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Website Signal Perceptions and Seller Quality Identification

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ABSTRACT

This study extends the understanding of signaling in online shopping environments by evaluating website signal perceptions of online buyers. Drawing from signaling theory, this study proposes and empirically tests a model for conceptualizing the influence of website signal perceptions on perceived trust, perceived deception and purchase intentions. Experimental results support the assertions of the model and indicate that the online buyers' perceptions and purchase intentions are mainly influenced by website content and website physical presence, whereas human presence and website policy credibility are less significant. In addition, there is evidence that signal perceptions change depending on the quality of online sellers. When dealing with low-quality online sellers, online buyers are concerned with physical and human presence. When evaluating high-quality sellers, online buyers are concerned with website amateurism.

Keywords

Signaling theory, website signals, perceived deception, seller quality, trust

INTRODUCTION

Information asymmetry in online commerce can lead to opportunistic behavior which, in turn, can motivate deceptive strategies initiated by unscrupulous sellers. In online markets, deception opportunities arise because of the geographic distances between sellers and buyers, their low level of familiarity with each other, and the limited number of interactions (Utz, Matzat and Snijders, 2009).

The inability of buyers to inspect products before purchase aggravates the uncertainty associated with online shopping. To alleviate this uncertainty, sellers indicate their quality by displaying certain signals on websites. These signals may include the availability of privacy, security and return policies, contact details, specific information about products, company facts and so on. However, the mere availability of signals does not necessarily lead to reducing the information asymmetry between a seller and a buyer unless buyers notice and form opinions about the signals. Therefore, it is important to investigate if buyers take any cues from the website by observing its signals, and if their perceptions of the signals influence their decisions to transact with the seller.

This research focuses on how the website interface impacts the perceptions of deception and trust of buyers as well as their purchase intentions. The study is centered on a pre-purchase phase of the shopping experience and on signals that appear during this phase. Hypotheses about buyer perceptions and purchase intentions are tested in the experimental study with actual websites in which the users' perceptions of signals are evaluated.

This paper seeks to make theoretical and practical contributions to the literature on website signaling, deception and trust, and to shed light on the buyers' perceptions of website signals. At the theoretical level, we apply and expand signaling theory and at the pragmatic level, we seek to inform online sellers and buyers of the importance of certain groups of signals.

The rest of the paper is structured as follows: First, we introduce signaling theory that is used to support hypotheses regarding the relationships between signal perceptions and perceptions of trust and deception, and eventually purchase intentions. The

next section introduces the research model, followed by the description of research methods, analysis and the explanation of results.

WEBSITE SIGNALS

Signaling theory (Spence, 1973) investigates types of signals and the circumstances in which these signals are used. This theory has been applied in information economics to describe market interactions in which different parties have asymmetric information (Boulding and Kirmani, 1993; Spence, 1973). In seller-buyer relationships, information asymmetry is characterized by the inability of the buyer to precisely evaluate the product or service quality prior to purchase (Mishra, Heide and Cort, 1998) and it is based on the principle that the buyer and the seller have different amounts of information regarding the products and services and disincentives to share this information (Akerlof, 1970). The seller is motivated to sell a product as high-priced as possible, and the buyer is motivated to buy a high quality product at the lowest possible price.

Information asymmetry takes place in various markets such as job markets, financial markets and some retail markets (Spence, 2002). Recently, online markets have been affected by information asymmetry issues as it is difficult for buyers to inspect the true quality of the seller and products before the purchase (Pavlou, Liang and Xue, 2007). While some markets exist in a separating equilibrium in which buyers do not experience difficulty to differentiate between high- and low-quality sellers, markets in a pooling equilibrium, such as some online markets, are more complicated as all types of sellers may use the same strategy (Boulding and Kirmani, 1993). Online sellers of both high and low-quality may utilize the same strategies such as investing in an online storefront with a similar design and providing similar means for electronic transactions. As the costs of development of an online store are highly reduced in comparison with establishing a physical store, it is more difficult for buyers to correctly perceive signals sent by multiple sellers and discern online seller quality.

