

# SITUATIONAL TRUST IN DIGITAL MARKETS: A SOCIO-TECHNICAL EXPLORATION

**Howard Rosenbaum**  
School of Library and Information Science  
Indiana University  
[hrosenba@indiana.edu](mailto:hrosenba@indiana.edu)

**Elizabeth Davenport**  
School of Business  
Napier University  
[e.davenport@napier.ac.uk](mailto:e.davenport@napier.ac.uk)

**Margaret Swan**  
School of Library and Information Science  
Indiana University  
[mbswan@indiana.edu](mailto:mbswan@indiana.edu)

## Abstract

*This paper describes research in progress that is investigating situational trust in e-commerce transactions. Beginning with a typology of conceptions of trust, the concept of situational trust is singled out as being particularly interesting. We then propose a socio-technical approach to the study of trust in e-commerce, and describe a two stage study using multiple methods to explore the formation of situational trust in a digital marketplace, the first stage of which is underway.*

**Keywords:** Trust, e-commerce, situational trust, socio-technical, digital markets

## Introduction

“Trust is emerging as an influential strategic component in organizational e-commerce site development... Customer trust is the single toughest nut to crack in the e-commerce arena.” (Kareke-Shaloub, 2002: 184)

Academic and market research and anecdotal evidence in the popular press indicate that consumers have persistent, negative perceptions about digital markets. Market researchers estimate that as many as two thirds of all online transactions are abandoned before completion (Huen, 2002). Research suggests that lack of trust is a significant barrier to widespread consumer adoption of e-commerce (Cazier et al.; 2002; Hoffman et al., 1999a) and may be oriented towards the companies seeking their business, the particular web sites where the transactions are to take place, or towards e-commerce in general. This is important because “trust is a key constituent of economic relations” (Dibben, 2000; 1). It is

Crucial whenever risk, uncertainty, or interdependence exist. These conditions flourish in many settings and certainly exist in the relationship between e-commerce vendors and customers. As conditions become more uncertain because business complexity increases through computer-mediated commerce, the need for trust grows (McKnight and Chervany, 2001; 1)

If novices, non-users, and even experienced users are hesitant about e-commerce transactions because of a lack of trust, the widespread adoption of e-commerce will be much more difficult. This problem can be decomposed into several interesting questions. How do people who engage in online shopping transactions with a range of companies develop trust in these companies? What is it about the design and structure of e-commerce web sites that helps (or hinders) people as they make decisions about whether they can trust the company enough to engage on transactions with it? How can e-commerce web sites be designed to maximize the probability that people will decide that the company can be trusted? Clearly the first step is to understand how trust is formed and managed in digital markets.

What then is the most useful approach to use to study the formation and maintenance of trust in business-to-consumer (B2C) e-commerce? After a brief discussion of the concept of trust in e-commerce, a typology of trust is offered and one component, situational trust, is singled out as particularly apposite for understanding B2C e-commerce transactions. Next, sociotechnical framework is described that is being used to guide the research. The paper concludes with a description of a two stage multiple method study exploring the formation of situational trust in a digital marketplace, the first stage of which is underway.

## **On the Concept of Trust in E-Commerce**

Trust is widely assumed to underlie all forms of economic relations and has been studied extensively in a range of literatures, and the “widespread importance and interest in trust has ... led to it being defined and operationalized in a variety of ways” (Plank and Reid, 1999; 62). As a psychological and social construct, trust is multifaceted, with rational, affective, instrumental, and moral components. It has “cognitive, affective, or behavioral dimensions with the strength of the particular dimension being dependent upon the type of relationship involved between the trustor and trustee” (Jarvenpaa and Shaw, 1999; 36). Trust is “the expectation that arises, within a community, of regular honest and cooperative behavior, based on commonly shared norms, on the part of other members of that community” (Fukuyama 1995; 26). It allows people in business transactions to interact under conditions of risk and uncertainty (Gambetta, 1988; Deutch, 1958).

A typology may be offered based on varying loci of trust:

- Psychological or behavioral trust: a predisposition towards having confidence that the other will carry through on their obligations; can also be a learned behavior based on prior knowledge and experience (Warrington, et al., 2000; 164; Mayer, et al., 1995; 712)
- Interpersonal trust: an expectation that others will behave in a predictable way and a willingness to be vulnerable during the trust relation (Aschmoneit and Lenz, 2001; Davenport and Cronin, 2000; Dibben, 2000)
- Organizational trust: the belief that an organization will carry through on its obligations (Cummings and Bromiley, 1996)
- Legal trust, or belief in the power of contracts and other statutory instruments to regulate the fulfillment of obligations (Froomkin, 1996)
- Product trust: a buyer's belief that goods and services will perform their functions as claimed by the seller (Ratnasingham, 1998)
- Technology trust: a belief that technologies will perform reliably and will not be used for untoward purposes (Chiravuri, 2001; Kollock, 1999; Guttman, Maes, and Moukas, 1998)
- Situational trust: dependance on cues and clues in the immediate social environment when deciding whether to trust another individual, group, organization, institution, or object (Karake-Shalhoub, 2002)

The components of this typology have been important in understanding trust in a range of business settings however, it is not clear if these approaches are equally useful in distributed digital marketplaces. Which types of trust play a role in B2C e-commerce? What are the processes by which trust is formed, maintained, lost and repaired? How important are the various types of trust in consumers' decisions to purchase online? The research described here focuses on the socio-technical bases of situational trust in B2C e-commerce.

