

Chapter 17: Trust in Cyberspace

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ABSTRACT

Trust plays a critical role when a user assesses the believability of online information content or when selecting an exchange site to purchase a product from. Users will not believe or participate in a transaction with those whom they do not trust. When a design team develops an informational or exchange site, they are responsible for ensuring that a user perceives that site as trustworthy. Thus, the goal of this chapter is to provide web designers with a definition of trust, an understanding of where trust originates and how it is perceived by a user, and a mechanism in the form of a trust taxonomy for analyzing the trust production methods of an exchange site.

KEYWORDS

Computer-Mediated Exchange, Credibility, Trust, Trustworthiness, Trust Production

INTRODUCTION

The Internet provides access to a myriad of online stores selling products ranging from books and computers to automobiles and houses. But when a user is ready to purchase a product online, how does that user assess which online stores are trustworthy and which are not? In the brick-and-mortar world, a user can rely on physical cues such as the neighborhood location, physical size, presence of customers, and interior décor of a store to help assess that store's trustworthiness. However on the Internet, those same physical cues are not available and a user must rely on other cues such as the privacy policy, visual aesthetics, and navigation quality of an online store to help assess that store's trustworthiness.

Although the principles of trust presented in this chapter help explain how a user assesses the believability of information found on newsgroups, discussion forums, and informational web sites, this chapter focuses on trust as it relates to computer-mediated exchange. The term *computer-mediated exchange* (CME) is used to collectively refer to the business-to-consumer and consumer-to-consumer electronic exchange models. For example, a consumer purchasing antiques, books, or

herbal remedies from Ebay, Amazon.com, or Drugstore.com qualifies as a CME. The terms *exchange partner* and *exchange site* are used to refer to the person or web site involved in a CME, respectively.

Working to develop a trustworthy exchange site is important for several reasons. Trust is required for all willing transactions, and without it, no market could function (Zucker, 1986). Trust creates more favorable attitudes towards suppliers as well as customer loyalties (Schurr & Ozanne, 1985) and “helps partners project their exchange relationships into the future” (Doney & Cannon, 1997). Trust enhances competitiveness, reduces transaction costs, and mitigates opportunism in uncertain contexts (Doney & Cannon, 1997). In sum, working to develop a trustworthy exchange site yields a competitive advantage.

When a design team develops an exchange site, they are responsible for ensuring that a user perceives that site as trustworthy. However, ensuring trustworthiness is not the same as ensuring usability. Adding a privacy policy, testimonial, or accreditation to an exchange site ostensibly has no impact on a user’s task performance, but may have a large impact on that user’s perception of that site’s trustworthiness. Thus, the goal of this chapter is to provide web designers with a definition of trust, an understanding of where trust originates (sources of trust) and how trust is perceived by a user (dimensions of trust), and a mechanism in the form of a trust taxonomy for analyzing the trust production methods of an exchange site.

DEFINITION OF TRUST AND TRUSTWORTHINESS

Defining trust-related terms is most effective when considering the entire process of trust production. The trust production process begins with a trustee possessing an objective, intrinsic level of trustworthiness. That is, the trustee knows the degree to which they will fulfill their transactional obligations during an exchange. However, because the trustor cannot precisely know that intrinsic value, they must perceive extrinsic cues produced from the trustee in order to

attribute a level of trustworthiness. Thus, we define trust as *the perception of the degree to which an exchange partner will fulfill their transactional obligations in situations characterized by risk or uncertainty*. However, trustworthiness must be defined from both the perspective of the trustee and the trustor. From the perspective of the trustee, we define trustworthiness as *an objective quality governing the degree to which transactional obligations will be fulfilled in situations characterized by risk or uncertainty*. And from the perspective of the trustor, we define