To alleviate the online product or service quality uncertainty, sellers may use signals that inform buyers about the actual qualities of the offerings. Signals are differentiated by their cost (Spence, 1973). Some signals require significant monetary investment such as the investment into state-of-the-art technology or the production of rich website content. Costly signals improve seller reputation and increase sales in the long term. However, low-quality sellers may avoid signals that are time consuming or require high-priced technology as they do not plan to stay in business for a long time and are not determined to make significant investments. In addition, some signals are differentiated by the cost of punishment in case a false signal is discovered (Spence, 1973). If there is a high cost of punishment, sellers are less likely to fabricate signals.

Signals are observable characteristics of an object that can be manipulated (Spence, 1973). For the purpose of this study, signals are website features that are displayed by a seller with a purpose to alter the receiver's beliefs and behavior in ways that benefit the seller (Donath, 2007). Signals that have been studied in e-commerce research include technological characteristics of websites, website design features, product presentation, website trust features and website content (Fogg et al., 2001; Gregg and Walczak, 2008; Kim and Benbasat, 2006, 2009; Mavlanova and Benbunan-Fich, 2011; Pavlou and Fygenson, 2006; Song and Zahedi, 2005). In this study we examine perceptions of signals that are most likely to influence perceptions of deception and trust as well as purchase intentions. These perceptions are based on the following signals: website amateurism, content, physical and human presence and website policies.

RESEARCH MODEL AND HYPOTHESES

Perceived Website Amateurism

Fogg et al. (2001) observed that some signals such as small errors, broken links and website glitches may negatively influence the overall perception of amateurism of a website. Buyers that encounter imperfections on the website may believe that the absence of professionalism on the part of the seller is an indication of the seller's incompetence. Thus, amateurishly looking websites may increase the perception of deception.

H1: Perceived website amateurism positively affects perceived deception

Website Content Quality

Richer information content of a website is one of the most vital signals influencing perceptions of the overall quality of the website (Gregg and Walczak, 2008). Content signals may include product information, expert product reviews, press releases, FAQ sections, and news. Huizingh (2000) defines the perception of content as highly valued by online users and states that a high-quality website should provide specific and extensive product and company information as well as other information on topics relevant to the company's mission. If website content is perceived as accurate and sufficiently detailed, buyers may be less likely to suspect that the seller is untruthful. Thus, we hypothesize a negative relationship between website content quality and perceived deception.

H2: Perceived website content quality negatively affects perceived deception

Perceived Human Presence

Human presence signals increase the presence of human touch in online environments. In virtual online marketplaces, it is important to provide human related signals such as pictures of people or live chat technology to increase the feel that real people work behind a virtual store representation. Fogg et al. (2001) found that displaying images of organization members on a website increases the website credibility. Trust can only exist in a social context and the buyer belief that human presence exist on a website is critical in the creation of trust (Gefen and Straub, 2003). Therefore, we propose:

H3: Perceived human presence positively affects perceived trust

Perceived Physical Presence

Physical store presence signals, such as a store locator, convey longevity and stability of a website as they show that a solid monetary investment has been made for the development of physical stores. Likewise, comparable signals such as listing the organization's physical address and other contact details have been found beneficial for the perception of website credibility (Fogg et al. 2001). Perceived physical presence may increase the perception of website longevity (i.e. the feel that the online store will stay in business longer), and reinforce the belief that the seller will not go out of business shortly. Physical store presence alleviates concerns about the store financial security and provides assurance that the store is a real establishment (Kim and Benbasat, 2003). Hence, we propose:

H4: Perceived physical presence positively affects perceived trust

Perceived Policies Credibility

The majority of retail websites include a customer service page that contains privacy, return and security policies. These policies include information regarding information sharing, product delivery and returns, and security of transactions (Kim and Benbasat, 2003). McKnight and Chervany (2001) report that companies that state their privacy policy improve the buyers' trusting beliefs, and Fogg et al. (2001) state that company policies improve the trustworthiness and the credibility of websites. As the policies reflect the actions of a seller to provide assurances that the seller will behave in a certain way (Kim and Benbasat, 2003), buyers who believe in these promises will display more trust towards the website if they perceive policies as credible.