## **A Socio-Technical Approach to Situational Trust in E-Commerce**

We are using a socio-technical approach to study situational trust in digital markets. This approach emphasizes the importance of understanding the roles of social and organizational contexts and human values in the design, implementation and use of information and communication technologies (ICTs) (Kling, 1999). From this perspective the outcomes of computerization and other ICTs in organizations are not determined; instead, they depend on the interactions among technologies, those who design and work with them, and the contexts of design, implementation, and use. In short, the uses of ICTs are socially shaped or “configured” and ICTs themselves are embedded in complex social and technical networks (Kling, Rosenbaum, and Sawyer, 2003). Predicting the outcomes of ICT implementation is made more difficult by the influence of the context because there will always be intended and unintended consequences of ICT design and use (Sawyer and Rosenbaum, 2000).

The situation of interest is the context within which a person decides to purchase online or abandon the transaction. The person is interacting with the company's web site, a carefully constructed artifact that is the company's point of presence. During the

person's exploration of the web site, he or she is developing a perception of the trustworthiness of the company. What are the situational cues that consumers look for in e-commerce web sites and what roles do these cues play in the formation or dissolution of trust? This approach assumes that situational trust is constituted, maintained, managed, and broken in a process of social construction that typically develops over time.

This approach to conceptualizing situational trust moves "beyond the tradition in economics, game theory, part of Sociology, and now in Artificial Intelligence and Electronic Commerce" that reduces the concept of trust to "subjective probability" (Castelfranchi and Falcone; 2000, 1). It focuses instead on the people who explore the sites as they develop trust and make the transition from browser to buyer. It also focuses on the people who develop the sites that embody markers or indicators of trustworthiness, seeking to understand these components and "how they may be engineered into congenial interactive systems" (Davenport et al., 1999; 286). The technology, in this case the e-commerce web site, and the people who design, maintain and use it are placed within a rich social and organizational context out of which trust develops.

Using a socio-technical standpoint, we assume that situational trust is an outcome of social interactions wherein participants become aware of cues that are rooted in, and are a product of, the immediate context of their interactions with the web site. We also assume that there are conceptions of trust that are embedded in their web site through the actions of company decision makers and site designers.

## Trust in Front of and Behind the Interface

The socio-technical framework proposed in this paper is being used to ground a study of situational trust in distributed digital markets that addresses the following questions:

- How is trust is constituted, defined, and perceived by consumers as they use a B2C e-commerce web site?
- What are the methods of trust-building and maintenance (and related systems and interface design issues) that are used by the designers of this site to engender trust in consumers using the site?

To investigate these questions, we are conducting a two stage multiple method study of situational trust in a pure-play e-commerce web site owned by a major publishing company. The purpose of the investigations is to discern factors of the site that engender and/or hinder consumer trust. The web site is the focus of our study because it is a carefully constructed artifact of the company using it to conduct business. It is the actual locus of trust as the person experiences the site, looking over the graphics and reading the content. This web site is intended to create a context where people learn about the company, interact with other participants and, hopefully, become buyers. It offers a range of content and services, all of which are intended to convey a sense that the company can be trusted; content and design features have been shown to be important antecedents of trust formation (Grandon, 2001; Warrington, Abgrab, and Caldwell, 2000, Einwiller, 2000; Fung and Lee, 1999). We seek to discover the features are relevant in the formation of situational trust from consumers' and designers' points of view.

Of interest in the first phase of this study is the process by which the person explores the site (either through browsing or directed actions) and develops a sense of situational trust that, if it rises above his or her personal threshold, leads to a purchase and if not, to an abandoned transaction or departure from the site. The research incorporates usability testing, interview and survey methods to examine people's interactions with the site. A sample of people comfortable with e-commerce but unfamiliar with this site is being tested, controlling carefully for user demographic characteristics. Realizing that brand name is an important factor in the development of the user's sense of trust in a company, people in the sample will not be familiar with the company's name and will not have used the web site.

