Influencing Perceptions of Trustworthiness in Internet Commerce: A Rational Choice Framework

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Abstract
Surveys of Internet users consistently reveal that lack of trust poses a major obstacle to the greater use of the Internet for transactions. This paper develops and tests a preliminary model of trust in Internet commerce which focuses on the perception of an Internet merchant's trustworthiness by a consumer.

Keywords
Internet commerce, trust, trustworthiness.

INTRODUCTION AND BACKGROUND

Internet commerce suffers from a range of problems that have tended to inhibit consumers from making transactions on the web. An important aspect of the problems is the lack of confidence on the part of many web users in the adequacy of the technical infrastructure to support the requirements of commerce in this environment. Long (2000), for example, argues with respect to Internet banking that "it is not just institutional resistance that is holding back the future, but … the wonders of technology are also constrained by the failings of electronic infrastructure." Technical solutions will therefore play a significant role in building confidence in consumers, as will increased familiarity with a medium that is still new and strange to most people.

Our focus in this paper, however, is on perceptions of trustworthiness relating specifically to the seller whose web site is being visited. Trust remains a significant problem in Internet commerce. Surveys of Internet user attitudes have consistently revealed that lack of trust is a key impediment to people making transactions on the Internet. For example, in the U.S., more than 75 percent of respondents to a *Business Week/Harris* poll cited privacy concerns as the main reason why they did not use the Web more (Department of Commerce, 1998, citing Green, 1998). Beer (1999) reports the results of a study by Jupiter Communications, an Internet market research firm, indicating that 64 percent of web users do not trust web sites. And Hoffman *et al.* (1999), in an extensive study of web users, found that:

> "The reason more people have yet to shop online or even provide information to Web providers in exchange for access to information, is the fundamental lack of faith between most businesses and consumers on the Web today. In essence, consumers simply do not trust most Web providers enough to engage in 'relationship exchanges' involving money and personal information with them." (p. 80)

Concerns about the ability of the system to support transactions with an adequate level of integrity and security, and concerns about the trustworthiness of merchants on the Internet should be recognised as two quite distinct issues. However, there has been a tendency to conflate them in some of the recent literature. For example, National Research Council (1999) and Camp (2000), which use the term "trust" in the context of the Internet, are in fact primarily concerned with the integrity and security of the computer network that makes up the Internet.

We use the term *confidence* to refer to web users' willingness to rely on the ability of the "system" to support the operations (including commercial transactions) required of it, reserving the term *trust* for what Internet merchants seek to engender in consumers.[1] The former stems from factors essentially beyond the control of the Internet retailer, and is dependent, *inter alia*, on the state of hardware and technical developments, particularly in incorporating security features, as well as the legal and regulatory regime governing transactions on the Internet. The latter, however, relates to the perception of trustworthiness that the web retailer is attempting to build in the consumer. The distinction allows us to focus attention on what the web retailer can do to enhance its perceived trustworthiness in the eyes of potential customers.

In this paper we propose a preliminary model of trust in Internet commerce which focuses on the perception of an Internet merchant's trustworthiness by a consumer. In doing so, we attempt to isolate the basic aspects of trust that are pertinent to Internet commerce. We argue that these are different in important ways from trust in other contexts. Nonetheless, notions of trust that have been developed elsewhere can be brought to bear on the Internet commerce context.

TRUST IN INTERNET COMMERCE

Most existing studies of trust have focused on interpersonal trust, frequently but by no means exclusively in organisational settings. These include Solomon (1960), Rotter (1967), Golembiewski and McConkie (1975), Larzelere and Huston (1980), Scott (1980), Johnson-George and Swap (1982), Sabatelli, Buck and Dreyer (1983), Good (1988), and Mayer, Davis and Schoorman (1995). Some studies focus on specific relationships: for example, Butler (1983) looked at trust between professionals and their secretaries; Conlon and Mayer (1994) at trust between principals and agents; Kruglanski (1970), Jones, James and Bruni (1975), Rosen and Jerdee (1977), and Butler and Cantrell (1984) at supervisors and their subordinates; Ring and Van de Ven (1992) at trust between individuals in different organisations; and Taylor (1989) at trust in labour-management relations. Trust has been studied in a wide range of disciplines, among them management, economics (Dasgupta, 1988; Williamson, 1993), psychology (Rotter, 1980), sociology (Goffman,

[1] Cf Dasgupta's (1988) distinction between confidence in the ability of professionals like doctors to perform as expected of them and trust, which "stems from a person's underlying disposition or motivation".