H5: Perceived policy credibility positively affects perceived trust

Perceived Deception

Deception is an intentional attempt designed by a deceiver to influence the behavior of a target (Johnson, Grazioli, Jamal and Berryman, 2001). In online commerce, deception is mostly related to the conflicts of interest between a seller and a buyer especially in situations when financial transactions are involved (Grazioli, 2004). Online deception can result in opportunistic behavior on a seller side such as fraud, unauthorized collecting and selling of buyer private information, failure to acknowledge refund, the delivery of inferior products, delayed delivery, or no delivery at all (Gefen, Wyss and Lichtenstein, 2008; Pavlou et al. 2007). To avoid deception, online buyers have to correctly evaluate the quality of a seller. If buyers suspect that an online seller's actual quality is not consistent with the quality that the seller is trying to promote through the website, it may provide strong cues of deception to the buyers (Everard and Galletta, 2005), and decrease perceived trust towards the seller.

H6: Perceived deception negatively affects perceived trust

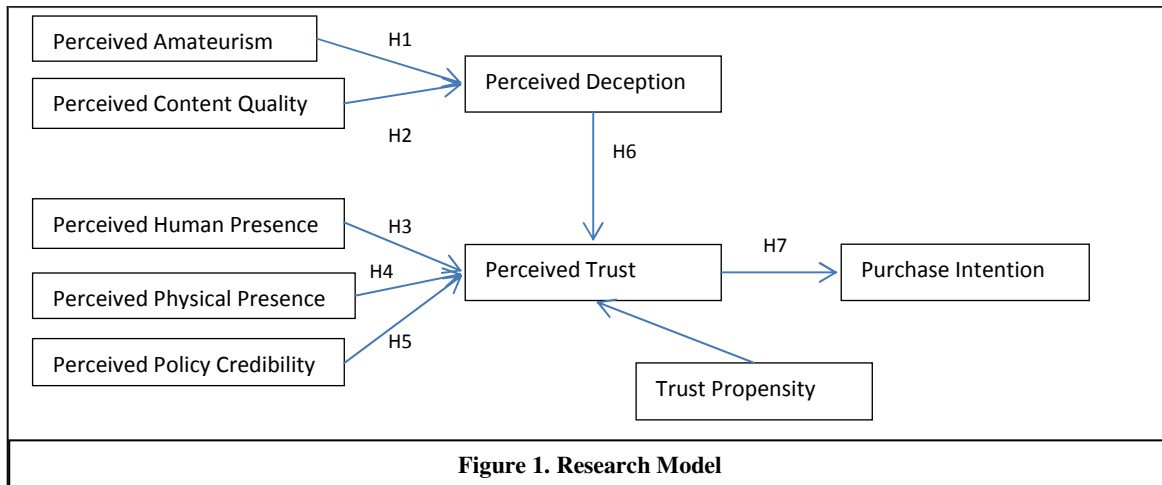
Perceived Trust

Trust is the disposition of a buyer to depend on the seller (McKnight and Chervany, 2001). Trust in the seller is a fundamental factor that influences online purchasing intentions and behavior (Everard and Galletta, 2005). Trust in online sellers decreases the level of perceived risk associated with transaction processes (Pavlou, 2003), and shows the buyers' confidence that online sellers will not behave opportunistically (Gefen, Karahanna and Straub, 2003). Seller-buyer relationships that lack trust are characterized by the absence of buyer engagement in financial or emotional transactions with the seller (Jarvenpaa and Tractinsky, 1999). On the contrary, seller-buyer relationships that have trust are characterized by buyer engagement in transactions, such as purchasing online (Everard and Galletta, 2005). Doney and Cannon (1997) define trust as a 'qualifier' for purchase decisions - buyers must trust the seller first, and then place an order. Thus, when buyers trust the seller, they are more willing to engage in online transactions with that seller.

H7: Perceived trust positively affects purchase intention

Figure 1 summarizes hypotheses and presents our research model. The basic premise of the model is that perceived website amateurism and website content affect perceived deception (H1 and H2), while perceived human presence, physical presence

and website policies affect perceived trust (H3, H4, H5). Perceived deception decreases perceived trust (H6), and perceived trust increases purchase intentions (H7). Buyer trust propensity is a control variable.



METHODOLOGY

To test our research model, a between subjects experiment design has been employed. Three different websites were selected for the experiment. All websites were actual online retail pharmaceutical websites representing three groups of online sellers: online only/high quality, click-and-mortar/high quality, and online only/low quality. The pharmacies were selected based on the guidelines of the National Association of Boards of Pharmacy (NABP, www.nabp.net) and LegitScript (www.legitscript.com), a verification and monitoring service for online pharmacies. The quality of the online pharmacies was assigned based on the NABP and LegitScript recommendations. The selected websites were the most representative of each profile suggested by NABP and LegitScript.

