

The Effects of Trust-Assuring Arguments on Consumer Trust in Internet Stores: Application of Toulmin's Model of Argumentation

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A trust-assuring argument refers to "a claim and its supporting statements used in an Internet store to address trust-related issues." Although trust-assuring arguments often appear in Internet stores, little research has been conducted to understand their effects on consumer trust in an Internet store. The goals of this study are (1) to investigate whether or not the provision of trust-assuring arguments on the website of an Internet store increase consumer trust in that Internet store and (2) to identify the most effective form of trust-assuring arguments to provide guidelines for their implementation.

Toulmin's (1958) model of argumentation is proposed as a basis to identify the elements of an argument and to strengthen the effects of trust-assuring arguments on consumer trust in an Internet store. Based on Toulmin's (1958) model of argumentation, three elements of arguments that commonly appear in daily communication; namely, *claim*, *data*, and *backing*, are identified. *Data* refers to the grounds for a *claim*, while *backing* is used for providing reasons for why the *data* should be accepted. By combining these three elements, three forms of trust-assuring arguments (*claim only*, *claim plus data*, and *claim plus data and backing*) are developed. The effects of these three forms of trust-assuring arguments on consumer trust in an Internet store are tested by comparing them to a *no trust-assuring argument* condition in a laboratory experiment with 112 participants.

The results indicate (1) providing trust-assuring arguments that consist of *claim plus data* or *claim plus data and backing* increases consumers' *trusting belief* but displaying arguments that contain *claim only* does not and (2) trust-assuring arguments that include *claim plus data and backing* lead to the highest level of *trusting belief* among the three forms of arguments examined in this study. Based on the results, we argue that Toulmin's (1958) model of argumentation is an effective basis for website designers to develop convincing trust-assuring arguments and to improve existing trust-assuring arguments in Internet stores.

Key words: trust-assuring arguments; trust; electronic commerce; Toulmin; model of argumentation; claim; data; backing; human-computer interaction

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1. Introduction

A key determinant of the success of business-to-consumer (B2C) e-commerce is consumer trust in Internet stores. This trust leads to desirable outcomes for Internet stores, such as increased intentions to purchase from an Internet store (Gefen 1997; Gefen and Straub 2003; Jarvenpaa et al. 2000; Kimery and McCord 2002; Lee and Turban 2001; Lim et al. 2006;

Liu et al. 2004; McKnight et al. 2002; Nöteberg et al. 1999; Pennington et al. 2003; Stewart 1999, 2003; Wetsch and Cunningham 2000) and in higher actual buying decisions (Lim et al. 2006, Pavlou 2003). However, consumer trust in Internet stores is still very low. A survey by Consumers Union found that only 26% of American users trusted e-commerce sites most of the time (*USA Today* 2002).

Although the importance of trust has been well accepted and the types of evidence that increases customer trust have been suggested (e.g., strong privacy policies and third-party assurances), there is still a paucity of research about how to best *argue (or convey)* such evidence of a store's trustworthiness to customers. Whether it is a statement placed on a website about a store's privacy policy or a symbol representing a third-party assurance, we cannot assume a priori that their presence will necessarily change trust beliefs. We know from previous work (Toulmin 1958) that there exists a hierarchy of argumentation that can be employed to bolster the veracity of (trust) *claims*. To our knowledge, Toulmin's (1958) prescriptions have not yet been applied to enhancing trust in Internet stores. We believe that such application can help us better understand how to enhance trust in Internet stores. In this regard, this study investigates an application of Toulmin's (1958) model to *organize and structure the content of trust evidence* to increase consumers' trust in an Internet store in B2C e-commerce.

A trust-assuring argument is a *claim* and its supporting statements used in an Internet store to address trust-related concerns (Kim and Benbasat 2003). This argument can focus on addressing trust directly or the antecedents of trust that are of concern, such as privacy and security. The following is an example of a trust-assuring argument used in an Internet store.

100% Safe Shopping: We absolutely guarantee that your order will be transmitted securely and that you will pay nothing if unauthorized charges ever appear on your credit card as a result of shopping here. (www.buydigitaldirect.com)

The *claim* of this argument is "100% safe shopping," and the reasons for the claim, called *data* (Toulmin 1958), are (1) secure transmission of your order and (2) no money loss because of credit card shopping. However, the reasons for why consumers should accept the *data*, called *backing* (Toulmin 1958), are missing in this argument. In spite of the relatively sound logical flow (e.g., if there will be no money loss, then the shopping is safe), some readers may not believe this *claim* if they are not convinced by the veracity of the *data*. For example, consumers may inquire as to why they will pay nothing in case of credit card fraud. The answers to these kinds of

questions are called *backing* (Toulmin 1958, VerLinden 1998). One example of *backing* is: most credit card providers limit your liability up to \$50 and cover all charge resulting from unauthorized use of your credit card; if those credit card companies ask you to pay your liability, we will reimburse you up to \$50." With this *backing*, it is more likely that more people will accept the *data* part, thus increasing the acceptance of the trust-assuring argument.

Although some trust-assuring arguments are commonly found in Internet stores, very little research effort has been devoted to investigating if these arguments actually increase consumer trust and, more importantly, on how to increase their impact on building consumer trust. To address this gap, this study examines the effects of trust-assuring arguments, based on Toulmin's (1958) model of argumentation, on consumer trust in Internet stores.

This paper begins with a brief review of the literature on trust. In §3, the hypotheses are developed; the research method is introduced in §4; and results are presented in §5. The findings, limitations, contributions, suggestions for future research, and implications are discussed in §6.

2. Literature Review

2.1. Trust in Internet Shopping

According to Gefen et al. (2003), trust has been conceptualized in a variety of ways, such as (1) trust as a set of beliefs regarding the positive characteristics of trustee; (2) trust as *trusting intentions*; (3) trust as a feeling of "confidence and security in the caring response" by trustees in interpersonal relationships, including friendship and love; and (4) a combination of these. We focus on *trusting belief* in our research model, because *trusting belief* has been identified as an important mediator that leads to higher *trusting intentions* in studies that have developed models of trust in e-commerce (Lee and Turban 2001, McKnight et al. 2002).

