

## Association for Information Systems AIS Electronic Library (AISeL)

---

AMCIS 2009 Proceedings

Americas Conference on Information Systems  
(AMCIS)

---

2009

# A Prediction Model for Initial Trust Formation in B2C eCommerce

Jollean K. Sinclair

*Arkansas State University*, [jsinclair@astate.edu](mailto:jsinclair@astate.edu)

Ronald B. Wilkes

*University of Memphis*, [rbwilkes@memphis.edu](mailto:rbwilkes@memphis.edu)

Judith C. Simon

*University of Memphis*, [jsmon@memphis.edu](mailto:jsmon@memphis.edu)

Follow this and additional works at: <http://aisel.aisnet.org/amcis2009>

---

### Recommended Citation

Sinclair, Jollean K.; Wilkes, Ronald B.; and Simon, Judith C., "A Prediction Model for Initial Trust Formation in B2C eCommerce" (2009). *AMCIS 2009 Proceedings*. 507.

<http://aisel.aisnet.org/amcis2009/507>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2009 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact [elibrary@aisnet.org](mailto:elibrary@aisnet.org).

# **A Prediction Model for Initial Trust Formation in B2C E-Commerce**

**Jollean K. Sinclair**  
Arkansas State University  
jsinclair@astate.edu

**Ronald B. Wilkes**  
University of Memphis  
rbwilkes@memphis.edu

**Judith C. Simon**  
University of Memphis  
jsimon@memphis.edu

## **ABSTRACT**

This study investigates initial trust formation with an unknown online company. Based on data collected from 628 respondents, the results indicate significant direct effects for trust in the Internet infrastructure, susceptibility to the social influence of media, and the presence of influential site characteristics, on user willingness to provide personal information to unknown Internet firms. This study extends the research on trust in e-commerce by providing a prediction model that is demonstrated to calculate the probability of user willingness to provide information. The utility of the model for identifying the relative importance of factors and predicting outcomes lends insight into important issues in online trust formation.

## **Keywords**

E-commerce, trust, trusted third parties, social presence, social influence

## **INTRODUCTION**

With the increasing rate of data breaches (ITRC, 2009), and the increasing consumer fear of identity theft (Steiner, 2008), a need exists for guidance on investment in e-commerce applications that meet specific data collection needs of organizations and communicate a credible expression of trustworthiness. Given the current challenging economic environment, it is especially important in the context of initial trust formation that organizations adopt a web strategy that maximizes user confidence yet minimizes investment in the e-commerce application.

Two information processing models offer a theoretical foundation for examining factors that influence online information-giving behavior. The heuristic-systematic model of persuasive communication (Chaiken & Eagly, 1983) and the elaboration-likelihood model (ELM) of persuasion (Petty & Cacioppo, 1986) are concerned with changes in attitude as a result of exposure to persuasive messages. Both theories assume that, in the absence of motivation for effortful cognition, individuals process information at a minimal level. Both theories describe cognitive processing as either deep/systematic or shallow/heuristic. Heuristic processing describes a minimizing effort that is more likely to occur when there is limited knowledge, time, or competing demands on cognitive ability (Chaiken, Wood, & Eagly, 1996). Systematic processing describes a more effortful process that makes greater demands on cognitive resources (Chaiken, Wood, & Eagly, 1996). In the process of initial trust formation, users consider a range of information and utilize a variety of cognitive processing strategies in their decision-making process relating to online information-giving behavior.

This paper provides a review of prior research, followed by sections on the research objective, research methodology, and data analyses. The paper concludes with a discussion and conclusion section that includes suggestions for future research.

## **LITERATURE REVIEW**

A review of research on user willingness to complete a transaction on the Internet reveals common themes of trust in the Internet store (Jarvenpaa, Tractinsky, & Vitale, 2000), trust in the vendor (Pennington, Wilcox, & Grover, 2003), trust in

organizational practices (Smith, Milberg, & Burke, 1996), and user perception of Web site features (Belanger, Hiller, & Smith, 2002; Gefen & Straub, 2004; Pennington et al., 2003).

### **Trust in the Internet Infrastructure**

The Lee and Turban (2001) model of consumer trust in Internet shopping (i.e., trust in the computerized medium) features the perceived technical competence, perceived system performance, and user understanding of the system or the medium. There is evidence of a link between positive perceptions about the trustworthiness of the Internet and Internet purchase intentions (George 2002, 2004), and between institution-based structural assurance and trust-related Internet behaviors (McKnight & Chervany, 2001). Structural assurance is characterized as “technological Internet safeguards” such as encryption (McKnight & Chervany, 2001, p. 5).