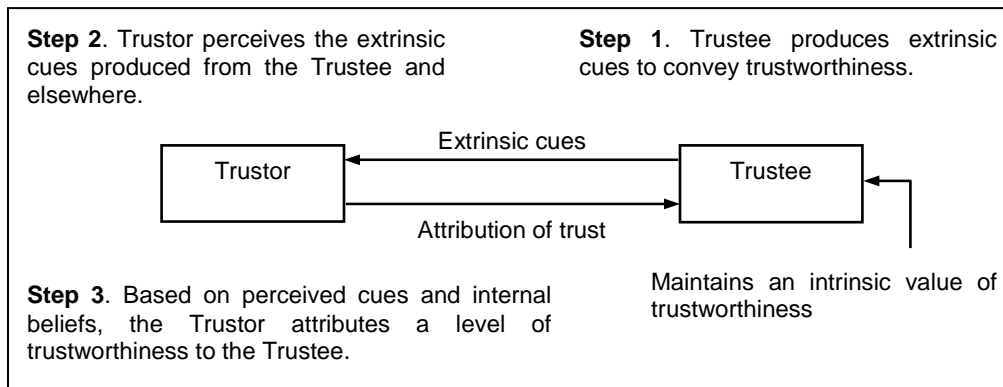


Figure 1. The trust production process.

trustworthiness as *an attribution of trust*. The trust production process is summarized in Figure 1.

The attribution of trust occurring in Step 3 of Figure 1 may be greater than, less than, or equal to the trustee's intrinsic value of trustworthiness, each case having a significant implication for the exchange (Brainov & Sandholm, 1999).

The trust production process just described is reasonable regardless of whether the trustee is another person or a technological entity such as a web site. Substantial evidence exists indicating that humans interact with technology in a social manner (Nass, Steuer, & Tauber, 1994; Nass, Moon, Fogg, Reeves & Dryer, 1995; Nass, Reeves, & Leshner, 1996; Waern & Ramberg, 1996). That is, when humans perceive specific social cues produced by a technological entity, their

reactions are *social* reactions. Furthermore, evidence exists indicating that people develop trust not only in salespeople, but also in their suppliers (Doney & Cannon, 1997). Together, these results confirm that humans develop trust in an exchange site in the same manner that they develop trust in other people.

SOURCES & DIMENSIONS OF TRUST

In the trust production process, extrinsic trust cues are produced from multiple sources and perceived along several dimensions leading to an attribution of trust. A *trust source* refers to the belief, impression, experience, or institution from which a trust cue is produced. A *trust dimension* is an operational attribute of trust to which a trust cue contributes. A person cognitively combines the trust dimensions forming an overall attribution of trust. The sources and dimensions of trust are related in a many-many relationship; i.e., a single trust source may contribute to multiple dimensions of trust, while a single dimension of trust may be contributed to from multiple sources. The next two sections provide a closer look at these two concepts.

Sources of Trust

From a synthesis of relevant literature in human-computer interaction (Fogg & Tseng, 1999; Kim & Moon, 1997; Tseng & Fogg, 1999), social psychology (Deutsch, 1973; Giffin, 1967; Patzer, 1983; Rempel, Holmes, & Zanna, 1985; Rotter, 1980), marketing (Doney & Cannon, 1997; Johnson & Grayson, 2000), and economics (Zucker, 1986), the four sources of trust are:

Presumptions produce trust through general beliefs or levels of confidence maintained in the absence of doubt. These beliefs and confidence levels are derived from general assumptions and stereotypes existing within one's own culture. For example, an exchange partner may presume that an exchange site is less trustworthy than a brick-and-mortar retailer.

Surface inspection produces trust through an examination of an exchange partner's external appearance, such as the visual design of a web site or the physical appearance of a person. Once formed, first impressions can be extremely difficult to break (Zajonc, 1980).

Experience produces trust through repeated successful exchanges with an exchange partner. For example, a person having repeated successful exchanges with an exchange partner will likely perceive that partner as being more trustworthy than an unfamiliar partner. Reputations and brands can also be considered as an experience-based source of trust (Zucker, 1986).

Institutions or third parties produce trust through what they report about an exchange partner, i.e., whether an exchange partner deserves the "Good Housekeeping Seal of Approval" or not. In this case, the production of trust is a *transfer* of trust from the institution to the exchange partner, where the amount of transference is proportional to the perceived trustworthiness of the institution. Although the name *institution* implies a governing body, this source of trust also includes recommendations from family members, friends, or colleagues.