2.1.1. Trusting Intentions. According to the review of trust studies in Rousseau et al. (1998), the most frequently cited definition for trust is willingness to be vulnerable, proposed by Mayer et al. (1995). This definition indicates that consumer trust is a kind of behavioral intention, referred to as "*trusting intentions*" by McKnight et al. (1998).

2.1.2. Trusting Belief. In Internet shopping environments, *trusting belief* refers to an aggregation of consumers' beliefs regarding a store's positive characteristics when it handles consumer transactions (Bhattacharjee 2002). A group of scholars (Bhattacharjee 2002, Gefen 1997, Mayer et al. 1995, McKnight et al. 2002) include ability, integrity, and benevolence as representative characteristics describing one's *trusting belief*. Ability refers to a "group of skills, competencies, and characteristics that enable a [trustee] to have influence within some specific domain" (Mayer et al. 1995, p. 717), such as expertise to conduct business via e-commerce. Integrity refers to a "trustor's perception that the trustee adheres to a set of principles that the trustor finds acceptable" (Mayer et al. 1995, p. 719), such as keeping her promises. Benevolence refers to the showing of empathy and responsiveness toward consumers' concerns and needs and the making of proactive efforts to resolve their concerns (Bhattacharjee 2002).

These positive characteristics have been collectively referred to as "trustworthiness" by Jarvenpaa et al. (2000) and Mayer et al. (1995). Although trustworthiness can be separated conceptually into several sub-constructs such as ability, integrity, benevolence, and so on, some or all of these characteristics tend to merge together empirically into one construct, especially in the initial stage of trust building when the trustor knows little about the trustee (Bhattacharjee 2002, McKnight and Chervany 2001).

2.1.3. What Influences Consumers' Trusting Belief? According to McKnight and Chervany's (2001) trust model, consumers' trusting belief and intentions are influenced by disposition to trust, institution-based trust, and Web vendor interventions.

Disposition to trust is "the extent to which a person displays a tendency to be willing to depend on others across a broad spectrum of situations and persons" based on either the person's faith in humanity or the person's strategy to deal with others (McKnight and Chervany 2001, p. 45).

Institution-based trust is "the belief that needed structural conditions are present" (McKnight et al. 2002, p. 339). This is about an individual's perception of the Internet environment (McKnight and Chervany 2001). According to Pavlou and Gefen (2004, p. 37),

perceived effectiveness of information technology-enabled institutional mechanisms, such as customer feedback mechanism, escrow service, and credit card guarantees, engenders buyer trust, "not only in a few reputable sellers, but also in the community of online auction sellers." Pennington et al. (2003) also showed that vendors' guarantees about privacy, security, and customer satisfaction increased the belief that the proper impersonal structures have been put into place for successful transactions, and eventually led to higher trust in vendors in e-commerce.

In B2C e-commerce, Web vendor interventions are "actions a vendor may take to provide assurances about the vendor's sites" (McKnight and Chervany 2001, p. 51). Cheskin Research and Studio Archetype/Sapient (1999) argue that e-commerce trust is communicated by seal of approval, brand names, fulfillment information (i.e., clearly indicating how orders will be processed, and providing information on how to seek recourse in case of problems), and so on.

The factors influencing consumers' trusting belief, which are reviewed in this section, including those shown in Table 1, are utilized later to show that trust-assuring arguments used in this study can influence consumers' trusting belief either directly or through these antecedents (see Appendix 2¹).

3. Hypotheses Development

3.1. Toulmin's Model of Argumentation

Toulmin (1958) proposed a model of argumentation in daily communication based on arguments made in court of law settings. Toulmin has identified six argument elements that appear to be common and invariant across different field settings. However, some of the elements are commonly left unexpressed when people actually do make arguments (VerLinden 1998). Therefore we focus on only three of them—*claim*, *data*, and *backing*—which appear frequently in daily communications, and also review *warrant*, statements that are assumed in daily communication, although they often remain unexpressed.

¹ An online supplement containing the appendices to this paper is available on the *Information Systems Research* website (<http://isr.pubs.informs.org/ecompanion.html>).

Table 1 Examples of Web Interventions in the IS Literature

Type	Description
Seals of approval	Displaying third-party assurances has been mentioned as a means to increase consumers' trusting belief (Cook and Luo 2003, Kaplan and Nieschwietz 2003, Kimery and McGord 2002, Kovar et al. 2000, McKnight and Chervany 2001, Wang et al. 2004).
Brand/reputation	Brand or reputation has been shown to increase consumers' trusting belief (Jarvenpaa et al. 2000, Kim et al. 2004, Wetsch and Cunningham 2000).
Fulfillment	Posting a privacy policy (Fogg et al. 2001, Hoffman et al. 1999, McKnight and Chervany 2001, Wetsch and Cunningham 2000) and security policy (Wetsch and Cunningham 2000) has been shown to increase consumers' trusting belief because perceptions of privacy protection and security control have a positive impact on consumer trust (Malhotra et al. 2004, Suh and Han 2003). Providing efficient interactions with customers (Fogg and Tseng 1999, Gefen 1997, McKnight et al. 2002) and ease of use (Gefen et al. 2003) increases consumers' trusting belief.
Others	Having links to and from other reputable sites increases customers' trusting belief (Stewart 1999, 2003). Showing other customers' feedback increases customers' trusting belief (Ba and Pavlou 2002, Lim et al. 2006). Familiarity with e-vendor influences customers' trusting belief (Gefen et al. 2003). Referrals from a person with strong personal ties were positively related to trusting belief (Kim and Prabhakar 2000). Website quality affects customers' trusting belief (Kim et al. 2004, McKnight and Chervany 2001).

Claim: "assertions or conclusions put forward for general acceptance" (Ye and Johnson 1995, p. 159).

Data: evidence used to support a *claim* (VerLinden 1998).

Warrant: propositions that establish links between *data* and *claim* (Toulmin 1958).

