synthesized from previously validated survey instruments (see Appendix A for a list of survey items used). Disposition to trust was measured via five items taken from

Gefen (2000). Trust in e-retailer was measured via three items, also taken from Gefen (2000). Perceived risk in purchasing from e-retailer was measured via four items and attitude toward e-retailer was measured via three items, all taken from Jarvenpaa et al. (2000). Warshaw (1980) used a single item to measure intention to purchase, but two additional items were added to this questionnaire to create a multi-item measurement scale. The inter-item reliability (Cronbach's alpha) for these three items was well above the .70 level suggested by Nunnally (1978) (see Table 2). All of the items on the pre- and posttest were measured using five-point scales. Reverse-scored items were transformed during analysis to provide a consistent orientation. All analyses used the mean of each multi-item construct measure.

The post-treatment manipulation check instrument contained items written specifically for this study. The two items used in this analysis captured whether the subject noticed a seal on the website, which type of seal they noticed, and how much attention the subject devoted to the seal. One of the factors in the model, attention to seal, was measured by a single item using a five-point scale, ranging from zero ("I do not recall seeing a seal on the website") to five ("I clicked on the seal and read information displayed about the seal and the merchant"). During analysis, this item was recoded to measure another factor in the model, seal notice, as equal to zero if the subject did not recall seeing a seal and equal to one for any other response. Seal notice is the only variable not measured on a five-point scale. Using graphic images of all four seals as a guide, subjects were also asked to identify which, if any, specific assurance seal they noticed on the website.

DATA ANALYSIS

Of the total 622 respondents who submitted complete surveys, 97% were students. Approximately 58% of the subjects were male; 69% were business majors; and almost 87% of the subjects were between the ages of 18 and 25. Almost 30% of the subjects agreed or strongly agreed that they frequently made purchases over the Internet. Of the 414 respondents who reported seeing an assurance

seal on the website, only 74, or approximately 18%, clicked on the link to reveal additional information about the seal or e-retailer. This “click rate” is consistent with rates reported in other studies (Portz and Strong 2000). It is important to note that subjects in our study were not specifically directed to click on the assurance seal or follow every link. The study was designed to simulate a real shopping experience and create a natural experimental setting.

To facilitate the creation of unique tests for effects of seal notice (Hypothesis 1) and attention to seal (Hypothesis 2), the full dataset was reduced by removing the 126 observations included in the “no privacy policy, no seal” condition (Site 5). This resulted in a reduced dataset of 496 observations comprising those subjects who were directed to browse one of the websites that did display an assurance seal. While all subjects in the reduced sample visited a website containing one of the seals, approximately 20% of the subjects ($n = 82$) did not notice the seal.

Simple summary statistics for the six major constructs in this study are presented in Table 2. This table shows the mean, standard deviation, and inter-item reliability estimate (Cronbach’s alpha) for each scale (with the exception of attention to seal, which is measured via a single item). The reliability estimates all fall well above the generally

accepted minimum value of .70, indicating that the items for each construct are internally consistent (Nunnally 1978). This table also presents a correlation matrix for the six constructs based on the reduced dataset.

Path analysis was performed to test Hypotheses 2 through 8. Path analysis is a statistical technique for studying hypothesized direct and indirect relationships between multiple variables. The relationships are graphically portrayed as a set of causal pathways between variables. Path analysis results indicate whether specific paths and the model as a whole successfully account for the actual relationships revealed in the data (Hatcher 1994; Kerlinger 1986). Path analysis was chosen for this exploratory phase of the data analysis because it provides a test for the individual causal paths, as well as the full set of relationships, in the proposed trust model. The path analysis was conducted using the SAS System’s CALIS procedure. The reduced dataset of 496 observations easily satisfies the PROC CALIS requirement for large sample size (Hatcher 1994). Maximum likelihood estimation, the specific procedure used in this analysis, is also relatively robust to violations of the normal distribution assumption (Anderson and Gerbing 1988; Joreskog and Sorbom 1989). All analyses were performed on the covariance matrix to improve the reliability of the results.

Table 2. Summary Statistics for Model Variables

Measure	Mean	Std. dev.	Intention to purchase	Attitude toward e-retailer	Perceived risk	Trust in e-retailer	Disposition to trust	Attention to seal
Intention to purchase	3.02	1.08	(.87)					
Attitude	3.28	0.84	.65**	(.85)				
Perceived risk	3.45	0.74	-.71**	-.67**	(.83)			
Trust in e-retailer	3.17	0.75	.52**	.65**	-.56**	(.81)		
Disposition to trust	3.47	0.66	.15*	.23**	-.18**	.32**	(.79)	
Attention to seal	2.39	1.16	-.04	-.01	-.02	-.00	-.01	(--)

N = 496

Coefficient alpha reliability estimates are reported in parentheses.