The sources of trust are not mutually exclusive and the contribution of each may change over time. For example, in the absence of previous exchanges and third party recommendations, an exchange partner must rely on presumptions and surface inspection to make an initial attribution of trust. In a future exchange with that same partner, this past experience will contribute more while presumptions and surface inspection will contribute less.

Dimensions of Trust

While sources of trust are from where trust cues originate, dimensions of trust are the operational attributes to which they contribute. Drawing mainly from the social psychology literature (Giffin, 1967; Patzer, 1983; Posner & Kouzes, 1988; Rempel, Holmes, & Zanna, 1985), the seven dimensions of trust are:

Attraction of an exchange partner's physical or non-physical characteristics. For example, an attractive person is generally perceived as being more trustworthy than an unattractive person (Patzer, 1983). Analogously, an aesthetically pleasing exchange site should be perceived as more trustworthy than one that is not.

Dynamism of the additional (peripheral) communication provided by an exchange partner through oral, written, or visual communication channels. For example, a salesman's body language or a website's ticker-tape display can be regarded as dynamism.

Expertness of an exchange partner's relevant skill, ability, or knowledge. An expert is generally perceived as being more trustworthy than a non-expert (Brainov & Sandholm, 1999; Peters, Covello, & McCallum, 1997).

Faith that an exchange partner will fulfill their obligations despite an uncertain future. Faith is important in exchanges where past experiences are minimal or only indirectly related to the current exchange. For example, suppose a buyer who has previously purchased several inexpensive items from a seller is now considering the purchase of an expensive item from that same seller. The buyer must have faith that the seller will once again act responsibly and fulfill their obligations.

Intentions of an exchange partner in terms of their perceived goals and objectives. For example, a seller who is open and honest, and who discloses relevant information is perceived as having a genuine interest in the welfare of the buyer, and thus, is perceived as being more trustworthy (Doney & Cannon, 1997).

Localness of an exchange partner's ideals, beliefs, values, or geography. The closer the perceived proximity along one or more of these dimensions, the more trustworthy an exchange partner appears. For example, a buyer may perceive a seller who donates to or volunteers for the same charitable organization as being more trustworthy than a seller who does not.

Reliability of an exchange partner measured in terms of dependability, predictability, or consistency. Reliability is directly rooted in past experiences and prior interactions. For example, a buyer who has successfully purchased books from a seller will perceive that seller as being more trustworthy than an unknown seller.

The relationship between the sources and dimensions of trust is depicted in Figure 2. By combining the sources and dimensions of trust into a matrix, with the sources as rows and the dimensions as columns, a trust taxonomy is created. This trust taxonomy, or classification matrix, provides a concrete mechanism for performing trust analysis of an exchange site. Trust analysis of an exchange site is performed by first inspecting that site for distinct methods of trust production and then placing each method into one or more of the matrix cells. The next section demonstrates the application of the trust taxonomy to the popular exchange site, Drugstore.com.

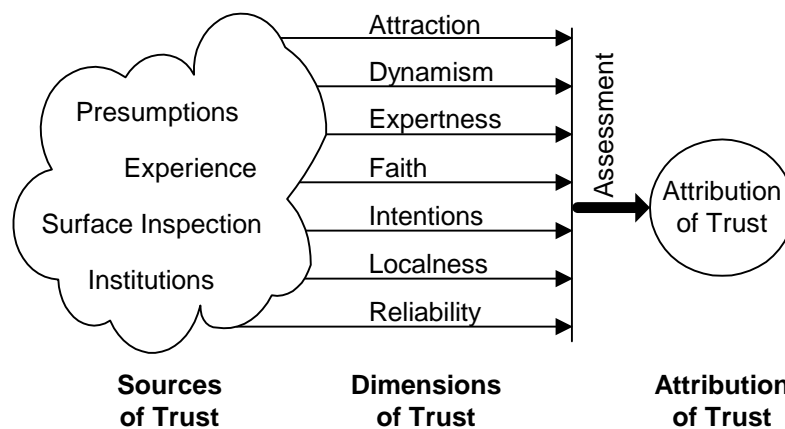


Figure 2. An expanded view of Steps 1 and 2 of the trust production process shown in Figure 1. Trust cues are produced from one or more sources, perceived along one or more dimensions, and cognitively assessed by a user, resulting in an overall attribution of trust.