1971), marketing (Morgan and Hunt, 1994; Hart and Johnson, 1999), philosophy (Hollis, 1998), and game theory (Axelrod, 1984; Milgrom and Roberts, 1992).

Trust, then, is a widely-studied issue of interest across the spectrum of human relationships. However, there are very few studies of trust in the context of Internet commerce, and certainly no explicit one-way studies of the trust relationship between an individual and an organisation that we are aware of. Many studies of trust are dyadic in focus; this is because most trust relationships are of that nature, between two individuals. With Internet commerce, however, we are presented with a very different beast. In a static framework, a consumer visits a web site of an Internet merchant with the possible intention of making a purchase. If the web site does not lead the consumer to believe that the web merchant is trustworthy, no purchase decision will result. A more dynamic model, which is beyond the scope of this paper, would investigate how the trust relationship evolves over time.

The Oxford English Dictionary defines trust as a "firm belief [that a] person or thing may be relied upon." The term "belief" highlights the fact that trust is essentially a subjective matter; the party being trusted may or may not be worthy of the trust. In addition, the idea of risk is inextricably bound up with the concept of trust, and implicit in the definition is the possibility that the party who does the trusting puts themselves at risk of suffering loss if the party being trusted proves untrustworthy. There is an element of calculation in this process. Baier (1986), for example, defines trust as "accepted vulnerability to another's possible but not expected ill will (or lack of good will) towards one." The point at which the level of vulnerability to loss crosses over from "possible" to "expected" defines the point at which trust ends and suspicion begins.

This view of trust is an admittedly restricted one. As Blois (1999) notes, more expansive views have been put forward in the literature. These include Govier (1994), who recognises that the act of trusting makes one vulnerable, but argues that, in addition, trust involves "expectations of benign action". Similarly, Hosmer (1995) argues that trust goes "beyond a negative promise not to harm the interests of the other party" and includes an element of goodwill. In other words, when we trust someone, we rely on them not only not to harm our interests but also, "without receiving instructions from us, [to] take our legitimate interests into account if such circumstances arise" (Blois 1999).

However, these aspects of trust may be more appropriate in the context of interpersonal relationships. We believe that our more "rational" approach to trust is more appropriate and generally justified in business contexts, and particularly in the context of the Internet. In that environment, the decision to continue browsing and, ultimately, to complete a transaction at a web site may hinge critically on perceptions formed from information and other content on the web site. It would take a particularly naïve consumer to form any "expectations of benign action" over and above what was required of the web retailer in meeting their commercial obligations to the consumer. In fact, we would go so far as to argue that on the Internet consumers tend to adopt an attitude of mistrust at the outset, and need to be convinced that the web merchant is "trustworthy" before they will be prepared to transact at the site.

In the next section, we discuss a rational choice framework to trust on the Internet. Following this, we outline our survey methodology in testing aspects of our model and report the results of our survey. We conclude in the final section.

A RATIONAL CHOICE FRAMEWORK

The rational choice approach can be formalised as follows:

$$G_b = p_b L_b , \tag{1}$$

where G_b denotes the gain to the consumer (the "Buyer", denoted by the subscript b) from transacting at a web site, p_b denotes the (subjective) probability as assessed by the consumer that the web site operator will turn out to be untrustworthy, and L_b denotes the loss the consumer will suffer if that is the case.