* Significant at $p < .001$

** Significant at $p < .0001$

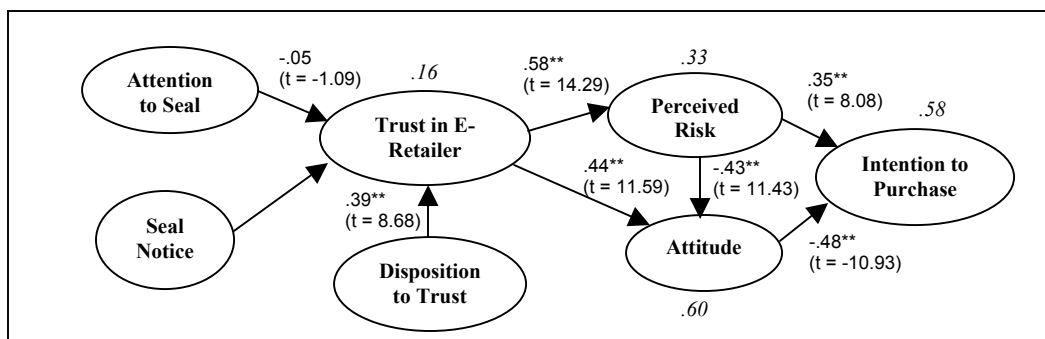
Various fit indicators for the model (excluding the seal notice factor) are presented in Table 3. Assessing the fit between the model and the data is a multi-step task, because there is no single indicator for goodness of fit that is sufficient by itself. The standardized residual matrix indicates that no elements in the model have overly large residuals, generally considered to be any value over $|2.0|$ (Hatcher 1994). The largest residual is 1.655 and the average off-diagonal standardized residual is 0.369. Given the acceptable residuals, the chi-square statistic is checked as a test of the null hypothesis that the proposed model fits the data. Accepting the model as a good fit to the data, therefore, requires that the chi-square value be small and the probability value (p) related to the chi-square statistic be larger than .05 (Hatcher 1994). The chi-square statistic and the p value are of acceptable size and suggest a good fit between the model and the data in the study. In addition to the chi-square, however, other indices are useful for judging model fit. Three indices that are frequently used, the normed fit index (NFI), the non-normed fit index (NNFI), and the comparative fit index (CFI), are all less susceptible to

influence of sample size, violations of normal distribution assumptions, and model complexity. Values on the NFI, NNFI, and CFI are well above the .9 minimum (Bentler and Bonett 1980, Hatcher 1994).

Figure 2 presents the research model with standardized path coefficients and t values added for each path. All of the tested relationships, with the exception of the path between attention to seal and trust in e-retailer, are in the predicted direction and highly significant ($p < .0001$), providing strong support for Hypotheses 3, 4, 5, 6, 7, and 8. The t statistic absolute values are all substantially greater than zero (again, with the exception of the path between attention to seal and trust in e-retailer), indicating that each relationship is non-trivial in size (Billings and Wroten 1978). The explained variance (r^2) statistic for each endogenous variable is also indicated in the figure. This statistic reflects that 58% of the variance in intention to purchase is accounted for by the model, 60% of the variance in attitude toward e-retailer, 33% of the variance in perceived risk, but only 16% of the variance in trust in the e-retailer.

Table 3. Goodness of Fit Statistics for Path Analysis.

Model	Max. Residual	chi-square	df	p	NFI	NNFI	CFI
Attention to Seal	1.655	3.7462	7	0.8085	.9962	1.0072	1.0



** Significant at the $p < .0001$ level ($t > 3.30$)

Paths are labeled with path coefficients and t values (in parenthesis). Endogenous variables are also labeled with r^2 value (in italics).

Note: Seal notice is not part of the path analysis model.

Figure 2. Model with Standardized Path Coefficients and Explained Variances.

Trust in the e-retailer, perhaps the most pivotal construct in this study, is the only endogenous variable that is not well explained by the model ($r^2 = .16$). The research model predicts that trust in the e-retailer is influenced by the customer's disposition to trust, and this path is significant ($p < .0001$), lending support for Hypothesis 3. Surprisingly, the path coefficient between attention to seal and trust in e-retailer (path coefficient = $-.05$, $t = 1.09$) is both insignificant and negative. Hypothesis 2, which predicts that increased attention to the seal is associated with increased consumer trust in the e-retailer, is clearly not supported by the data.