CASE STUDY – TRUST PRODUCTION METHODS IN CME

In this case study, we first identify the primary trust production methods used within Drugstore.com, and then classify those methods according to our trust taxonomy. Drugstore.com

(www.drugstore.com) is a leading online retailer of health, beauty, and pharmacy products, and more. Inspection of the site reveals that Drugstore.com's trust production methods include (the):

Affiliations with companies who display links back to Drugstore.com. The quantity, quality, and diversity of third party sites displaying links back to Drugstore.com helps to produce a sense of localness and reliability.

Brand of the company (E-commerce trust study, 2000; Schurr & Ozanne, 1985) as well as the products it offers. Brands convey a specific image, reputation, and presumed quality of service that help produce a sense of expertness, localness, and reliability to a buyer.

Charitable organizations supported by the company. By informing a customer about its charitable donations, Drugstore.com helps produce a sense of good intentions and localness.

Customer service providing extensive help and support for order processing, payment, shipping, tracking, account management, prescription and insurance issues, and FAQs. This extensive customer service section produces a sense of good intentions, availability (localness), reliability, and future dependability.

Functionality or "feel" of the site in terms of working links, speed of page loading, and the intuitive nature of order processing (E-commerce trust study, 2000). Drugstore.com maintains a high degree of functionality which produces a sense of expertness and reliability.

Investor relations links offering a complete suite of investor information such as SEC filings, stock quotes and charts, earnings estimates, and more. By supplying this information, Drugstore.com produces a sense of reliability and good intentions.

Navigation of product structure measured in terms of accuracy, efficiency, and search methodology (E-commerce trust study, 2000). By enabling a user to browse products by brand or category or search for a specific product, Drugstore.com produces a sense of helpfulness (good intentions), reliability, and expertness.

Presentation of the site in terms of its visual appearance and quality of content structure (E-commerce trust study, 2000). Quality presentation produces a sense of attraction and expertness, resulting in an increased perception of trustworthiness (Kim & Moon, 1997).

Privacy policy clearly explaining if, when, why, and under what circumstances a customer's personal information, e.g., email address, home address, or credit card number is needed, used, stored, or traded to third parties. The privacy statement also explains how to update stored personal information as well as explains the use of cookies and encryption. By disclosing this information, Drugstore.com draws upon our cultural beliefs that those who are open and honest have good intentions both now and in the future (Doney & Cannon, 1997).

Relationship building (Doney & Cannon, 1997; E-commerce trust study, 2000) with a customer through personalized email notifications describing new product offerings, press releases, and medical alerts, and welcoming a recognized customer to the site. By working to build a relationship with a customer, Drugstore.com produces a sense of good intentions, faith, and localness for that customer.

Seals of Approval (E-commerce trust study, 2000; Schurr & Ozanne, 1985) depicting privacy compliances such as TrustE, business standards such as BBBonline, or specialized certifications such as Verified Internet Pharmacy Practice Site. By including these symbols, Drugstore.com produces a sense of expertness, good intentions, and reliability in proportion to a customer's perceived trustworthiness and selectivity of these third party seals of approval.

Size and market share (Doney & Cannon, 1997) conveying that many other customers trust Drugstore.com enough to do business with them. On its home page, Drugstore.com lists how many packages have been shipped and which product was recently sold. Working to convey size and market share produces a sense of reliability and good intentions.

Testimonials from previous customers and the popular press. By sharing these positive statements, Drugstore.com produces a sense of expertness, good intentions, localness, faith, and reliability to a customer.