### **Web Site Characteristics**

Trusted third parties (TTPs) are organizations that work to reduce consumer fear about online security and privacy and increase trust in e-commerce transactions (Palmer, Bailey, Faraj, & Smith, 2000). A TTP acts as a guarantor, providing an assurance of authentication or a brand image or reputation as a foundation for trust. TTPs may be classified according to purpose or intention. Privacy seals represent certified data collection and data usage processes (TrustE, n.d.; BBBOnline, n.d.); security symbols provide assurance that the site uses the secure sockets layer (SSL) cryptographic protocol (GeoTrust, n.d.; VeriSign, n.d.). A vulnerability symbol verifies third-party scans for vulnerabilities (HackerSafe, n.d.). Reliability symbols vouch for the identity of the Web site and may affirm ethical practices (BBBOnline, n.d.; SquareTrade, n.d.; WebAssured, n.d.). Consumer rating symbols indicate a satisfied customer experience with the Web site (BizRate, n.d.). Although e-commerce literature offers contradictory findings on the ability of TTPs to influence online users, there is evidence of the positive effect of TTPs on purchasing likelihood (Fogg, Soohoo & Danielson, 2002) and information disclosure for some users (Miyazaki & Krishnamurthy, 2002). Additionally, as symbols of expertise, the presence of these artifacts may result in less thought given to scrutiny of information about the Web vendor (Chaiken et al., 1996; Petty & Cacioppo, 1986).

Web site social presence is a subjective quality based on user perception. It is defined as the perception of an interpersonal interaction due to the impression of human contact and the information richness of the medium (Gefen & Straub, 1997). Social presence features may include photographs of smiling customer service representatives as well as online-chat. Although Wang and Emurian (2005) found “social cue design elements” (p. 49) to be less important in promoting trust than visual design and content design, Gefen and Straub (2004) found evidence that the perception of social presence increases trust in e-commerce.

### **Social Influence**

In research on the use of information technology in general, social influence, referred to in some literature as subjective norms, is frequently decomposed into relevant referent groups. For example, in research that examined the use of IT in an organization setting, Taylor and Todd (1995) decomposed sources of social influence into three groups: peers, superiors, and subordinates. In the context of e-commerce, Limayem, Khalifa, and Frini (2000) decomposed sources of social influence into three groups (friends, family, and media), finding the social influence of media and family to have an effect on online shopping. Hwang (2005) found all three dimensions of social influence (friends, family, media) to be significantly related to online trust, while Bhattacharjee (2000) found news reports, popular press and mass media to have a large effect on subjective norms leading to intention to accept e-commerce.

The literature review suggests that these three factors, trust in the Internet infrastructure, Web site features of institutional trust and social presence, and social influence are influential components in the complex relationship that occurs between an individual and an unknown online vendor. These factors form the framework for the research presented here.