Backing: evidence explaining why *warrant* and *data* should be accepted (Toulmin 1958, VerLinden 1998).

An example of an argument and its relationship to these four elements is depicted in Figure 1. A *claim* is what one is arguing for, and *data* is the ground on which the *claim* is based. A bare argument often consists of *claim* and *data*. *Warrant* is a proposition that links the *data* and the *claim*.

In Figure 1, *warrant* is shown in a dotted box because it is often left unexpressed, although its implicit existence is generally assumed. *Data* and *warrant* sup-

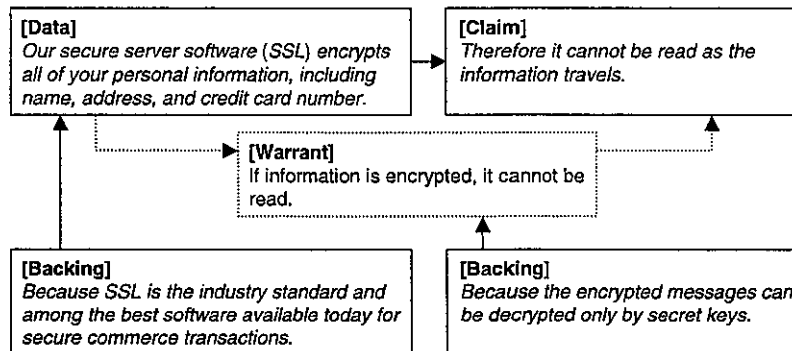
port *claim* directly. *Backing* supports *claim* indirectly by supporting the *data* and the *warrant*. In this example, those familiar with the meaning of encryption may accept the argument. Others may inquire as to why encryption means that information cannot be read. If *warrant* is challenged, other statements could be used as a backup. *Backing* for "why does encryption prevent information from being read?" could be: "Since the encrypted messages can be decrypted only by secret keys [*backing*]." While those familiar with SSL (Secure Socket Layer) may accept the *data* that SSL encrypts information, others may need *backing*, as shown in Figure 1, to be convinced.

By combining the three argument elements in Toulmin's (1958) model, we define the following three forms of arguments: *claim only*, *claim plus data*, and *claim plus data and backing*. Theoretically, *data* without *claim* and other combinations also can be tested. However, such forms are not included in this study because they infrequently appear in daily communication.²

Though little attention has been given to Toulmin's (1958) model in influencing consumers' beliefs, empirical evidence suggests that application of Toulmin's model can affect users' or consumers' beliefs in the context of expert systems and advertising. Ye and Johnson (1995) applied Toulmin's (1958) model to the development of explanations used in expert systems in an experimental setting and reported that explanations that conform to Toulmin's model were more persuasive in getting users to accept an expert system's conclusions than those that do not. Munch et al. (1993) tested the effects of *warrants* (i.e., an element of Toulmin's 1958 model) in the context of advertising and reported that having *warrants* in advertising messages improves consumers' beliefs of the product attributes (such as sharp picture quality) and attitudes toward the product, but they did not examine the influence of *claim*, *data*, and *backing* as was done in the current study.

² In our exploration of the 10 websites (Kim and Benbasat 2003), it was observed that such forms are rarely used only in special cases, when claims can be inferred quite easily because of the context. If people can infer the claims, then the effects of *data only* are likely to be similar to those of *claim plus data*. However, it is practically difficult to develop *data only* arguments for all issues because it is difficult to provide the context where the claims are evident for every issue.

Figure 1 Claim, Data, Warrant, and Backing



3.2. Trust-Assuring Arguments and Consumers' Trusting Belief

Kim and Benbasat (2003) identified customers' trust-related concerns in Internet shopping (see Appendix 1), such as privacy, security, product price and quality, and customer service, which undermine consumers to trust a store. Appendix 2 lists the claims used, and corresponding data and backing, that are provided by the Internet store used in this study to alleviate these trust-related concerns. Some of these claims are related to the *antecedents* of trusting belief, such as concerns about privacy (Malhotra et al. 2004), e.g., Claims 2 and 13, security (Wetsch and Cunningham 2000, Pennington et al. 2003), e.g., Claims 1, 3, and 12, and satisfaction or ease of use (Pennington et al. 2003), e.g., Claims 5 and 8, while others are related *directly* to dimensions of consumers' trusting belief, such as a store's competence and integrity, e.g., Claims 4, 6, 7, 9, 10, and 11, in providing customer services. Whether a trust-assuring argument is about the antecedent of a trusting belief (such as, a site with a *secure* transmission of information generates a high trusting belief) or it is about the trusting belief (such as a site that can deliver on time is competent), the impact of both types of arguments will lead to higher trusting belief as argued below.

Providing trust-assuring arguments about either the antecedents of trust and/or the dimensions of trust directly is likely to increase consumers' trusting belief via the prediction process and the intentionality process, as discussed in Doney and Cannon (1997). They argue that customers trust a store when customers can predict its future behavior, based on

an assessment of information regarding *the store's promises and past behavior*. Kim and Benbasat (2003) argue that consumers visiting an unknown Internet store to buy a product feel uncertain about the future behaviors of the store in dealing with consumers. Providing trust-assuring arguments can increase customers' understanding of a store's practices (as a proxy of its *past behavior*) as well as *promises*, and this increased understanding about the store is likely to reduce uncertainty in the characteristics of the store and to enhance the customers' ability to predict the store's future behavior. Doney and Cannon (1997) also argue that customers trust a store when customers infer a store's intention to be benevolent, based on interpretation of a store's claims. With trust-assuring arguments displayed on a store's website, customers can infer whether a store's intention is to do good for its customers or not. Therefore we predict that displaying trust-assuring arguments increases consumers' *trusting belief* in Internet stores.