Respondents are being in one of two conditions. In the first condition, they are asked to explore the site and decide whether or not they want to make a purchase. When they reach this decision point, they are interviewed about the components of the site (content and design features) that either led them to trust the company enough to make a purchase or to abandon the transaction. In the second condition, people are given a coupon and use the site to make a purchase. This can take place in a time and location of their choosing. After they have completed the transaction and received their books, they are being surveyed about the components of the site that they think engender or hinder trust. It is an open question as to which of the features on the site play a role in influencing the formation of situational trust. This stage of the study is currently under way.

In the second stage of the study, to begin later in the summer, we will be interviewing the designers of the site, all of whom work in-house for the publishing company and several key employees who make higher-level decisions affecting the site. We will be

asking them to explain how they have designed the site to maximize the formation of trust in the people who come to the site. We want to know what components of the site they believe contribute to the establishment of situational trust in the company.

We will then compare the two data sets looking for points of agreement and divergence. We expect to have preliminary results from both stages of the research available in August. At this time, we will discuss the instruments, protocols, and procedures used to collect the data and the techniques used to analyze the data.

## Towards a Research Agenda for the Study of Situational Trust in E-commerce

There is practical significance of this research. The systematic analysis of trust can help ebusinesses improve the design of their web sites and suggest trust building methods that align more closely with consumers' perceptions of trust. Companies that can successfully develop and maintain trusting relations with a wide variety of consumers in a global digital marketplace will have a clear competitive advantage. This work will help consumers develop a better understanding of e-commerce, particularly in terms of the risks and benefits involved in their information exchanges with e-commerce companies. It will be especially useful for educating newcomers to the e-commerce marketplace such as members of underrepresented minority groups, older people, rural dwellers, and teenagers.

The rigorous and sustained study of trust in digital markets has theoretical and practical significance. A robust literature is emerging about factors that facilitate and inhibit e-commerce (McKnight and Chervany, 2001; Jarvenpaa and Tractinsky, 1999). Much work has been done in the past decade on typologies and models of trust in traditional business, and though these have proved useful as indicators of whether brick and mortar organizations and people are likely to be trusted, it is not clear if these approaches have validity in distributed digital marketplaces. Existing models may need to be extended, and different models may be required. The extent to which trust can be decomposed, operationalized, and measured is not clear, though initial work with computer agents whose behavior is based on models of trust in the physical world suggest that such models can be engineered (Marsh, Meech, and Dabbour; 2000). The socio-technical approach outlined in this paper will contribute to literature of e-commerce by describing a conceptual framework from which an empirically grounded conception of trust and a generalizable model of trust building in B2C e-commerce can be developed.

## References

- Aschmoneit, P. and Lenz, M. (2001). The role of trust in business-to-business electronic commerce. *Proceedings of the Seventh Americas Conference on Information Systems*. 689-695.
- Castelfranchi, C. and Falcone, R. Trust Is Much More than Subjective Probability: Mental Components and Sources of Trust. *Proceedings of the 33rd Hawaii International Conference on System Sciences*, 2000
- Cazier, J.A., Shao, B.B.M., and St. Louis, R.D. Personal privacy preferences in e-business: A focus on trust and value compatibility. *Proceedings of the Eighth Americas Conference on Information Systems*, 2002, 2204-2213
- Chiravuri, A. and Nazareth, D. Consumer trust in electronic commerce: An alternative framework using technology acceptance. *Proceedings of the Seventh Americas Conference on Information Systems*, 2001, 781-784.
- Cummings, L.L. and Bromiley, P. The Organizational Trust Inventory (OTI): Development and Validation. In R.M. Kramer and T.R. Tyler (Eds.). *Trust in Organizations: Frontiers of Theory and Research*. Thousand Oaks, CA: Sage Publications, 1996 302-330.
- Davenport, E. et al. 'Artificial morality:' Representations of trust in interactive systems. In Brewster, S. et al. (Eds.). *Human - Computer Interaction - INTERACT 99*. Vol. II. Swindon: BCS:IFIP, 1999, 286.
- Davenport, E. and Cronin, B. The citation network as a prototype representing trust in virtual environments. In: Cronin, B and Atkins, H.B. (eds.). *The web of knowledge: a Festschrift in honor of Eugene Garfield*. Learned Information Inc, 2000
- Deutch, M. Trust and Suspicion. *Journal of Conflict Resolution*. 2, 1958, 265-279.
- Dibben, M.R. *Exploring Interpersonal Trust in the Entrepreneurial Venture*. London: MacMillan, 2000
- Einwiller, S., Geissler, U., and Will, M. Engendering trust in Internet businesses using elements of corporate branding. *Proceedings of the Sixth Americas Conference on Information Systems*, 2000
- Fung, R. K. K., and Lee, M.K.O. EC-Trust (Trust in Electronic Commerce): Exploring the antecedent factors. *Proceedings of the Fifth America's Conference on Information Systems*, 1999, 517-519.
- Froomkin, M. The Essential Role of Trusted Third Parties in Electronic Commerce. *75 Oregon L. Rev.* 49, 1996. <http://www.law.miami.edu/~froomkin/articles/trusted.htm>.
- Fukuyama, F. *Trust: The Social Virtues and the Creation of Prosperity*. London, UK: Hamish Hamilton, 1995