If the equation holds, i.e., the gain from transacting at a particular web site is equal to the expected loss from transacting, then the consumer is indifferent between completing the transaction and not doing so. Whatever the web retailer can do to increase the LHS of the equation or decrease the RHS of the equation will enhance the consumer's incentive to transact. On the LHS, for example, the retailer can lower its price on the good being offered, increasing the gain to the consumer from transacting. We focus, however, on the RHS of the equation. Here, the web retailer can seek to reduce the perceived probability on the part of the consumer that the retailer will dishonour its promises. That is, the variable p_b expresses the uncertainty faced by the consumer about the trustworthiness and reliability of the web retailer; the lower the degree of uncertainty, the more likely the consumer is to transact with the retailer.

Equation (1) therefore helps focus attention on what can be done by web retailers to enhance consumers' perception of their trustworthiness. Trust in commerce is called for whenever there is a degree of uncertainty regarding the other party. The greater the uncertainty, p_b, the greater the degree of trust required. The extent to which trust is required also increases the riskiness of a transaction, as they are essentially two sides of the same thing. Thus, consumers seek to reduce their vulnerability to exploitation by reducing their level of uncertainty.[2] For example, they may incur additional costs to research the background of parties and investment possibilities. Alternatively, firms themselves may provide the requisite information to consumers, and it may in fact be more efficient for them to do so. A large part of the information provided by web retailers may be interpreted as being devoted to enhancing the perceived trustworthiness of the web retailer by reducing the uncertainty, p_b , faced by potential consumers.

There are at least three aspects of this uncertainty, reflecting different aspects of trustworthiness, to be addressed.[3] First, consumers are concerned about the retailer's *ability* to deliver on its promises. Thus an important aspect of trust building focuses on the web retailer's efforts to enhance the credibility of its claims regarding, for example, the quality

[2] Governments and other regulatory authorities also seek to do this by enacting laws and regulations which protect consumers from exploitation by the threat of penalties on offending parties. See below.

[3] As Baier (1986) and Blois (1999) have noted, A may trust B with regard to one aspect of B's behaviour but not with regard to another aspect.

of its products or services being marketed on the web site.[4] It can do this in a number of ways, for example, offering products with well known brands so that the perception of quality is not in doubt, the use of a certification authority (trusted third party) to authenticate its claims[5], and the use of customer feedback comments on the web site to provide unbiased testimony regarding the quality of its product offering.

Second, consumers concerned with determining the retailer's *willingness* to honour its commitments may look for indications on the site that the retailer intends to honour its commitments, or has honoured its commitments in the past, and that there is reasonable recourse for them should the transaction go "wrong". This can take the form, where practicable, of a money-back guarantee, or allowing damaged or unsuitable goods to be easily returned in the off-line world (e.g., to the nearest retail outlet); the use of traditional but familiar communication systems like faxes and customer telephone hotlines to show that it is backed up by a viable product fulfilment facility; (again) the posting of the testimonials of past satisfied customers to vouch for the quality of its customer service; and, generally, information indicating that it is an operation that is there for the long haul, not a "fly-by-night" operation.

Third, it is widely acknowledged that one of the primary concerns that Internet consumers have is with regard to the use of personal information provided by consumers to web sites (Arthur Andersen/Andersen Legal, 2000). Consumers need to be assured that their privacy will be respected and that personal information will not be passed on to third parties. Here, a simple policy statement declaring that the web retailer will respect the privacy of personal information may suffice to reassure most consumers.[6] It is also desirable that web retailers give their customers a say in how their personal information is used, as well as access to their information in the event that it needs to be changed.

Equation (1) above takes the consumer's point of view. Equation (2) below expresses the point of view of the web retailer (the "Seller", denoted by the subscript *s*):

$$G_s = p_s L_s , \tag{2}$$

where G_s denotes the gain to the web retailer from dishonouring promises made to consumers at its web site, p_s denotes the (subjective) probability as assessed by the web retailer that it will suffer sanctions (both legal and non-legal) if it does not honour its promises, and L_s denotes the penalty the web retailer will suffer if that happens. If the equality holds, the retailer is indifferent between honouring its commitments and not doing so. It will honour its commitments to consumers if the LHS (its gain from cheating) is decreased or the RHS (the expected penalty for cheating) increased.