Students enrolled in the required introductory IS undergraduate course at an urban U.S. university participated in the experiment. Each study participant was randomly assigned to evaluate one of the three websites. In total 319 responses were collected with 104, 107, and 108 participants in each condition (online only/high quality, click-and-mortar/high quality, online only/low quality) Students were provided with course credit for their participation.

In order to establish a common task context, all participants were given a scenario according to which they had to examine website content and design and make a purchase decision on behalf of an imaginary person. The participants were asked to locate a specific medicine for an elderly person who had neither a physical ability to go to an actual pharmacy nor the internet skills to make an online purchase.

To complete the task, participants were asked to 1) to evaluate the website by examining the store's design and content; 2) to locate a specific product; 3) to make a purchase decision; 4) to complete a post-test questionnaire.

Measures used in the post-test questionnaire were adapted from existing scales for (a) perceived website amateurism (Fogg et al. 2001); (b) perceived website content quality (Gregg and Walszak, 2008); (c) perceived human presence (Gefen and Straub, 2003); (d) perceived physical presence (Fogg et al. 2001); (e) perceived website policies credibility (Grazioli and Jarvenpaa, 2000); (f) perceived trust (Loiacono, Watson and Goodhue, 2007); (g) trust propensity (Gefen et al. 2003); (h) purchase intentions (Gefen and Straub, 2003).

RESULTS

The data were analyzed using SmartPLS software. Two stages of analysis were implemented. During the first stage, the reliability and the validity of the constructs was established. During the second stage, the model was examined.

Convergent validity was determined by ensuring that all items loaded significantly on their respective constructs. The composite reliabilities of all constructs were above the recommended value of 0.70 and AVE values were above 0.50 (Sarker and Valacich, 2010). Cronbach's Alpha values were above 0.7 for all constructs. The results are reported in Table 1.

Item	Construct	Item Loading	AVE	Composite Reliability	Cronbach's Alpha	R Squared
PercAmateurism1	Perceived Amateurism	0.6836	0.5377	0.822	0.717	
PercAmateurism2		0.7218				
PercAmateurism3		0.6826				
PercAmateurism4		0.8345				
PercContentQual1	Perceived Content Quality	0.8513	0.7175	0.9101	0.8674	
PercContentQual2		0.8657				
PercContentQual3		0.7695				
PercContentQual4		0.8966				
PercHumanPresence1	Perceived Human	0.8994	0.7906	0.883	0.7356	
PercHumanPresence2		0.8788				
PercPhysPresence1	Perceived Physical Presence	0.8368	0.6775	0.863	0.7626	
PercPhysPresence2		0.8004				
PercPhysPresence3		0.8318				
PercPolicyCredibility1	Perceived Policy Credibility	0.9078	0.8999	0.9642	0.9441	
PercPolicyCredibility2		0.9635				
PercPolicyCredibility3		0.9733				
PercDeception1	Perceived Deception	0.8575	0.6495	0.9173	0.8916	0.6022
PercDeception2		0.8276				
PercDeception3		0.7636				
PercDeception4		0.7364				
PercDeception5		0.7981				
PercDeception6		0.8453				
PercTrust1	Perceived Trust	0.9092	0.8562	0.947	0.916	
PercTrust2		0.9445				
PercTrust3		0.9219				
TrustProp1	Trust Propensity	0.8789	0.6828	0.865	0.7749	0.6593
TrustProp2		0.7225				
TrustProp3		0.8683				
PurchIntent1	Purchase Intentions	0.909	0.8527	0.9205	0.8286	0.7712
PurchIntent2		0.9376				