Further analyses using the SAS System's GLM procedure were conducted to address Hypotheses 1. Table 4 presents the results of these analyses. Seal notice, reflecting whether or not the subject noticed the seal on the e-retailer's website, has a small f value ($f = 2.11$), accounts for a very small percentage of the variance in consumer trust ($r^2 = .0076$), and has a p value approaching, but not meeting, the $\alpha = .05$ significance criterion level. Hypothesis 1 fails to achieve support from the data. Together, the results of the path and regression analyses suggest that a third-party assurance seal has no effect of any significance on how a consumer views the trustworthiness of a specific, unfamiliar e-retailer.

POST HOC ANALYSIS

While the previous analyses directly address all of the hypotheses presented in our original research design, the lack of support for pivotal Hypotheses 1 and 2 motivated further exploratory, post hoc analyses. The question was posed, "Is there an uncontrolled factor confounding a possible relationship between assurance seals and consumer trust?" This study aggregated four different types of assurance seals, privacy, policy, technology, and privacy policy, into one seal condition. Previous studies suggest that the type of seal on an e-retailer's website is inconsequential in terms of impact on the consumer's expectations for

e-retailer behavior or intention to purchase. Houston and Taylor (Houston and G.K. 1999) report that subjects are not more likely to purchase from a website displaying the WebTrust assurance seal than from a site displaying a statement about the e-retailer's security and business practices. In their study, Noteberg et al. (1999) find that assurance seals do have a significant positive effect on likelihood to purchase, however it matters very little what type of seal is displayed. Further, when asked about the likelihood that concerns over privacy would prevent them from purchasing from a specific website, subjects in the Noteberg, et al., (1999), study responded that seals provided by banks, accountants, or consumer's unions would all reduce their concerns about privacy. Lastly, Mauldin and Arunachalam (2001) report that the assurance seals they tested (Visa, TRUSTe, and WebTrust) were not significantly different in their impacts on intent to purchase and that these seals were only effective in the absence of statements disclosing business, security, and privacy policies.

Given that these earlier studies did not directly measure trust in the e-retailer, data in this study were re-examined to explore the possibility that the positive influence of third-party assurance seals on consumer trust was masked by the aggregation of multiple seal types during the original data analysis. As reported earlier, Hypothesis 1 was tested using the SAS System GLM procedure and the results (presented in Table 4) failed to support a significant difference in trust based on whether or not the subject saw a third-party assurance seal on the e-retailer's website. The GLM analysis was repeated, but seal type was controlled by blocking each seal type against the "no seal" condition. The results of these additional post hoc regression analyses are summarized in Table 5.

What the results in Table 5 reveal is that, in fact, the type of seal viewed on a merchant's website does appear to be important. Noticing a privacy assurance seal, represented in our study by the TRUSTe seal, on an e-retailer's website has a significant and positive impact on how subjects perceive the trustworthiness of the e-retailer. None of the other seals have a statistically significant influence, although the impact of the privacy policy statement on the website does meet

Table 4. GLM Analyses Results of Trust.

	R-Square	Mean Square	F Value	Pr > F
Seal Notice (saw/didn't see)	0.0076	2.11	3.79	0.0521

Table 5. Post-hoc Analysis Results.

Source	n	F Value	Pr > F	R-Square
Privacy Seal (TRUSTe)	253	7.47	0.0067	.02879
Process Seal (BBBOnline)	212	0.39	0.5339	.001836
Technology Seal (Verisign)	240	0.13	0.7164	.000553
Privacy Policy Statement	258	3.37	0.0675	.0129

a less rigorous, exploratory significance criteria of $\alpha = .10$ and approaches significance at the $\alpha = .05$ level.

DISCUSSION AND IMPLICATIONS FOR FUTURE STUDY

Because these results represent early findings of on-going research, it is premature to draw final conclusions or suggest what the full implications of the research will ultimately be for researcher and practitioners. The study was designed to test a set of initial hypotheses regarding the causal relationships between third-party assurance seals, consumer trust, and initial purchase decision making by online consumers. Initial study results confirm prior research regarding relationships between consumer's disposition to trust, trust in the e-retailer, perceived risk, attitude toward purchasing from an e-retailer, and intention to purchase (Gefen 2000; Jarvenpaa et al. 2000). Six of the eight hypotheses proposed in this study are strongly supported by the data, while Hypotheses 1 and 2, regarding the impact of noticing or devoting attention to an assurance seal on consumer-perceived trust of an e-retailer, are not supported.