## **RESEARCH OBJECTIVE**

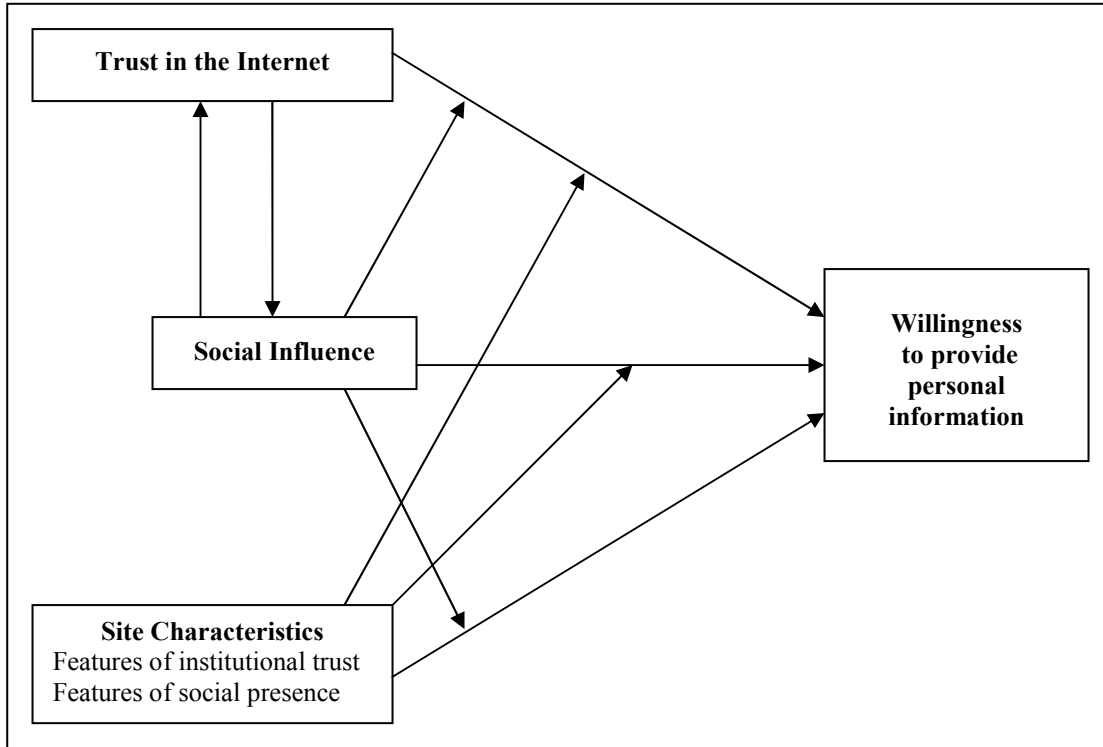
In view of the inherent insecurity of the Internet and user concerns for information privacy, a question that should interest organizations seeking to maximize investments in e-commerce is: What cues of institutional trust and social presence are effective in overcoming low trust in the Internet infrastructure and social/media influences to persuade first-time users to provide personal information so that online transactions are facilitated? Specifically, four research questions are addressed:

*In the context of initial trust formation*

- Does trust in the Internet infrastructure affect user willingness to provide personal information online?

- Do Web site elements of institutional trust and social presence affect user willingness to provide personal information online?
- Does general social influence affect user willingness to provide personal information online?

The research model is presented in Figure 1.



**Figure 1. The Research Model**

Trust in the Internet infrastructure is defined as trust in the safety and integrity of the fundamental security measures used to protect personal information during online transactions (McKnight & Chervany, 2001). Influential Web site characteristics are defined as artifacts of institutional trust (e.g., links to privacy policies and symbols of trusted third parties), and elements of social presence (e.g., e-mail links, images of service representatives, and options to speak online with service representatives in real time). User susceptibility to social or interpersonal influence is defined as the tendency of persons to change their online information-giving behavior as a result of social pressure (McGuire, 1968). The dependent variable is willingness to provide personal information ranging from data perceived as low risk (i.e., name, email address) to data perceived as high risk (i.e., credit card number, social security number) (Miyazaki & Krishnamurthy, 2002).

**RESEARCH METHODOLOGY**

The research consisted of a 3×3×3 between-subjects quasi-experiment designed to test the effects of (1) trust in the Internet infrastructure, (2) social influence, and (3) Web site features of institutional trust and social presence on user willingness to provide personal information. The subjects were undergraduate and graduate students, considered to be reasonable proxies for online shoppers based on age and education (Drennan, Mort, & Previte, 2006; Mauldin & Arunachalam, 2002). A total of 628 survey responses were included in the final analysis.

Respondents were advised that the topic of the survey was “Using the Internet for Personal Business.” Using an online instrument, subjects responded to questions that assessed trust in the Internet infrastructure and susceptibility to social influence before being assigned to a media treatment. Assignment to treatment groups was accomplished with alphabetic self-selection menus. That is, based on the first letter of the last name (using self-selection), subjects were assigned to one of three media conditions: positive, negative, or none. Then, based on the first letter of the first name (using self-selection),

subjects were assigned to one of three Web site conditions: low-, moderate-, or high-level. According to Shadish, Cook, and Campbell (2002), this procedure is quasi-experimental in that random assignment occurred by means of self-selection.

User trust in the Internet infrastructure was evaluated using measures adapted from previous research (Lee & Turban, 2001; McKnight, Choudhury, & Kacmar, 2002; George, 2004). Following assignment to a media treatment, susceptibility to social influence was measured using scales developed and validated as part of this study. The media treatments were composites of positive or negative excerpts pertaining to the safety of the Internet. To provide and control for source credibility, both messages were presented as an article in *USA Today*. Following assignment to a simulated Web site on which the type and number of elements that represent guarantees, institutional assurances of trustworthiness, and social presence were varied, the effect of these elements was evaluated using measures adapted from previous research (Miyazaki & Krishnamurthy, 2002). The simulated Web site created for this experiment was “product-neutral” in that it typified a “registration” page on which new users would provide personal information to learn more about a product or service.