Table 1. Item Loadings, AVE, Composite Reliability and Cronbach's Alpha values

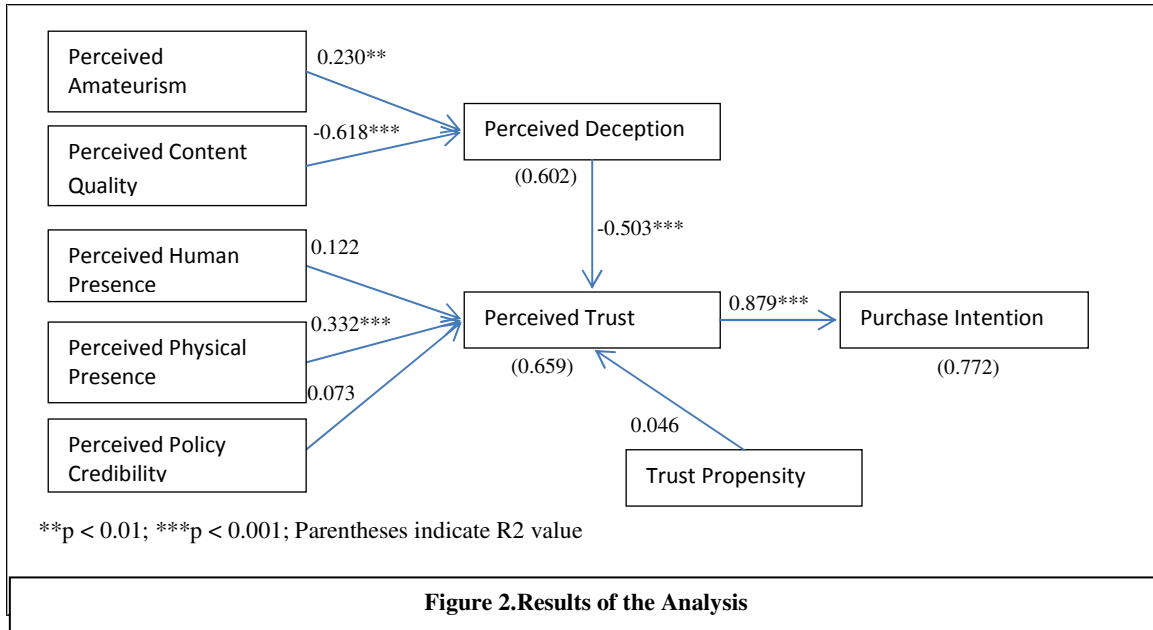
Discriminant validity was determined by assessing the correlation between the latent variable scores with the measurement items. All measurement items loaded higher in respect to their designated factor than any other factor (Sarker and Valacich, 2010). In addition, discriminant validity was confirmed by calculating the square root of AVE and ensuring that for each construct the square root of its AVE was above other correlations between that factor and other constructs (Sarker and Valacich, 2010). See Table 2.

	Perceived Amateurism	Perceived Content Quality	Perceived Human Presence	Perceived Deception	Perceived Physical Presence	Perceived Policy Credibility	Purchase Intention	Perceived Trust	Trust Propensity
Perceived Amateurism	0.7333								
Perc. Content Quality	-0.5889	0.8471							
Perc. Human Presence	-0.2998	0.4690	0.8892						
Perceived Deception	0.5942	-0.7534	-0.3510	0.8059					
Perc. Physical Presence	-0.3702	0.5569	0.4401	-0.4919	0.8231				
Perc. Policy Credibility	-0.0743	0.1806	0.0438	-0.1373	0.0725	0.9486			
Purchase Intention	-0.5386	0.7574	0.4563	-0.7157	0.6240	0.1814	0.9234		
Perceived Trust	-0.5457	0.7912	0.4563	-0.7262	0.6476	0.1793	0.8786	0.9253	
Trust Propensity	-0.1318	0.2197	0.1843	-0.1406	0.1907	0.1589	0.2212	0.2143	0.8263

Bold numbers represent the square root of the AVEs of the constructs.

Table 2. Correlations among Construct Scores and Square Roots of AVEs

To test the hypotheses, we used the bootstrapping method. The majority of the hypotheses were supported. The prediction that perceived website amateurism increases perceived deception (H1) was supported ($\beta = 0.230, p < 0.01$). The expectation that perceived content decreases purchase intentions (H2) was also supported ($\beta = -0.618, p < 0.001$). The positive relation between perceived physical presence and perceived trust (H4) was significant ($\beta = 0.332, p < 0.001$). The relationship between perceived deception and perceived trust (H6) was also significant ($\beta = -0.503, p < 0.001$), and the effect of perceived trust on purchase intentions (H7) was significant ($\beta = -0.879, p < 0.001$). H3 and H5 were not supported. See Figure 2.