This perspective focuses attention, firstly, what governments can do generally to build confidence in the e-commerce environment by creating a regulatory regime conducive to it: for example, by enacting laws and regulations governing the conduct of such

[4] See Schoorman *et al*. (1996) on the issue of whether ability should be included in the concept of trust.

[5] See, however, Grossman (2000), who reports that a proposal by the British government to address the problem of trust by setting up a network of trusted third parties to encourage e-commerce appears to have been ineffective.

[6] In addition, Deutsch (1958), in explaining the results of an early series of experiments, suggests that a party is more likely to behave in a "cooperative" fashion if they have indicated a commitment to behaving in that fashion.

transactions and providing for legal and/or economic sanctions in the event of breaches, and by vigorously enforcing the law — in effect, increasing both variables on the RHS of Equation (2). The degree of confidence that a consumer has in the ability of the legal/regulatory regime to protect his or her interests is an important element in his or her decision to make any transaction on the Internet. It explains the level of urgency that has characterised initiatives, such as the United Nations Commission on International Trade Law (UNCITRAL) Model Law on Electronic Commerce, to put in place legislation governing electronic transactions.

Secondly, as improved technical features, particularly those aimed at ensuring security, are incorporated into web sites and software, consumer confidence in the efficiency and effectiveness of the infrastructure will be enhanced. In addition, it is to be expected that as access to the Internet becomes more widespread and familiarity with the medium increases, the natural circumspection of web users to making commercial transactions on the Internet will be gradually broken down. This will not, however, alter the need for individual web retailers to convince web users of their trustworthiness before they will be prepared to make transactions.

In this paper we focus on two aspects of the perception of trustworthiness outlined above: the *ability* of the web retailer to deliver a product/service that performs as promised, and the retailer's *willingness* to do so. These are represented in the use of branded goods and the use of transaction warranties. Specifically, we want to know if a product carrying a well-known brand sells more easily on the Internet than a similar non-branded product; and whether the use of a transaction guarantee has any effect on willingness to buy. Our framework indicates that the use of these two strategies will lower the consumer's uncertainty regarding the trustworthiness of the web retailer. We use willingness to buy as a proxy of perception of trustworthiness.

METHODOLOGY

We adopt an experimental approach in our study. The 25 subjects used were students in a third-year undergraduate class in an Australian university. They were asked to complete a questionnaire consisting of four 10-point purchase intention scales for the following products: a cheap watch (priced at $50), an expensive pair of jeans ($90), a personal computer ($2,000) and a cough mixture ($12). The subjects were told to rate how likely or unlikely they were to buy these products on the Internet as opposed to buying them from a traditional retail store.

After they had completed their ratings for these four product categories, they were asked to proceed to the next stage of the survey where the brands of Swatch, Levi's, Dell and Benedryl respectively were added to these product categories (with the same price points). The subjects were again asked to rate their likelihood of purchase on a 10-point scale. Finally, in the final stage of the survey, they were told that all purchases would be guaranteed by the well-known Australian insurance company, AMP. Again, they were asked to rate their likelihood of Internet purchase as opposed to going to a retail shop. Throughout the exercise, subjects were asked not to look back to their previous ratings or talk to each other.

A common criticism of the experimental approach is on the grounds of its "artificiality". However, the strengths of the experimental approach lie in its convenience and its internal validity, particularly when the task is to control for extraneous variables. It also has the advantage of being able to isolate different effects, and comparing them across treatment conditions (Cook, Campbell and Perracchio, 1990). Such effects cannot be easily isolated with a naturalistic study mainly because of a multitude of possible confounding factors.

In addition, the research philosophy adopted here is called theory application (Calder, Phillips and Tybout, 1981). That is, the aim of this paper is to test a theory to see if it can explain a phenomenon. Under such circumstances, it is advantageous to use a homogeneous sample because it will help reduce the error variance. As Calder, Phillips and Tybout (1981, p. 200) point out, "Homogeneous respondents also are preferred because they decrease the chance of making false conclusions about whether there is a covariation between the variables under study."