**DATA ANALYSES**

Statistical analyses included descriptive statistics, univariate analyses of factors affecting trust in the Internet infrastructure and susceptibility to social influence, cross-tabulations and chi-square tests to evaluate differences across treatment groups, and correlational analyses among the predictor variables. Logistic regression models were constructed to examine main and interaction effects.

Based on results of chi-square tests and correlational analysis, potential predictors of willingness to provide information included demographic characteristics, trust in the Internet infrastructure, susceptibility to social influence, media treatment, and Web site treatment. This paper focuses on the results of the logistic regression analyses.

Logistic regression relates one or more continuous or categorical predictor variables to a dichotomous dependent variable by analyzing the logit or natural logarithm of the odds of the reference outcome, defined as  $P_i$  (the probability of an event). If  $P_i$  is the probability of a “Yes” response, then  $1 - P_i$  is the probability of a “No” response.

The logistic regression models were constructed using a model-building strategy (Hosmer & Lemeshow, 1989) that calls for univariate analysis of each variable to select variables for multivariate analyses with subsequent analyses considering interactions among the variables. Because chi-square statistics revealed significant differences in outcome between gender, race, media, and Web site groups, those variables were included in the initial regression model as were the continuous variables of interest (trust in the Internet, social influence of friends, social influence of family, and social influence of media). The results provided a subset of five covariates with  $p < .10$  that were retained for further analysis: race, trust, media, site, and social influence of family. The results of the reduced model showed these five variables to be significant at the .05 level for at least one outcome variable (phone number, credit card number, social security number) or all six outcome variables. Table 1 describes the results of the reduced multivariate model.

	Model chi-square $G_m$	Sig. of $G_m$	Significant Variables in the Equation (Wald statistic $p < .05$ )
Name	26.574	.002	race, trust
Email	25.718	.002	race, trust, media
Address	31.863	.000	race, trust
Phone	18.750	.027	social_2 (family)
CCN	54.056	.000	race, trust, site, social_2 (family)
SSN	16.952	.049	Media

**Table 1. Results of Reduced Multivariate Model**

Ten two-way interactions may be formed from the variables in the reduced multivariate model. Following the strategy suggested by Hosmer and Lemeshow (1989), further analyses examined each of these interactions with all variables retained from the reduced multivariate model. When all outcome variables are considered collectively, none of the interaction models provides a significant improvement over the main effects only model. Therefore, the main effects model was selected for further analysis using the subset of predictor variables identified as significant for willingness to provide credit card number.

Those covariates are race, trust, media, site, and social influence of family. This model was selected because it shares the highest level of significance (.000) with the model identified for willingness to provide address, and it is the most inclusive model; that is, it includes all variables that are significant for the remaining outcome variables. Of the five parameters in the final model, four were statistically significant. The estimates of the main effects logistic regression model are presented in Table 2.

	<b>B</b>	<b>SE</b>	<b>Wald</b>	<b>Df</b>	<b>Sig.</b>	<b>Exp(B)</b>
Race			8.854	3	.031	
Race(1)	-1.003	.397	6.398	1	.011	.367
Race(2)	-.595	.739	.648	1	.421	.551
Race(3)	-.367	.203	3.259	1	.071	.693
Trust	.380	.082	21.306	1	.000	1.463
Media			12.353	2	.002	
Media(1)	.409	.217	3.541	1	.060	1.506
Media(2)	-.392	.216	3.282	1	.070	.676
Social_2	-.142	.054	6.862	1	.009	.868
Site			6.702	2	.035	
Site(1)	.470	.227	4.227	1	.039	1.601
Site(2)	.544	.223	5.927	1	.015	1.723
Constant	-1.111	.242	21.082	1	.000	.329

**Table 2. Logistic Regression Model: Variables in the Equation**

The most frequently used test of significance of an individual predictor is the Wald Chi-square statistic (Pampel, 2000). This value indicates the relative importance of the individual variable. The estimates shown in Table 3 indicate four covariates in the model are important factors for willingness to provide personal information on the Internet in the context of initial trust formation.