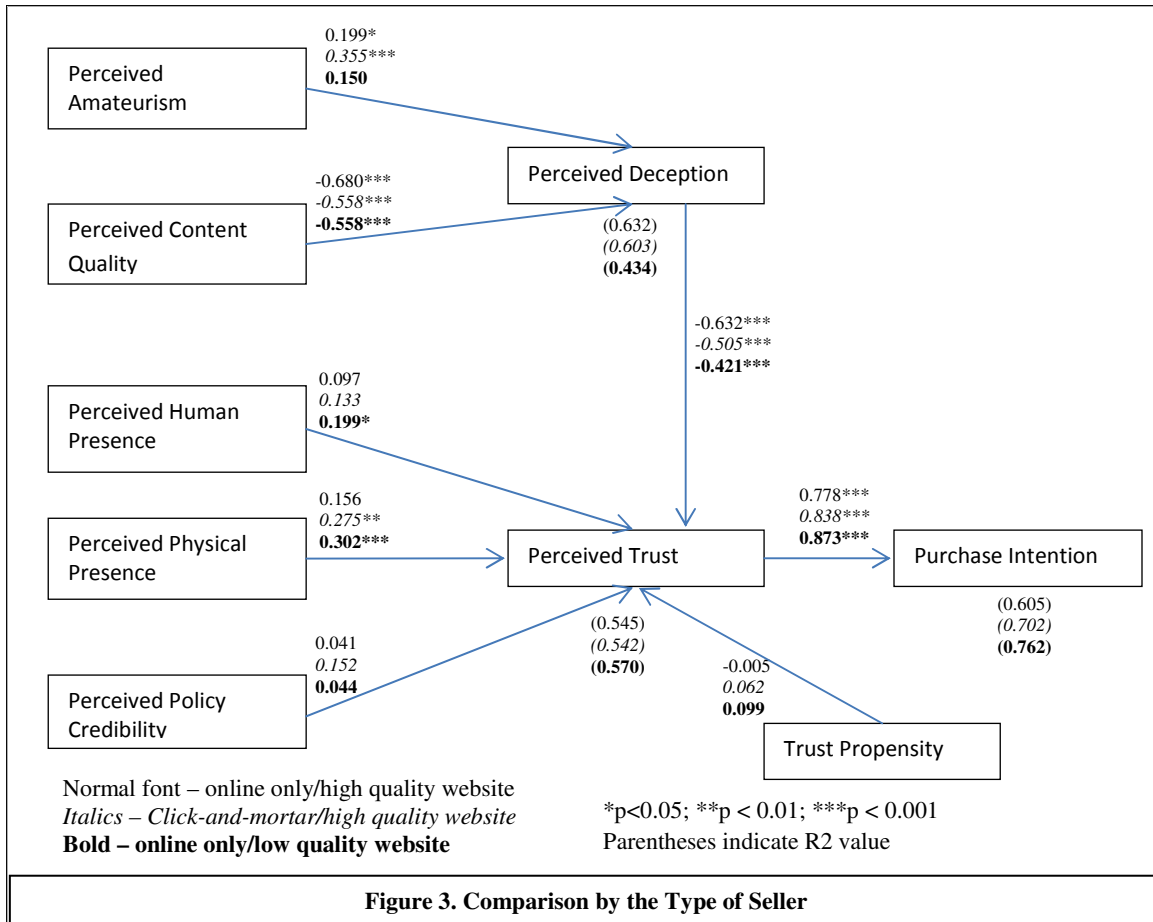
In addition, we examined whether buyer perceptions of signals were influenced by seller quality (See Figure 3). Interestingly, we found that signal perceptions change based on the type of a seller (i.e. online only/high quality, click-and-mortar/high quality, and online only/low quality). There were some similarities that all types of sellers shared: the perception of content quality had negative influence on perceived deception for all sellers (0.680, 0.558 and 0.588 respectively), and the perception of policy credibility had no influence on trust for any type of the sellers (0.041, 0.152 and 0.044 respectively).

At the same time, the effect of perceived amateurism on perceived deception was found significant for click-and-mortar/high quality sellers (0.355), and slightly less significant for online only/high quality sellers (0.199), while there was no significant effect of amateurism on perceived deception for online only/low quality sellers. A possible explanation of this finding is that users are able to discern the quality of the sellers and demand high-quality sellers to pay more attention to the professionalism of their websites. At the same time, users seem to show more lenience toward low-quality sellers as their expectations of professionalism are lower.