Path analysis shows that the research model explains 58% of the variance in intention to purchase, which is a substantial improvement

over model performance reported by Gefen (2000) (42%), Jarvenpaa et al. (2000) (43% and 48%), and Kovar et al. (2000a; 2000b) (41%). This explanatory power indicates that perceived risk and attitude toward purchasing from an e-retailer are highly accurate predictors of a consumer's intention to purchase from an unfamiliar e-retailer. Variance in perceived risk and attitude toward purchasing from the e-retailer are also both well explained by predictors included in the model ($r^2 = .33$ and $.60$, respectively). This indicates that trust is an important factor for creating a positive attitude toward buying from an unfamiliar e-retailer both directly and through its influence on perceived risk. Less well explained by the model is consumer trust itself. Sixteen-percent of the variance in trust is explained by the model, and only one factor, disposition to trust, contributes significantly to that explanation.

These initial results clearly suggest that trust is an important consideration for consumers facing an initial purchase decision from an unfamiliar e-retailer. Operating through its impacts on the perceived risk of buying and attitude toward buying, trust has a substantial impact on whether or not a consumer forms the intention to buy a pre-selected product from an unfamiliar e-retailer. This finding is of particular importance to merchants who are new to the Internet as a channel of retail

distribution, as well as to existing online merchants who wish to exploit a larger or more diversified consumer market. For such merchants, efforts made to establish and enhance initial trusting relationships with potential customers may be rewarded with increased first-time sales.

The effectiveness of third-party assurance seals as a tactic for building trust between e-retailers and new online customers is more problematical. This study did not reveal any significant direct impact of a third-party seal on consumer trust in a specific e-retailer. Although these results are tentative, the key implication of these findings for e-retailers is that the decision to participate in third-party assurance programs should be made judiciously. Online merchants may derive various direct or indirect benefits associated with participation in such programs (for example, improvement of internal operations, access to customer feedback and performance metrics, or avoidance of government regulation or intervention in the e-commerce industry), but this study suggests that third-party seals, by themselves, are not an effective tactic for building consumer trust in a specific e-retailer.

Post hoc analyses, however, suggest that the type of seal displayed may influence whether or not a third-party seal has a significant, positive impact. Exploratory regression analyses suggest that one type of seal, a privacy assurance seal (in this study, the TRUSTe seal), does effectively signal to consumers that the e-retailer is trustworthy. It is possible to explain the differential influence of the seal types based on the actual assurances represented by the seals. Concerns about privacy and the appropriate handling of personal information may be a key barrier to trust between consumers and unfamiliar e-retailers. The internal business processes and technology employed by an e-retailer may simply not be as important in a consumer's evaluation of an e-retailer as trustworthy or untrustworthy. A privacy policy statement, while addressing similar issues of privacy, does not represent any form of external oversight of merchant behaviors and, as a result, may have a weaker influence on consumer trust

While differences in seal impact may be a reflection of real differences in seal representations, it is also possible that other factors may be responsible. For example, it is possible that subjects were more familiar with the TRUSTe seal than with the other types of seals used in the study. If consumers are unaware of the representations or assurances represented by a particular seal, it is less likely that they could be influenced by its presence. Low familiarity may also affect the likelihood that a consumer will notice the seal on the webpage, click on the seal, or attend to the disclosures linked to the seal. It is also possible that the similarity of the privacy seal name, TRUSTe, and the endogenous variable being measured, consumer trust, may have created some response bias. The word "trust" did appear in each of the items measuring the consumer trust construct (see Appendix A).

Future analyses of the current dataset will attempt to better explain the relationship between attention to an assurance seal, familiarity with the seal, and trust of a specific e-retailer. The hypothesized relationship between attention to seal and consumer trust is based, in part, on the trust-building process of trust transfer. For trust to be effectively transferred from the assurance seal to the e-retailer the consumer must be both familiar with the assuring third-party and perceive them as trustworthy. Similarly, for the seal to contribute to institution-based trust or be viewed as a source of valid knowledge about the e-retailer, the consumer must know and accept the standards and mechanisms that the assessor represents. We have yet to fully analyze the data-in-hand to determine how familiarity with different assurance seals interact with attention to seals to influence trust in the e-retailer. The effect of seal familiarity will be a primary focus on future analyses.

In addition to resolving questions regarding seal familiarity, goals for future study focus on identifying other factors that may mediate the relationship between third-party seals and consumer trust. It is possible that the impact of trust infrastructure mechanisms, such as the third-party assurance seals tested in this study, have been diminished somewhat by consumers' increased experience with online shopping, better understanding of the

technology supporting the Internet, more awareness of the privacy and security limitations of the Internet, and enhanced predictability of e-retailer conduct via increased governmental regulation and legal restraints. As part of the current study's data collection, information was collected regarding subjects' online shopping experience; purchases completed online during the past three months, six months, and one year; and the value of their largest online purchase made during the past year. These data remain to be analyzed. Data related to familiarity with Internet technology, perceptions of privacy or security threats related to the Internet in general, knowledge of governmental regulation of e-retailer practices, or understanding of legal remedies for violations of laws or codes have not yet been collected. These all represent opportunities for expansion of the current research agenda.