*Continuous variables.* The Exp(B) value or odds ratio value for **trust** (1.463) indicates a one-unit increase in trust results in a 46.3% increase in the odds of the subject providing a credit card number. (Trust in the Internet infrastructure ranges in value from -3 to +3 in increments of 0.25.) Based on a negative coefficient and a fractional odds ratio, using the reciprocal, the .868 odds ratio for **social\_2** indicates a one-unit increase in social influence of family results in a 15.2% decrease in the odds that the subject will provide a credit card number. (Social influence ranges in value from -3 to +3 in increments of 1.0.)

*Categorical variables.* The reference group for race is White; and race(1) compares Asian subjects to the reference group; race(2) compares Native Hispanic subjects to the reference group; race(3) compares Black/African American subjects to the reference group. Based on a negative B-value and a fractional odds ratio, using the reciprocal, the 3.67 odds ratio for **race(1)** indicates an Asian subject is 2.72 times less likely to provide a credit card number compared to a White subject (the reference group). The reference group for **site** is low-level; and site(1) compares the high-level treatment to the low-level treatment; site(2) compares the moderate-level treatment to the low-level treatment. The odds ratio for site(1) indicates a subject who receives a high-level site treatment is 1.6 times more likely to provide a credit card number than a subject who receives a low-level site treatment. The odds ratio for site(2) indicates a subject who receives a moderate-level site treatment is 1.7 times more likely to provide a credit card number than a subject who receives a low-level site treatment.

**The Prediction Model**

The overall accuracy of the reduced multivariate model to predict willingness to provide credit card number is 69.4%. The positive predictive value = 55/88 = 62.5%; the negative predictive value = 370/525 = 70.6% (Pedhazur, 1997). The classification table for the logistic regression equation for estimating willingness to provide credit card number is shown in Table 3.

Observed	CCN	Predicted		Percentage Correct
		Willing to Provide CCN		
		No	Yes	
	No	370	33	91.8%
	Yes	154	55	26.3%
Overall Percentage				69.4%

**Table 3. Prediction Model Classification Table**

The equation for calculating the probability that a subject will provide a credit card number is given by the equation:

$$\text{Probability (Yes)} = 1/(1+e^{-z})$$

where  $z$  = the logistic regression equation derived from Table 3. For this model

$$z = -1.111 - 1.003*\text{race}(1) + .380*\text{trust} - .142*\text{social}_2 + .470*\text{site}(1) + .544*\text{site}(2)$$

(Note: Race(1) = Asian; site(1) = high-level; site(2) = moderate-level.)

This prediction model can be used to calculate the probability of willingness to provide credit card number based on the subject's race, scores on trust in the Internet infrastructure and susceptibility to social influence of family, and the level of the Web site treatment (low, moderate, high) (Chan, 2004). Several examples of the utility of the prediction model are provided below.

The first example compares two subjects presented with a moderate level Web site. Each subject scores 1.5 on trust in the Internet infrastructure and 1.0 on susceptibility to social influence of family. These scores indicate the subjects are moderately trusting of the Internet and consider the opinions of family members when making decisions about providing information online or making purchases on the Internet. The first subject is non-Asian; the second subject is Asian. For the first subject, the logistic regression equation is:

$$z = -1.111 + .380*1.5 - .142*1 + .544*1 = 0.139$$

$$e^{-z} = 1.149$$

$$\text{Probability (Yes)} = 1/(1 + 1.149) = .465$$

indicating the non-Asian subject is somewhat unlikely to provide a credit number at the moderate-level Web site in the context of initial trust formation.

For the second subject, the logistic regression equation is:

$$z = -1.111 - 1.003*1 + .380*1.5 - .142*1 + .544*1 = -1.142$$

$$e^{-z} = 3.133$$

$$\text{Probability (Yes)} = 1/(1 + 3.133) = .242$$

indicating the Asian subject is unlikely to provide a credit card number at the moderate-level Web site in the context of initial trust formation. This comparison shows that holding constant all other factors of the model, an Asian subject is much less likely to provide a credit card number than a non-Asian subject.

The second example compares three subjects presented with a moderate-level Web site. Each subject scores 2.0 on trust in the Internet infrastructure. However, scores on susceptibility to social influence of family vary from -1 to +1.