HYPOTHESIS 1A (H1A). *Displaying trust-assuring arguments that consist of claim only produces higher consumers' trusting belief in an Internet store than not displaying any trust-assuring arguments does.*

HYPOTHESIS 1B (H1B). *Displaying trust-assuring arguments that consist of claim plus data produces higher consumers' trusting belief in an Internet store than not displaying any trust-assuring arguments does.*

HYPOTHESIS 1C (H1C). *Displaying trust-assuring arguments that consist of claim plus data and backing produces higher consumers' trusting belief in an Internet store than not displaying any trust-assuring arguments does.*

3.3. Effective Form of Trust-Assuring Arguments

In general, people accept the *claim* of an argument if they accept the *data* (e.g., evidence) and the *warrant* (e.g., logic of argument). If customers express skepticism about particular *data* and *warrant*, then *backing* provides the reasons for why they should be accepted. People are more likely to accept the *data* and *warrant* of an argument that includes *backing* than that without. In fact, Ye and Johnson (1995) have reported that explanations that conform to Toulmin's (1958) model are more persuasive in getting people to accept an expert system's conclusions than those that do not. In addition, studies on knowledge-based system explanations (Gregor and Benbasat 1999) have posited that arguments, which conform to Toulmin's (1958) model of argumentation are more effective in influencing consumers' beliefs. Therefore we predict that trust-assuring arguments that include *claim plus data and backing* are the most effective form among the three forms under investigation.

HYPOTHESIS 2A (H2A). *Displaying trust-assuring arguments that consist of claim plus data and backing produces higher consumers' trusting belief in an Internet store than displaying trust-assuring arguments that consist of claim only does.*

HYPOTHESIS 2B (H2B). *Displaying trust-assuring arguments that consist of claim plus data and backing produces higher consumers' trusting belief in an Internet store than displaying trust-assuring arguments that consist of claim plus data does.*

4. Method

A laboratory experiment was conducted to test these hypotheses because it can control for potential confounding factors such as downloading time. One hundred and twelve people, including university students, staff, and faculty members were recruited.

4.1. Experimental Task

Participants were asked to explore *two* experimental Internet stores one at a time. They were told that the stores were real stores. Their tasks were (1) to evaluate two stores by examining the stores' front pages, checkout processes, policies, and features; (2) to decide from which store they would prefer to buy a watch; and (3) to complete a questionnaire.

4.2. Independent and Dependent Variables

4.2.1. Independent Variable. (1) Displaying trust-assuring arguments based on Toulmin's (1958) model.

Trust-assuring arguments that consist of a *claim, data, and backing* were developed by referring to and utilizing arguments used in actual Internet stores and the trust-related concerns (Appendix 1) in Kim and Benbasat (2003). As shown in Appendix 2, the 13 arguments are all related to the factors influencing consumers' trusting belief, directly or indirectly, in the extant literature reviewed in §2.1.3 and/or to the trust-building processes in Doney and Cannon (1997).

These arguments are listed in one of the *checkout* pages (Figure 2), where customers could see all the *claims* and links to *data and backing* for each claim (see Appendix 3). To increase chances for participants to access the arguments, the same arguments were also embedded in the front page, checkout pages, and company information pages (see Appendix 4).

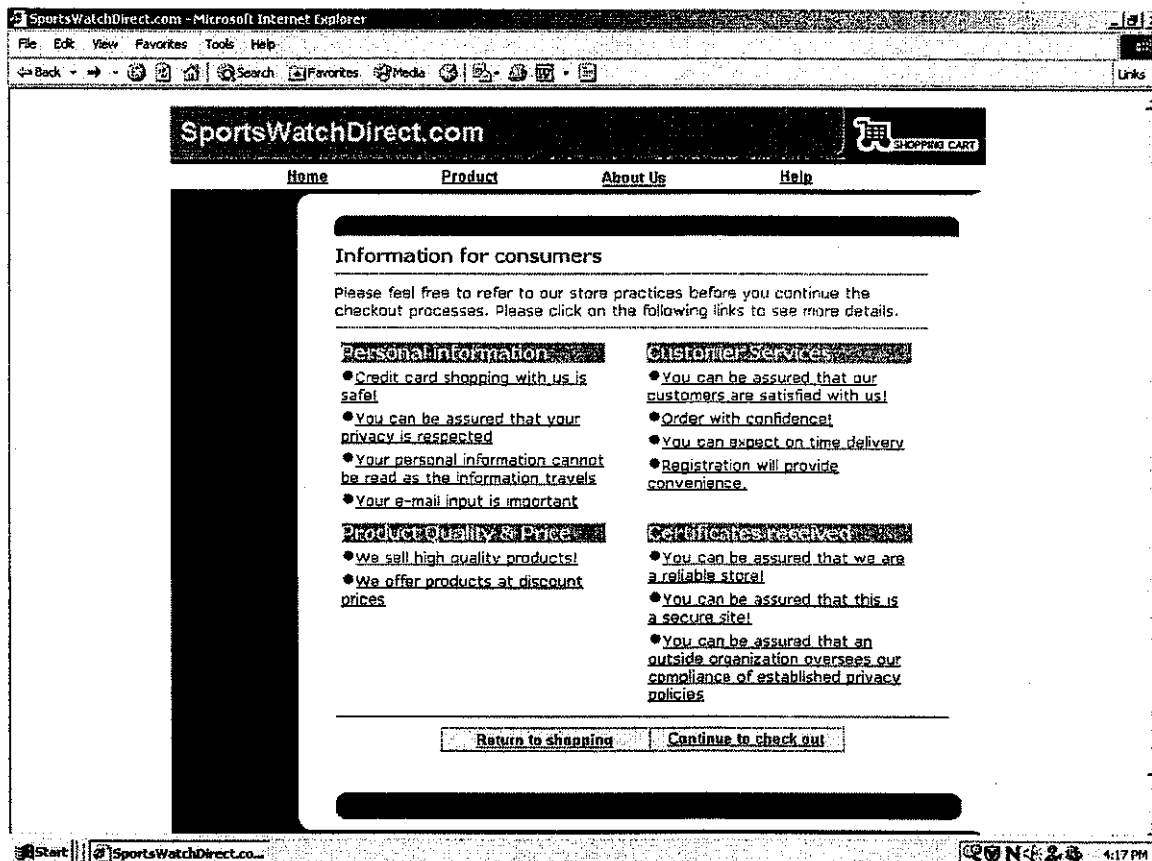
For this study, two Internet stores were developed for subjects to compare the two stores, as people often do in Internet shopping. They were named sportswatchdirect.com (hereafter Store A) and sportstechwatch.com (hereafter Store B).