- Fukuyama, F. The virtual handshake: E-commerce and the challenge of trust. Merrill Lynch Forum, 1999. <http://www.ml.com/woml/forum/e-commerce1.htm>.
- Gambetta, D. *Trust*. New York, NY: Backwell, 1988.
- Grandon, E.E. and Ranganathan, C. The impact of content and design of web sites on online sales. *Proceedings of the Seventh Americas Conference on Information Systems*, 2001, 689-695.
- Guttman, R.H., Maes, P., and Moukas, A.G. Agents as mediators in electronic commerce. *Electronic Markets - Electronic Transactions*. 8(1), 1998. [http://www.electronicmarkets.org/netacademy/publications.nsf/all\\_pk/801](http://www.electronicmarkets.org/netacademy/publications.nsf/all_pk/801).
- Harris, S. and Dibben, M. Trust and Co-operation in Business Relationship development: Exploring the influence of national values. *Journal of Marketing Management*. 15, 1999, 463-483.
- Hoffman, D.L., Novak, T.P. and Peralta, M. Building consumer trust online. *Communications of the ACM*. 42(4), 1999, 80-85.
- Huen, C. Now There Are More Disappointed Online. InformationWeek.com. Jan. 3, 2002. <http://www.informationweek.com/story/IWK20020103S0019>.
- Jarvenpaa, S.L. and Shaw, T.R. Global Virtual Teams: Integrating Models of Trust. In Pascal Siebe, P. and Griese, J. (Eds.) *Organizational Virtualness: Proceedings of the VoNet Workshop, April 27-28, 1998*. Simowa Verlag Bern, 1999, 35-52.
- Jarvenpaa, S.L. and Tractinsky, N. Consumer trust in an internet store: A cross-cultural validation. *Journal of Computer Mediated Communication*. 5(2), 1999. <http://www.ascusc.org/jcmc/vol5/issue2/jarvenpaa.html>.
- Karake-Shalhoub, Z. *Trust and Loyalty in Electronic Commerce: An Agency Theory Perspective*. Westport, CT: Quorum Books, 2002.
- Kling, R. What is Social Informatics and Why Does it Matter? *D-Lib Magazine*, 1999. <http://www.dlib.org:80/dlib/january99/kling/01kling.html>
- Kling, R., Rosenbaum, H., Sawyer, S. (in progress). Information Technologies in Human Contexts: Learning from Organizational and Social Informatics. Currently available as a report: <http://www.slis.indiana.edu/CSI/report.html>.
- Kollok, P. The production of trust in online markets. In Lawler, E.J., Macy, M., Thyne, S., and Walker, H.A. *Advances in Group Processes* (Vol. 16). Greenwich, CT: JAI Press, 1999, [http://www.sscnet.ucla.edu/soc/faculty/kollock/papers/online\\_trust.htm](http://www.sscnet.ucla.edu/soc/faculty/kollock/papers/online_trust.htm).
- Marsh, S., Meech, J. F., and Dabbour, A., Putting Trust into E-Commerce: One Page at a Time. In proceedings Autonomous Agents 2000 Workshop on Deception, Fraud and Trust in Agent Societies. Barcelona, Spain., 2000.
- Mayer, R.C., Davis, J.H. and Schoorman, F.D. An integrative model of organizational trust. *Academy of Management Review*. 20(3), 1995, 709-34.
- McKnight, D.H. and Chervany, N.L. Conceptualizing trust: A typology and e-commerce customer relationships model. *Proceedings of the 34<sup>th</sup> Hawaii International Conference on System Sciences*, 2001 1-10.
- Plank, R.E. and Reid, D.A. Perceived trust in Business-to-business sales: A new measure. *Journal of Personal Selling and Sales Management*. 19(3), 1999, 62-73
- Ratnasingham, P. The importance of trust in electronic commerce. *Internet Research: Electronic Networking, Applications, and Policy*. 8(4), 313-321, 1998.
- Sawyer, S. and Rosenbaum, H. Social informatics in the information sciences: Current activities and emerging directions. *Informing Science*, 3(2), 2000, 90-95. Retrieved 8/13/01 from: <http://inform.nu/Articles/Vol3/indexv3n2.htm>.
- Warrington, T.B., Abgrab, N.J., and Caldwell, H.M. Building trust to develop competitive advantage in e-business relationships. *Competitive Review*. 10(2), 2000, 160-168.