The first subject's score on social influence of family is -1, indicating a lack of consideration for the opinions of family members when making decisions about providing information online or making purchases on the Internet. For this subject, the logistic equation is:

$$z = -1.111 + .380*2 - .142*-1 + .544*1 = -.335$$

$$e^{-z} = .715$$

$$\text{Probability (Yes)} = 1/(1 + .715) = .583$$

The second subject's score on social influence of family is zero, indicating a neutral stance on the consideration of the opinions of family members. The logistic equation for this subject is:

$$z = -1.111 + .380*2 - .142*0 + .544*1 = .193$$

$$e^{-z} = .825$$

$$\text{Probability (Yes)} = 1/(1 + .825) = .548$$

The third subject's score on social influence of family is +1, indicating moderate consideration for the opinions of family members. The logistic equation for this subject is:

$$z = -1.111 + .380*2 - .142*1 + .544*1 = .051$$

$$e^{-z} = .950$$

$$\text{Probability (Yes)} = 1/(1 + .715) = .513$$

This comparison shows that holding constant race, trust in the Internet infrastructure, and site-level, increasing levels of susceptibility to social influence function to reduce the probability that subjects will provide a credit card number in the context of initial trust formation.

The last example compares three subjects who differ only on the basis of Web site viewed. These subjects are non-Asian, have moderately high scores on trust in the Internet infrastructure (2) and low positive scores on susceptibility to social influence of family (1) indicating moderate consideration of the opinions of family members. The first subject viewed a low-level site, the second subject viewed a moderate-level site, and the third subject viewed a high-level site.

For subject one (low-level site), the logistic regression equation is

$$z = -1.111 + .380*2 - .142*1 = -.493$$

$$e^{-z} = 1.637$$

$$\text{Probability (Yes)} = 1/(1 + 1.637) = .379$$

For subject two (moderate-level site), the logistic regression equation is

$$z = -1.111 + .380*2 - .142*1 + .544*1 = .051$$

$$e^{-z} = .950$$

$$\text{Probability (Yes)} = 1/(1 + 1.045) = .513$$

For subject three (high-level site), the logistic regression equation is

$$z = -1.111 + .380*2 - .142*1 + .470*1 = -.023$$

$$e^{-z} = 1.023$$

$$\text{Probability (Yes)} = 1/(1 + 1.023) = .494$$

This comparison shows that holding constant race, trust in the Internet infrastructure, and social influence of family, a moderate-level web site results in the highest probability that a subject is willing to provide a credit card number. A high-level site results in a slightly lower probability, and the low-level site produces the lowest probability that a subject is willing to provide a credit card number in the context of initial trust formation.

In summary, the main effects model predicts with 62.5% confidence that, in the context of initial trust formation, Asian subjects are less likely than non-Asian subjects to provide a credit card number; increasing levels of social influence of family result in reduced probabilities that subjects will provide a credit card number; and a moderate-level Web site treatment results in the highest probability that subjects will provide a credit card number.

## **DISCUSSION AND CONCLUSION**

The results of this experiment indicate trust in the Internet infrastructure, the presence of Web site features of institutional trust, and susceptibility to the social influence of media are positively related to willingness to provide personal information online in the context of initial trust formation. Additionally, significant differences in online information-giving behavior were observed between ethnic groups.

Evidence of systematic cognitive processing (Chaiken & Eagly, 1983) was provided by results that found significant differences in willingness to provide information across media treatment groups such that subjects who received the positive media treatment were more willing to provide information than subjects who received the negative media treatment. Because the media treatment required reading an article and answering manipulation check questions, these results describe systematic cognitive processing (Chaiken et al., 1996). Evidence of heuristic cognitive processing (Chaiken & Eagly, 1983) was provided by results that found the presence of influential Web site characteristics influenced willingness to provide personal information. Because Web site features of institutional trust and social presence are processed as cues, these results describe heuristic or "shallow" cognitive processing (Chaiken et al., 1996).

This study has a number of limitations. Because the quasi-experiment simulated a potential information-giving situation for a product-neutral, unknown (un-branded) Web site, the results should be interpreted within that factor. Another limitation is that this quasi-experiment included only one operationalization each of the media treatment and the Web site. Because media treatments were presented as an article in *USA Today*, and the Web site was a fictional corporation, threats to construct



validity include mono-operation bias such that the constructs of media influence and Web site features of institutional trust and social presence may have been underrepresented. Additionally, a threat to construct validity results from using one method of measuring outcome variables (i.e., self-report).