These methods of trust production have been classified according to our trust taxonomy in Table 1. Inspection of the table reveals several interesting features. First, Drugstore.com’s trust production methods draw heavily on direct experience to strengthen many of the trust dimensions. As a result, a customer should be encouraged to explore Drugstore.com’s features in order for their attribution of trust to meaningfully increase, and methods for encouraging exploration should be analyzed during usability testing. Second, Drugstore.com effectively leverages the interactive and dynamic nature of the Internet to convey a sense of trustworthiness through the dimensions of expertness, good intentions, and reliability using trust cues such as seals of approval, charitable organization support, and extensive customer service.

Table 1: Classification of Trust Production Methods for Drugstore.com

| | Attraction | Dynamism | Expertness | Intentions | Faith | Localness | Reliability |
|----------------------|------------|----------|-------------|---------------|-------|-----------|-------------|
| Presumed | | | B | Ch, Pi | Pi | B, Ch | B |
| Surface | Pe | Si | Pe | Ch, Cu, I, Si | Cu, I | Cu | Cu, I, Si |
| Experience | | R | B, F, N, Pe | N, R | R | B, R | B, F, N |
| Institutional | | | Se, T | Se, T | T | A, T | A, Se, T |

A = Affiliations, **B** = Brand, **Ch** = Charitable organizations **Cu** = Customer service, **F** = Functionality, **I** = Investor relations, **N** = Navigation, **Pe** = Presentation, **Pi** = Privacy policy, **R** = Relationship building, **Se** = Seals of approval, **Si** = Size & marketshare, and **T** = Testimonials.

DISCUSSION

Using the trust taxonomy in this case study and others (Bailey, Gurak, & Konstan, 2001) has produced two important lessons:

- The same person(s) should perform all classifications of trust production methods to maintain consistency and reliability. The classification process, known as *coding*, is subjective rather than an application of hard and fast rules. For example, because a first-time customer could only inspect the links for customer service, we classified it as a surface-based source of trust, although the actual quality of that service is something that must be experienced. However, overcoming the challenges of subjective coding practices is not insurmountable, as analogous situations have long been addressed in the area of communication research (Rice & Love, 1987; Sproull & Kiesler, 1986; Walther, 1992).
- Using the trust taxonomy for trust analysis works. Even though the exchange site chosen for the case study is mature, and presumably already perceived as trustworthy by most, trust analysis has identified some missed opportunities for trust production. For example, Drugstore.com could add to the dimensions of attraction and localness by providing a welcome letter from the CEO or add to the dimension of dynamism through a community support program.

The primary limitation of the taxonomy is that the exact contribution that each matrix cell or trust production method makes to an overall attribution of trust has not been determined. As a result, a design team must rely on the density of the matrix coupled with an intuitive understanding of the trust production methods in order to estimate a user's attribution of trust. However, other research has demonstrated that an attribution of trust can be empirically measured (Deutsch, 1958; Kim & Moon, 1997; Rocco, 1998), including a subset of the trust dimensions presented in this paper (Doney & Cannon, 1997; Giffin, 1967). Providing a more quantitative approach to assessing the trustworthiness of an exchange site will be a challenging task for future research.

Finally, trust is a dynamic process that strengthens or weakens over time based on a customer's experience. Thus, an exchange site must provide a strong set of trust cues to establish an initial

perception of trust, but afterward, that site must provide positive experiences for a customer in order to strengthen or at least maintain that initial perception of trust.

CONCLUSION

Creating a trustworthy exchange site is a critical requirement for web designers, as online consumers will not do business with an exchange partner they do not trust. As a first step towards a trust analysis procedure facilitating the creation of a more trustworthy exchange site, this chapter defined a trust taxonomy enabling the classification of trust production methods in computer-mediated exchange. Applying the taxonomy to an exchange site enables web designers to compare how that site is to be perceived against the classification of trust cues actually produced, identifying missed opportunities for trust production in terms of untapped sources and dimensions of trust. Although this work provides a promising first step towards a complete trust analysis procedure, much work still remains in assessing a user's perception of trust cues produced within the unique context of computer-mediated exchange.

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