For *each store*, there were four versions of their particular website: (1) a website *without* arguments (hereafter *baseline*), (2) a website displaying *claim only*, (3) a website displaying arguments that consist of *claim plus data*, and (4) a website displaying arguments that include *claim plus data and backing*.

Each participant first explored a website that did not include any arguments (i.e., *baseline*), and then visited the second website (i.e., *baseline, claim only, claim plus data, or claim plus data and backing*) according to his or her assigned group, as shown Table 2.

There are strong theoretical reasons for using this particular experimental design, that was also applied previously in the IS literature by Jiang and Benbasat (2004) and Lim and Benbasat (2000). To ensure that the differences in trusting beliefs are mainly because of treatment differences rather than subjects' differing past experiences, in line with Helson's (1964) theory, we used the first store that contained no arguments to provide a baseline so that subjects would use it as a common reference or context. Helson's adaptation-level theory (1964) posits that people's judgments are based on (1) their past experiences, (2) a context

Figure 2 Information for Consumers (Inserted as a Page of Checkout)



or background, and (3) a stimulus (or treatments); namely, trust-assuring arguments in this study. A person will make a judgment of the stimulus or treatment provided mainly by basing it on his or her own past experiences. Because individual subjects are likely to have different past experiences, there is no common frame of reference on which to base a judgment. To ensure that the experimental outcomes are because of the differences in stimulus or treatments, and not

on differences in past experiences, we provided all subjects with a common base condition so that they would use it as a common reference to control for differences in past experiences in evaluating the treatment condition to which subjects were assigned.

Hence the first store is intended to control for differences in subjects' past experiences in evaluating the websites. The second store with treatments was then presented for subjects to assess trustworthiness of the

Table 2 Treatment Groups and Sequence of Visit

Group	Control		Claim only		Claim plus data		Claim plus data and backing	
	Store A without argument	Store B without argument	Store A without argument	Store B without argument	Store A without argument	Store B without argument	Store A without argument	Store B without argument
First store	Store A without argument	Store B without argument	Store A without argument	Store B without argument	Store A without argument	Store B without argument	Store A without argument	Store B without argument
Second store	Store B without argument	Store A without argument	Store B with claim	Store A with claim	Store B with claim + data	Store A with claim + data	Store B with claim + data + backing	Store A with claim + data + backing

second store as compared to that of the first store (i.e., elicit the impact of the particular treatment assigned). To counterbalance the differences other than the treatments between Stores A and B, half of the participants within a group visited Store A first and then Store B, and the other half visited Store B first and then Store A (Table 2). To measure any potential learning effects, we had a control group, where subjects visited two stores that did not include any arguments (i.e., baseline – baseline).

4.2.2. Dependent Variable. Consumers' *trusting belief* is the dependent variable. It is a four-item summative scale,³ with the first three items adapted from store trustworthiness in Jarvenpaa et al. (2000) and the fourth item from ability in Lim et al. (2006). It is measured on a 15-point scale (i.e., -7 to +7) and based on perceptions of the second store (i.e., treatments) as compared to the first store (i.e., baseline). Hence the term, *trusting belief*, hereafter is used to describe the additional change in consumers' trusting belief because of treatments as compared to a baseline (i.e., no treatment condition).

4.3. Experimental Procedures

4.3.1. Initial Briefing. The study was conducted with one participant at a time. Participants spent about an hour to complete the task. On arrival, participants were randomly assigned to one of the four treatment groups by utilizing the randomized sequences (generated from <http://random.org/sform.html>) and received an instruction binder that described the procedures for the study. They were told that the aim of the study was to understand consumers' Internet shopping experiences. After completing a consent form, subjects completed a pre-questionnaire regarding years of Internet experience, hours per week of Internet use, frequency of shopping online, amount of spending in online purchases for the last 12 months, their comfort level with shopping online, and their preexisting levels of trust in Internet stores (Appendix 6). All participants received a \$10 reward for their participation. In addition, to encourage their involvement, participants had the option to

buy a \$30 gift certificate for \$10 from the researchers, if they agreed to use the gift certificate to buy their chosen (favorite) product from one of the two stores.

4.3.2. Practice and Selection of a Favorite Watch. A research assistant demonstrated to the participants the key steps of the checkout process that they had to go through to place an order in the baseline store, using a printed copy of screen images until subjects were familiar with the meaning of the buttons (e.g., *add to cart*, *continue shopping*, and *check out*) in the ordering process. Then, pictures and descriptions of four watches were given to the participants in a printed form. They were asked to review the four watches and to choose the one they liked best, which they would decide where (which of the two stores) to buy from in the next step. This step imitated participants' product-searching experiences.

4.3.3. Comparative Evaluation of Baseline and Treatment Stores. Participants were requested to explore two Internet stores, first baseline and then treatment (see Table 2), one at a time, to shop for the watch they had selected in the previous step and to observe the front pages, checkout processes, policies, and information for customers that included the trust-assuring arguments (Figure 2). After exploring the two stores, the participants completed questionnaires concerning their *trusting belief* (Appendix 5) and the reasons for their answers. Those who chose to buy a watch, paid \$10, filled out a gift certificate, and returned it to the researchers. (When the incentive was explained, participants were told that the orders would be mailed after all the participants made their decisions.)⁴

5. Results

5.1. Subject Demographics

About 57% of the participants were females. Of the participants, 98% had more than two years of Internet use experience, 68% used the Internet more than 20 hours per week, and 63% had previously made purchases at least once in the past 12 months.

³ Appendix 5 lists the questions and Appendix 8 reports measurement characteristics. Factor analysis and reliability statistics show satisfactory discriminant validity and reliability.