The results of this study provide insight for organizations that seek to adopt a strategy to maximize trust for new online users at the same time that they minimize investment in e-commerce. The utility of the prediction model for identifying the relative importance of factors and predicting outcomes can guide investment on Web site features that are sufficient for the specific data collection needs of the organization.

Regarding differences found in information-giving behavior between subjects who received the positive media treatment and those who received the negative media treatment, and in consideration of marketing research that indicates two-sided advertising messages result in higher believability and greater purchase intentions (Golden & Alpert, 1987), future research on media influences could look at the effectiveness of Web site information features such as news links and/or blogs that present opposing media treatments to offset negative media influences.

## REFERENCES

1. Bhattacharjee, A. (2000). Acceptance of E-Commerce Services: The Case of Electronic Brokerages. *IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans*, 30(4), 411-420.
2. BBBOnline (n.d.). *About Us*. Retrieved March 31, 2006, from [www.bbbonline.org](http://www.bbbonline.org).
3. Belanger, F., Hiller, J.S., & Smith, W.J. (2002). Trustworthiness in electronic commerce: the role of privacy, security, and site attributes. *Strategic Information Systems*, 11, 245-270.
4. BizRate (n.d.). *About BizRate*. Retrieved March 31, 2006.
5. Chaiken, S., & Eagly, A.H. (1983). Communication Modality as a Determinant of Message Persuasiveness and Message Comprehensibility. *Journal of Personality and Social Psychology*, 45, 241-256.
6. Chaiken, S., Wood, W., & Eagly, A.H. (1996). Principles of Persuasion. In E.T. Higgins & A.W. Kruglanski (Eds.), *Social Psychology. Handbook of Basic Principles* (pp. 702-742). New York: The Guilford Press.
7. Chan, Y.H. (2004). Biostatistics 202: Logistic Regression Analysis. *Singapore Medical Journal*, 45, 55-61.
8. Drennan, J., Mort, G. S., & Previte, J. (2006). Privacy, Risk Perception, and Expert Online Behavior: An Exploratory Study of Household End Users. *Journal of Organizational and End User Computing*, 18(1), 1-22.
9. Fogg, B.J., Soohoo, C., & Danielson, D. (2002). How Do People Evaluate a Web Site's Credibility? *Consumer Reports WebWatch*. Retrieved July 15, 2006, from <http://www.consumerwebwatch.org/dynamic/web-credibility-reports-evaluate-abstract.cfm>
10. Gefen, D., & Straub, D.W. (1997). Gender differences in perception and adoption of E-mail: an extension to the technology acceptance model. *MIS Quarterly* 21(4): 389-400.
11. Gefen, D., & Straub, D.W. (2004). Consumer trust in B2C e-Commerce and the importance of social presence: experiments in e-Products and e-Services. *Omega: The International Journal of Management Science*, 32(6), 407-424.
12. George, J.F. (2002). Influences on the intent to make Internet purchases. *Internet Research*, 12(2), 165-180.
13. George, J.F. (2004). The Theory of Planned Behavior and Internet Purchasing. *Internet Research*, 14(3), 198-212.
14. GeoTrust (n.d.). *About Us*. Retrieved March 31, 2006, from [www.geotrust.com](http://www.geotrust.com).
15. Golden, L., & Alpert, M. (1987). Comparative Analysis of the Relative Effectiveness of One-and Two-Sided Communication for Contrasting Products. *Journal of Advertising*, 16, 18-25.
16. HackerSafe (n.d.). *About HackerSafe*. Retrieved March 31, 2006, from [www.hackersafe.com](http://www.hackersafe.com).
17. Hosmer, D.W. & Lemeshow, S. (1989). *Applied Logistic Regression*. New York: John Wiley & Sons.
18. Hwang, Y. (2005). An Empirical Study of Online Trust and Consumer Behavior: Cultural Orientation, Social Norms, and Personal Innovativeness in Information Technology. *Proceedings of the Twenty-sixth International Conference on Information Systems*, June 25-28, Las Vegas, Nevada.
19. ITRC (Identity Theft Resource Center) (2009, January 5). *ITRC 2008 Breach list*. Retrieved January 19, 2009, from [http://www.idtheftcenter.org/artman2/publish/lib\\_survey/ITRC\\_2008\\_Breach\\_List.shtml](http://www.idtheftcenter.org/artman2/publish/lib_survey/ITRC_2008_Breach_List.shtml)
20. Jarvenpaa, S.L., Tractinsky, N., & Saarinen, L. (1999). Consumer Trust in an Internet Store: A Cross-Cultural Validation. *Journal of Computer Mediated Communication*, 5(2).
21. Jarvenpaa, S.L., Tractinsky, N., & Vitale, M. (2000). Consumer Trust in an Internet Store. *Information Technology and Management*, 1(1), 45-71.
22. Lee, M.K., & Turban, E. (2001). A Trust Model for Consumer Internet Shopping. *International Journal of Electronic Commerce*, 6(1), 75-91.