The effect of perceived human presence on trust was only significant for online only/low quality sellers (0.199) and not significant for high quality sellers (0.097 online only, and 0.133 click-and-mortar). Again, there is a strong support that high and low quality sellers are perceived differently. While for high quality sellers human presence does not increase perceived trust, low quality sellers can encourage trust by providing more signals that promote human touch.

Perceived physical presence had the strongest effect on trust for online only/low quality sellers (0.302) and slightly weaker effect for click-and-mortar/high quality sellers (0.275). No significant effect of physical presence was found for online only/high quality sellers (0.156). A possible explanation for this finding is that online only/high quality sellers are able to demonstrate their quality and promote trust without reliance on physical presence signals, while online only/low quality sellers need additional signals to make buyers perceive them as more trustworthy. Click-and-mortar/high quality sellers are the only type of online stores in our sample that actually own physical stores. In this situation, it is possible that buyer knowledge of this fact influenced their perceptions toward trust.

In these analyses, trust propensity did not have a significant influence on the perception of trust (0.005, 0.062, and 0.099 in each condition respectively).



DISCUSSION

The results of this study indicate that buyers perceive website interface information provided by sellers through signals differently. Buyers assign more weight towards some signals (website content, physical presence and amateurism) and less weight towards other signals (human presence and policies). These findings support tenets of signaling theory that state the importance of signaling costs. Signals are perceived by the amount of resources required to produce a signal. When signals are costly, buyers believe that a seller is of high-quality otherwise the seller will incur costs in the form of forfeited wealth if the true quality of offerings is discovered (Kirmani and Rao, 2000).

Website content is an example of a costly signal as creating and updating the website content including company details, product images and product descriptions requires effort and constant monitoring of information quality. The same logic applies to the professionalism of a website. Keeping the website more professional and less amateurish requires resources that low quality sellers are not always willing or able to invest. Physical presence is a costly signal because it is prohibitively costly for a seller to provide false or incomplete information (Spence, 1973). If the seller displays false physical address, phone and email information on the website, buyers can potentially verify this information. If the contact information is false, does not exist, or belongs to a different entity, buyers will not trust the seller and the sale will not take place.

Human presence and the availability of various policies are not found to be significant mainly because these signals require lower costs. Human presence can be operationalized through images, and policies can be copied and pasted from other reputable websites. Both signals do not require significant money contributions nor do they require maintenance or updates. In addition, the cost of punishment in case of false signals is low as images and policies are difficult to verify as false during the initial pre-purchase phase of online shopping. Buyers can sense insignificance of these signals and thus their perception of trust toward the seller is not affected by these signals.

Overall, our results shed light on the buyer perceptions of signals provided by sellers of various quality. Website content quality is found to be extremely important in decreasing perceived deceptiveness for all three types of sellers. Thus, it is

necessary for online sellers to pay more attention to the value of the information they provide. Policies are found insignificant in increasing perceived trust for all types of sellers. Possible explanations are that buyers either perceive these policies as low cost signals that do not affect the quality of a seller or offerings, or simply do not notice them.

Our results also show that buyers differentiate between high and low sellers based on the level of amateurism, and require high quality websites to display more professionalism. Human and physical presence are both important predictors of trust for low quality websites. Possibly, websites that cannot invest into other signals should provide more evidence of human and physical touch to persuade buyers that they are legitimate entities and real people work behind the virtual online storefront.

As hypothesized, trust and deception are significant predictors of purchase intentions. While perceived deceptiveness of a website decreases purchase intentions for all types of sellers, perceived trust increases purchase intentions for all of them.

CONCLUSION

This study enhances our understanding of signaling in online commerce by evaluating website signal perceptions of online buyers. The results show that signal perceptions are formed according to tenets of signaling theory. Website content and website physical presence are found more significant in affecting buyer perceptions of deception and trust, while perceived deception and perceived trust are significant predictors of purchase intentions. In addition, there is evidence that seller quality influences the perceptions of signals. Physical and human presence signals are more important in the evaluation of low-quality online sellers, and website amateurism signals are critical when assessing high-quality sellers.

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