RESULTS

Table 1 reports the results of the study. The following conclusions were reached. First, the subjects were significantly more likely to buy products carrying well-known labels, like Swatch, Levi's, Dell and Benedryl, than they were to buy generic products on the Internet. We term this the *brand equity effect*. Second, subjects were significantly more likely to buy products on the Internet if the transaction was guaranteed than if it was not. We term this the *guarantee effect*.

The guarantee effect was much stronger than the brand equity effect. The rise in mean ratings on purchase intention when a brand name was added to the product was 0.9, while the mean rise in ratings when a guarantee was added was 1.9.

A third aspect of our findings is also interesting and worth mentioning. The product categories of watch and personal computer had the highest potential to be sold on the Internet. The biggest range in purchase intention goes from 4.4 to 7.5 (on a 10-point scale). On the other hand, for the product categories of cough mixture and jeans, the range of the purchase intention is much narrower — from the smallest of 2.1 to 5.6 (on a 10-point scale). Thus, there would appear to be a *product category effect*. It is worth noting that the experience to date clearly suggests that certain product categories are more amenable to Internet transactions. For example, CDs, software and books are the three most popular products bought on the Internet (ABS, 1999). One can speculate that products that are more amenable to being precisely described according to a well-understood set of specifications lend themselves better to being sold through a remote marketing channel like the Internet or mail order. We leave the elaboration of these ideas to a future paper.

We note that both the guarantee and brand equity effects were also observed by Van den Poel and Leunis (1999), but using electronic survey methodology with a "real world" sample from the Belgian population. They found that having a money-back guarantee and the use of well-known brands were two of the most important risk relievers on the Internet, *in that order*. Our results are consistent with this finding.

Finally, we note that although brand equity has been studied extensively (see, e.g., Keller, 1998), the type of purchase guarantee studied here is not the typical money-back guarantee such as that offered by retailers in the physical world, but a "third-party" guarantee. The fact that a significant effect is found implies that it "works", and suggests a further line of research in the area of third-party trust mechanisms. This is likely to be of particular relevance to Internet merchants whose reputations have yet to be established sufficiently for them to make inroads into the market, and who are thus most likely to require the services of a third-party guarantor.

CONCLUSION

The primary objective of this paper was to investigate perceptions of trustworthiness on the Internet and, in particular, whether having a well-known brand (the brand equity effect), or guaranteeing the purchase (the guarantee effect) made a difference to the propensity to purchase a product. We found both a guarantee effect and a brand equity effect, but also that the guarantee effect was much stronger than the brand equity effect.

The model presented and tested in this paper is a preliminary and incomplete static model of trust on the Internet. Further research avenues could be directed towards: (1) a fuller articulation of the static model; (2) a more thorough specification of the experimental conditions, e.g., to test the effects of third-party guarantees versus own guarantees; (3) as foreshadowed earlier, the development of a dynamic model which would investigate how the trust relationship evolves over time, for example, focusing on the relationship between trust and reputation, and the ways in which these are built up or eroded over time.

Table 1: Changes in Willingness to Buy on the Internet for Four Product Categories

	N	Mean	Mean of the differences	Standard error	t-value
Watch (no brand)	25	4.4			
			1.04	0.40	2.5*
Swatch watch	25	5.4			
			1.96	0.44	4.5*
Swatch + AMP Guarantee	24	7.5			
Jeans (no brand)	25	2.1			
			0.84	0.39	2.2*
Levis jeans	25	2.9			
			2.68	0.47	5.7*
Levis + AMP Guarantee	25	5.6			
PC (no brand)	25	4.2			
			1.20	0.42	2.8*
Dell PC	25	5.4			
			1.46	0.34	4.3*
Dell + AMP Guarantee	24	7.0			
Cough Mixture (no brand)	25	2.2			
			0.64	0.33	1.9+
Benedryl	25	2.9			
			1.04	0.40	2.6*
Benedryl + AMP Guarantee	24	4.0			

* = significant at p<.05
\+ = significant at p<.10

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