CONCLUSION

In order to ensure that the full potential of the Internet as a commercial medium is realized, it is important to understand not only why consumers choose to shop and make purchases from Internet merchants, but also why other potential shoppers choose to stay

away. Retailers who have made the decision to offer products and services to customers via the Internet and those who are considering that move need to know what barriers may restrict their access to these potential buyers. Consumer trust in e-retailers has been identified as one of these barriers, and third-party assurance seals have emerged as one trust-building method to help break it down. The initial results from this study confirm the importance of consumer trust for supporting the initial decision to purchase from an unfamiliar e-retailer. Initial results also suggest, however, that the promotion of third-party assurances as a quick remedy for the trust-gap between consumers and online retailers should be tempered with some skepticism. Until we better understand how trust is built and maintained in on-line exchange relationships and what role, if any, third-party assurance seals play in this process, the road to trust in online retailing remains inadequately mapped.

ACKNOWLEDGEMENTS

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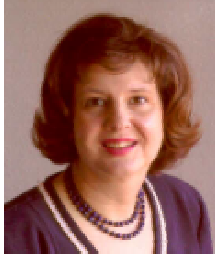
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Appendix A: Measures Used

Pre-Test Instrument

Disposition to Trust (all items from Gefen, 2000)

(scale: strongly disagree / strongly agree)

- I generally trust other people.
- I tend to count upon other people.
- I generally have faith in humanity.
- I feel that people are generally reliable.
- I generally trust other people unless they give me reason not to.

Post-Test Instrument

Transaction Expectations (all items from Kovar, 2000)

(scale: strongly disagree/strongly agree)

- My credit card number or other personal information will be protected if I make a purchase from Company X's website.
- Returns and warranties related to online purchases will be processed efficiently by Company X.
- This Internet store will get my online transaction right, such as the product ordered, quantity shipped and delivery address.
- The product I purchase at this Internet store will be of good quality.
- Company X is a financially sound business.
- Every transaction conducted at this Internet store is audited and will be dealt with correctly.

Trust in E-retailer(all items from Gefen, 2000)

(scale: strongly disagree / strongly agree)

- Even if not monitored, I'd trust Company X to do the job right.
- I trust Company X.
- I believe that Company X is trustworthy.

Attitude toward E-retailer (all items from Jarvenpaa, 2000)

(scale: strongly disagree/strongly agree)

- The idea of shopping from Company X is appealing to me.
- I like the idea of using this Internet store to find and purchase things I want.
- Shopping online at Company X is a good idea.

Perceived Risk (all items from Jarvenpaa, 2000)

- How would you characterize the decision of whether or not to buy a product from this Internet store? (*significant opportunity/significant risk*)
- How would you describe the decision to purchase something online from Company X? (*high potential for loss/high potential for gain*)
- What best describes a decision to buy a product from Company X? (*very positive situation/very negative situation*)
- What is the likelihood that you would make a good bargain by making a purchase from Company X. (*very unlikely/very likely*)

Intention to Purchase

Assuming that you will buy the product from some source, how likely are you to purchase Item X from this website? (*definitely not purchase/definitely purchase*)

What is the probability that you would purchase Item X from Company X rather than from another source (0% = no chance at all, 100% = absolute certainty that you would purchase online)? (0%-20%, 20%-40%, 40%-60%, 60%-80%, 80% -100%)

All things considered, I would probably purchase this fondue pot from a department store, discount store, or catalog, rather than purchase it from Company X. (*strongly disagree/strongly agree*)

Manipulation-Check Instrument

One of the seals shown above **may** or **may not** have appeared on the website you visited. Choose only 1 answer. (*displays a graphic of each possible seal*)

I saw the seal: Trust-e

I saw the seal: Privacy Policy

I saw the seal: BBB

I saw the seal: Verisign

I did not see any of the above

I saw one of the above, but do not remember which one

Which of the following statements best describes your recollection and attention to the seal, if any, on the Company X website?

I do not recall seeing a seal on the website.

I recall seeing one of the seals, but did not recognize it or read the labeling.

I saw one of the seals & read the labeling information on the seal

I read the labeling on the seal and clicked on it, but did not read the information that was displayed.

I clicked on the seal and read information displayed about the seal and the merchant.