⁴ When data collection was completed, those who paid \$10 to buy a watch were debriefed via e-mail and had the option to receive \$30 (the nominal value of the gift certificate) in cash or the watch they had ordered, according to their preference.

5.2. Manipulation Checks and Measurement Characteristics

No significant differences were found between the subjects randomly assigned to each of the conditions, with respect to years of Internet experience, hours per week of Internet use, frequency of shopping online, amount of spending in online purchases for the last 12 months, their comfort level with shopping online, their preexisting levels of trust in Internet stores, gender, and age (multivariate analysis of variance test, Wilks's Lambda $F = 1.142$, $p > 0.1$) (questions are listed in Appendix 6).

Based on the participants' answers about argument use (Appendix 7) in the postexperiment questionnaire, we measured the extent to which participants indicated that they accessed the 13 trust-assuring arguments (Appendix 2) that the *second* store displayed. Those exposed to *claims*, *data*, and *backings* reported that on average they accessed (at least saw) 9.2 *claims* (70%), 6.5 *data* (50%), and 4.7 *backing* statements (36%).

The discriminant validity of the trusting belief and the preexisting level of trust in Internet stores were assessed through an exploratory, principal components factor analysis with direct oblimin rotation. In the analysis, two factors with prerotation eigenvalues of 3.08 and 2.59 were obtained. All items for the trusting belief loaded on Factor 1 and all those for the preexisting level of trust in Internet stores loaded on Factor 2. All items had loadings above the commonly specified minimum of 0.4 on the intended construct and no items had cross-loadings above 0.4 on the unintended constructs, indicating that two constructs are empirically distinct (McKnight et al. 2002).

Reliability indicators measured by Cronbach's α were all above the cited minimum of 0.7, indicating that each set of variables is consistent in what it is intended to measure (Gefen et al. 2000).

5.3. Hypotheses Testing: Comparisons of Treatment Groups

Table 3 shows descriptive statistics regarding consumers' *trusting belief*. As we predicted, the *trusting belief* of the subjects who were given arguments that include *claim plus data and backing* was the highest.

Table 3 Descriptive Statistics (Trusting Belief)

Group	N	Mean	Std. dev.
Control	28	0.277	1.593
Claim only	28	0.813	1.591
Claim plus data	28	1.143	1.231
Claim plus data and backing	28	2.170	2.269

To test whether there was any significant difference among the treatment groups for *trusting belief*, analysis of covariance (ANCOVA) was run with the treatment groups (i.e., *control*, *claim only*, *claim plus data*, and *claim plus data and backing*) as one factor, and the order of visit (Store A first or Store B first) as the other. Years of Internet experience, hours per week of Internet use, frequency of shopping online, amount of online purchase, comfort level with shopping online, preexisting levels of trust in Internet stores, gender, and age were entered as covariates to control any influence on consumers' trusting beliefs because of these covariates.

None of these covariates were significant at $\alpha = 0.05$, indicating that individual's characteristics and past experiences are successfully controlled by randomly assigning subjects and having a baseline store. ANCOVA indicated that as expected *trusting belief* is significantly different among treatment groups ($F = 5.223$, $p < 0.01$), but not significantly different because of the order of visiting the two stores ($F = 1.032$, $p > 0.1$) (Table 4).

To test Hypotheses 1A, 1B, 1C, 2A, and 2B, five nonorthogonal contrast tests were conducted based on Holm's sequentially rejective Bonferroni test with Welch's degree of freedom (Kirk 1995, p. 143). Holm's

Table 4 Results of the ANCOVA for Trusting Beliefs

Factor	DF	MS	F	p-value
Years of Internet experience	1	7.48	2.41	0.12
Hours per week of Internet use	1	0.82	0.26	0.61
Frequency of shopping online	1	0.07	0.02	0.88
Amount of online purchase	1	0.07	0.02	0.88
Comfort level with shopping online	1	0.00	0.00	0.97
Preexisting levels of trust in Internet stores	1	0.21	0.07	0.80
Gender	1	0.47	0.15	0.70
Age	1	0.56	0.18	0.67
Treatment groups	3	16.23	5.22	0.00
Order of visit	1	3.21	1.03	0.31
Treatment groups * order of visit	3	0.92	0.30	0.83
Error	96	3.11	—	—

Table 5 Nonorthogonal Contrast Tests for Trusting Belief

Hypotheses	Hypotheses supported?	Contrast value	Welch's <i>df</i>	<i>t</i>	Critical <i>t</i> value ($\alpha = 0.05$, one tail)
H1A Claim only—control	No	0.536	54.00	1.259	1.684
H1B Claim plus data—control	Yes	0.867	50.77	2.276*	2.189 ^a
H1C Claim plus data and backing—control	Yes	1.893	48.42	3.613*	2.406 ^b
H2A Claim plus data and backing—claim only	Yes	1.357	48.38	2.591*	2.312 ^c
H2B Claim plus data and backing—claim plus data	Yes	1.026	41.63	2.105*	2.009 ^d

Notes. Holm's sequentially rejective Bonferroni test with Welch's degree of freedom (Kirk 1995) was used.

*Contrasts are significant at $\alpha = 0.5$ level (one tail).

^aCritical value based on Dunn-Sidak procedure ($df = 40$, 3 comparisons).

^bCritical value based on Dunn-Sidak procedure ($df = 40$, 5 comparisons).

^cCritical value based on Dunn-Sidak procedure ($df = 40$, 4 comparisons).

^dCritical value based on Dunn-Sidak procedure ($df = 40$, 2 comparisons).

procedure was chosen because it is recommended as the most powerful procedure for nonorthogonal group comparisons (Kirk 1995, p. 143). Welch's modified degree of freedom was used to control the Type I error in the contrast tests under unequal variance among treatment groups (Kirk 1995, p. 143). A *one-tailed test* was applied because the hypothesis tested directionality (Cooper and Emory 1995, p. 435).