23. Limayem, M., Khalifa, M., & Frini, A. (2000). What Makes Consumers Buy from Internet? A Longitudinal Study of Online Shopping. *IEEE Transactions on Systems, Man, and Cybernetics – Part A: Systems and Humans*, 30(4), 421-432.
24. Mauldin, E., & Arunachalam, V. (2002). An Experimental Examination of Alternative Forms of Web Assurance for Business-to-Consumer e-Commerce. *Journal of Information Systems*, 16(1), 33-54.
25. McGuire, W.J. (1968). Personality and Susceptibility to Social Influence. In E.F. Borgatta & W.W. Lambert (Eds.), *Handbook of Personality Theory and Research* (pp. 1130-1187). Chicago: Rand McNally & Company.
26. McKnight, D.H., & Chervany, N.L. (2001). Conceptualizing Trust: A Typology and E-Commerce Customer Relationships Model. *Proceedings of the 34th Hawaii International Conference on System Sciences*, January 3-6, Maui, Hawaii.
27. McKnight, D.H., Choudhury, C.J., & Kacmar, V. (2002). Developing and Validating Trust Measures for e-Commerce: An Integrative Typology. *Information Systems Research*, 13(3), 334-359.
28. Menard, S. (1995). *Applied Logistic Regression Analysis*. Thousand Oaks: Sage Publications.
29. Miyazaki, A.D., & Krishnamurthy, S. (2002). Internet Seals of Approval: Effects on Online Privacy Policies and Consumer Perceptions. *Journal of Consumer Affairs*, 36(1), 28-40.
30. Palmer, J.W., Bailey, J.P., Faraj, S., & Smith, R.H. (2000). The Role of Intermediaries in the Development of Trust in the WWW: The Use and Prominence of Trusted Third Parties and Privacy Statements. *Journal of Computer Mediated Communication*, 5(3).
31. Pampel, F.C. (2000). *Logistic Regression: A Primer*. Thousand Oaks: Sage Publications.
32. Pedhazur, E.J. (1997). *Multiple Regression in Behavioral Research. Explanation and Prediction*. 3<sup>rd</sup> Edition. Stamford: Thompson Learning.
33. Pennington, R., Wilcox, H.D., & Grover, V. (2003). The Role of System Trust in Business-to-Consumer Transactions. *Journal of Management Information Systems*, 20(3), 197-236.
34. Petty, R.E., & Cacioppo, J.T. (1986). *Communication and Persuasion: Central and Peripheral Routes to Attitude Change*. New York: Springer-Verlag.
35. Shadish, W.R., Cook, T.D., & Campbell, D.T. (2002). *Experimental and Quasi-Experimental Designs for Generalized Causal Inference*. Boston: Houghton Mifflin Company.
36. Smith, H.J., Milberg, S.J., & Burke, S.J. (1996). Information Privacy: Measuring Individuals' Concerns about Organizational Practices. *MIS Quarterly*, 20( 2), 167-196.
37. SquareTrade (n.d.). *About Us*. Retrieved March 31, 2006, from [www.squaretrade.com](http://www.squaretrade.com).
38. Taylor, S., & Todd, P.A. (1995). Understanding Information Technology Usage: A Test of Competing Models. *Information Systems Research*, 6(2), 144-176.
39. TrustE (n.d.). *About TrustE*. Retrieved March 31, 2006, from [www.truste.com](http://www.truste.com).
40. VeriSign (n.d.). *About VeriSign*. Retrieved March 31, 2006, from [www.verisign.com](http://www.verisign.com).
41. Wang, Y.D. and Emurian, H.H. (2005). Trust in E-Commerce: Consideration of Interface Design Factors. *Journal of Electronic Commerce in Organizations*, 3(4), 42-60.
42. WebAssured (n.d.). *About Us*. Retrieved March 31, 2006, from [www.webassured.com](http://www.webassured.com).