Table 5 shows the results of the five contrast tests. For *claim plus data and backing* as well as *claim plus data* groups, *trusting belief* was significantly higher than that of the *control* group. However, *trusting belief* of the *claim only* group was not different from that of the *control* group. Therefore, Hypotheses 1B and 1C were supported but Hypothesis 1A was not, indicating that displaying trust-assuring arguments can increase consumers' *trusting belief* only when they include *data* or *data plus backing*. Consumers' *trusting belief* of the *claim plus data and backing* group was significantly higher than that of both the *claim only* group and the *claim plus data* group. Therefore, Hypotheses 2A and 2B were supported, suggesting that arguments that include *claim*, *data*, and *backing* are most effective in increasing consumers' trust among the three argument forms.

5.4. Supplementary Analyses for an Alternative Explanation of the Results

There is a potential alternative explanation of the study results. It could be argued that the same results might have occurred because of *longer length* of the arguments that include *claim plus data and backing*, because people sometimes process arguments with

simple heuristics, such as "the longer the argument, the more convincing the argument must be" (O'Keefe 2002, p. 150). Obviously, for the same *claim* and *data*, arguments that include *claim plus data and backing* are naturally longer than those that include *claim only* or *claim plus data*. Therefore we need to rule out the influence of *length* as the cause of the outcomes observed. For doing so, we rely on the well-tested and accepted elaboration likelihood model (ELM) (Petty and Cacioppo 1981, 1984, 1986), which posits that personal relevance moderates influence of heuristic cues⁵ on the persuasion outcomes (trusting beliefs in this paper). That is, ELM suggests that *heuristic cues*, such as the length of an argument, become relatively more important determinants of persuasion (e.g., enhance trusting beliefs in this study) under *low levels of personal relevance*,⁶ i.e., when an argument is less relevant or important to one's personal interests, while *heuristic cues* become relatively *less* important determinants of persuasion under high levels of personal relevance, i.e., when an argument is highly relevant or important to one's personal interests (Petty and Cacioppo 1986, p. 20). O'Keefe argued (2002), "if one's personal relevance of an argument is *low*, one puts less effort to read and think about the argument, thus is more influenced by the length of the argument, rather than the argument content itself" (p. 145). Consequently,

⁵ A heuristic cue refers to "extrinsic features of the communication situation," which includes the characteristics of communicator and the sheer length of the message (O'Keefe 2002, pp. 148-150).

⁶ Personal relevance refers to the extent to which an advocacy of an argument has *intrinsic importance* or *personal meaning* (Petty and Cacioppo 1986, p. 81).

if argument length rather than argument content is the main cause of consumers' trusting belief, then differences between *claim only* and *claim plus data and backing* (H2A), and the differences in trusting belief between *claim plus data* and *claim plus data and backing* (H2B) would be significant under low levels of personal relevance, but not so under high levels. Appendix 9 summarizes these arguments and demonstrates that the actual results, as described below, do not support the contention that the outcomes were because of argument length.

Personal relevance of arguments is measured in the postexperimental questionnaire with a three-item summative scale, which was adapted from Zaichkowsky (1994). Each item was measured on a seven-point semantic differential scale (*relevant/irrelevant, means a lot to me/means nothing to me, and interested/uninterested*).⁷

To check whether our results support an alternative explanation based on a length factor, the three treatment conditions (*claim only*, *claim plus data*, and *claim plus data and backing*) were divided into two subgroups, based on the levels (low or high) of personal relevance in the arguments within each condition (Mackenzie and Spreng 1992, Maheswaran and Meyers-Levy 1990),⁸ by a median-split procedure (see Bakker et al. 2006). Participants were placed into the high personal relevance group if their personal relevance scores were higher than or equal to the median of personal relevance scores within their treatment group; otherwise they were placed into the low personal relevance group.

ANOVA was run for each of subgroup, (1) high personal relevance subgroup and (2) low personal relevance subgroup, to examine whether treatment differences are significant regarding consumers' trusting belief within that subgroup. The differences among

treatments on consumers' trusting belief was significant in the high personal relevance subgroup ($F = 4.861$, $p < 0.05$), but not so in the low personal relevance subgroup ($F = 1.625$, $p > 0.1$). These results do not support the alternative explanation that the length of arguments is a dominant factor explaining the group differences in consumers' trusting belief (see Appendix 9). For the low personal relevance subgroups, consumers' trusting belief in the *claim plus data and backing* group was not different from that of the *claim only* group ($t = 1.261$, $p > 0.1$, one-tail test) and that of the *claim plus data* group ($t = 0.573$, $p > 0.1$, one-tail test).⁹ For the high personal relevance subgroups, consumers' trusting belief in the *claim plus data and backing* group was significantly higher than that of the *claim only* group ($t = 2.322$, $p < 0.05$, one-tail test) and the *claim plus data* group ($t = 2.294$, $p < 0.05$, one-tail test). Based on these results, we conclude that the length of arguments is most likely not the main factor for the differences in trusting beliefs among the treatment groups, and that the effects are because of the content of arguments.

6. Discussion and Concluding Comments

The results of this study suggest that trust-assuring arguments increase consumer trust if they include *claim plus data* or *claim plus data and backing*. Smith et al. (1991) suggest that the strength of an argument decreases with evidence deficiency. Consequently, *claim only* arguments, which do not provide any supporting evidence, did not increase consumer trust. Among the three forms of arguments, *claim plus data and backing* increased consumer trust most. This result confirms the Gregor and Benbasat's (1999) proposition (stated in the case of knowledge-based systems) that explanations conforming Toulmin's (1958) model would be more persuasive in the specific context of e-commerce.

6.1. Limitations

There are several limitations to be noted. In this study, all subjects have been recruited from the same university, most of them being undergraduate students,

⁷ The same results were obtained when the full set of items in Zaichkowsky's (1994) personal involvement inventory was used.

⁸ Our approach is similar to Maheswaran and Meyers-Levy's (1990) approach based on the split sample. In their study, message-related thoughts (e.g., thoughts related to the content) were significant in predicting attitudes toward products in the high involvement group, but not so in the low involvement group. In contrast, simple evaluative thoughts (e.g., thoughts related to peripheral cues) were significant in predicting attitudes toward products in the low involvement group, but not so in the high involvement group.

⁹ This is based on Holm's sequentially rejective Bonferroni test with Welch's degree of freedom (Kirk 1995).

hence the results are based on a rather homogeneous group. Thus, to generalize the study results, it will be necessary to conduct additional studies with different subject demographics and in different settings.

Furthermore, in this study, only one type of product (i.e., sports watches), a relatively inexpensive product (i.e., \$30) with a rich set of attributes, was used. The findings may not be consistent when other types of products are used. Further research with various types of products will allow a better generalization of the findings.

Another limitation is that the experiment did not completely reflect the real world of e-commerce. To increase a subject's access of the trust-assuring arguments, the arguments were provided repeatedly in a special page as well as in other places (see Appendix 4). It is likely that most websites may not afford to allocate a substantial portion of their Web spaces to such arguments. Additional investigations with fewer arguments in a natural setting may be necessary to generalize the findings.

Lastly, what was measured for consumers' trusting belief was not consumers' trusting belief per se, rather based on perceptions of the second store (i.e., treatments) as compared to the first store (i.e., baseline). Further investigations using measures of consumers' trusting belief per se rather than as a level of difference are needed to confirm the findings of this study.

6.2. Contributions to Theory and Research and Suggestions for Future Studies

To our knowledge, this is the first empirical study to test Toulmin's (1958) work in the context of an e-commerce setting and enhancement of trust in such settings. The results contribute to trust theories in e-commerce and to e-commerce success in a variety of ways. To date, the focus of trust studies in e-commerce has been on identifying the antecedents of trusting beliefs, such as: disposition to trust, structural assurances, situation normality, and calculative-based trust. This study shows that trust building is not solely achieved by providing information about some of these antecedents, such as structural assurance, but as importantly structuring this information in a fashion that is most effective in convincing the customer the website intends to influence. Hence the study demonstrates both how the way trust-related

information is structured can add value by increasing trusting belief over and above what the nature of the evidence is, e.g., structural assurances, and also suggests a well-defined method (Toulmin's 1958 model) that could be used to form such convincing arguments in the context of e-commerce.

For example, several studies (Malhotra et al. 2004, Suh and Han 2003) have suggested that perceptions of privacy protection and security control, which could be effected by structural assurance mechanisms (McKnight et al. 2002), had a positive impact on consumer trust. Toulmin's (1958) model of argumentation can be used to strengthen the communication of Web vendors' privacy and security policies, increasing customers' perceptions about privacy protection and security controls, and eventually enhancing consumers' trusting belief. Another example is associated with knowledge-based trust mechanisms implemented via information sharing. Wang and Benbasat (2004) observed that a Web-based product recommendation agent could enhance its trustworthiness by providing *explanations* (information) concerning why and how it recommended a particular set of products. Again, in deciding how to structure these explanations so that they are most effective in enhancing trust beliefs, Toulmin's (1958) model could be applied to develop well-formed arguments.

It is also important to identify those types of trust assurances for which Toulmin's (1958) model is expected to be more or less effective; that is, the existence of some potential moderators. Some trust-assuring arguments focus on increasing awareness of general types of structural assurances in e-commerce, such as credit card limits guaranteed by law and SSL, while others are specific to particular vendors, such as its privacy policies. The former, i.e., those focusing on increasing awareness of structural assurances, can decline in importance over time with experience in Internet shopping, because such knowledge generalize across all sites, whereas the latter, i.e., those that are specific to a particular vendor, can only decline in importance with experience with that particular online vendor. Therefore it is likely that Internet shopping experience would moderate the effect of the former type on consumer trust; i.e., they would be more effective for those who have no experience with Internet shopping than to those who are experienced.

Therefore, all else being equal, an Internet store needs to give priority to providing trust-assuring arguments focusing specifically on itself rather than on those focusing on increasing awareness of structural assurances, especially given that over time the general population will be gaining an increasing awareness of structural assurances in Internet shopping.

Toulmin's (1958) model of argumentation can also apply to e-commerce phenomena other than trust building, such as directly eliciting Web-customer satisfaction and favorable attitudes toward a product. According to McKinney et al. (2002), Web-customers' satisfaction depends on two aspects of website quality: *information* quality and *system* quality. Toulmin's (1958) model can be best utilized for improving information quality—to enhance persuasiveness of information, the credibility of the information, and the richness of the information—thus eventually increasing customer satisfaction with a website. For example, it could be applied to providing richer and more comprehensive product descriptions, to argue that not only is a product suitable for the customer, but also why this is by providing data and backing. As Deighton (1985) has argued, Toulmin's (1958) model is applicable in general to developing marketing communications in an attempt to increase consumers' attitudes toward a product.

Toulmin's (1958) model can also serve as a foundation for future research on how to assess the comparative value of the different mechanisms to enhance trust. For example, it may be interesting to investigate how important the application of Toulmin's (1958) model is compared to other factors (e.g., source of arguments). It is possible that consumers may perceive claims made by a store itself, if bolstered by data and backing, to be as convincing as *claims only* made by a third-party assurance organization. The ELM discussed earlier could be utilized in answering this question as well as identifying possible moderators, such as personal relevance of the purchase because the source of arguments is a heuristic cue, whereas the content of arguments is a central and stronger cue that influences attitudes, especially when it is formed with data and backing.

6.3. Implications for Practice

This study demonstrated that trust-assuring arguments that closely conform to Toulmin's (1958) model

of argumentation are most effective among the three forms of arguments in increasing consumers' *trusting belief*. Internet stores may analyze their existing arguments with Toulmin's (1958) model and improve them by adding missing argument elements. Website designers may use Toulmin's (1958) model to develop new arguments for their websites. Inasmuch as trust-assuring arguments increase consumer trust by providing information on how trust concerns are addressed in the Internet store, consumers can make more informed decisions and enjoy shopping with higher confidence at an Internet store with trust-assuring arguments than without them.

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