

# SUPPORT FOR A TWO-FACTOR MODEL OF TRUST IN E-COMMERCE

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## Abstract

*The present paper represents work in progress, the goal of which is to further our understanding of the process through which people come to trust an e-commerce web site enough to engage in a transaction. Following a brief literature review, the authors will examine the role of person-centered mediating factors in the decision to trust or not to trust an e-commerce site. Specific constructs, such as self-efficacy, levels of both computer and Internet knowledge and experience, and trust and distrust will be investigated, leading to the formulation of a research model for the development of tendencies to trust or distrust, and the relationship of these tendencies to high and low risk transaction-relevant behaviors. Preliminary statistical analyses reveal some support for the model. Higher risk online behaviors such as a tendency to make purchases or pay bills online was better predicted by lower levels of Distrust, while Trust was a better predictor for lower risk behaviors such as searching for product-related information, or news and sports information.*

## Introduction

The present paper will attempt to achieve a greater understanding of some of the internal or dispositional factors involved in the decision to trust an ecommerce web site, while recognizing that external factors (e.g., characteristics of the web site such as the presence of a returns policy) play an equally important role in this process. Constructs such as risk perception, self-efficacy, levels of both computer and Internet knowledge and experience, and disposition to trust and disposition to distrust will be investigated, leading to the formulation of a research model for the development of an internal sense of trust vs. distrust, and its relationship to potentially high and low risk behaviors.

### *Risk perception as a component of trust*

Several earlier research models have used 'Perceived Risk' as an explanatory variable. Pavlou and Gefen (2004), for instance, included 'Perceived Risk from the Community of Sellers' as a variable that would affect 'Transaction Intentions,' while Cheung and Lee (2003) proposed 'Perceived Risk' as a consequence of 'Trust in Internet Shopping.' Boyle and Ruppel (2004) suggested that 'Perceived Risk' affects 'Online Purchasing Intention,' and Corritore, Kracher, and Wiedenbeck (2003) included 'Perceived Risk' as part of a set of personal factors determining trust in a website. Gefen, et al. (2003) also used 'Perceived Risk' as a sub-construct of other constructs such as 'Trust,' while Pavlou (2003) used it as an antecedent of 'Trust.'

While these researchers would implicitly define ‘Trust’ as a more or less unitary concept that is affected by and affects other variables – purchasing decisions, intention to purchase, risk perception – others have suggested that the concept of trust may need to be expanded to include a more important role for risk perception in determining a person’s decision to engage in a transaction with a web site. For example, Patrick, Briggs, and Marsh (2005), in their review of the literature on trust and e-commerce, have suggested that the characteristics of trust are dependent upon the types of underlying risk that are perceived in the situation. Thus, it may help to reframe the process of risk perception in on-line transactions to include not only external criteria such as the monetary cost of a proposed transaction or the type of product being bought, but also variables that could also help researchers understand the nature of the decision process itself. Using such a framework, we can begin to examine the underlying psychological variables that may be at work in the process of risk perception in ecommerce transactions.

### ***Disposition to trust and disposition to distrust and the perception of risk***

McKnight, Kacmar, and Choudbury (2003) suggested that there is an important distinction between the constructs of trust and distrust, which may have an effect on the way a person decides to enter into an e-commerce transaction. For these researchers, trust and distrust are based on different underlying psychological states which are determined by the level of risk a person perceives in a situation (McKnight, et al., 2003; McKnight, Kacmar, and Choudbury, 2004).

Thus, in addition to proposing models that include ‘institutional’, more externally focused variables, and unitary conceptions of trust, leading to intentions to purchase, researchers should begin to examine the nature of the underlying perception of risk in the on-line transaction itself. How do people decide whether a transaction is high or low risk? The present study, therefore, will focus on a small set of internal, more person-centered variables. The set of variables that will be investigated include: self-efficacy, which will be reviewed below, levels of both computer and Internet knowledge and experience, and, following McKnight, et al., disposition to trust and disposition to distrust.

### ***Self-efficacy***

Computer self-efficacy has emerged in recent years as an important explanatory variable in studies of the effectiveness of software training programs (Campeau and Higgins, 1995). Originally developed in Cognitive Social Learning Theory (Bandura, 1986), the construct, with reference to computing, refers to an individual judgment of one’s capability to use a computer (Marakas, Yi, and Johnson, 1998). As with the original construct, though, self-efficacy refers to one’s self-reported judgment of ability, rather than to an independently assessed measure of ability.

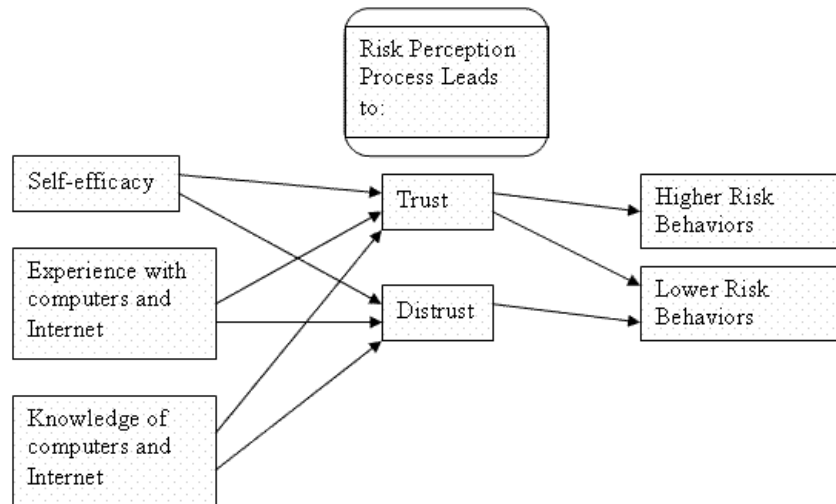
In the present research context, Boyle and Ruppel (2004) found a significant relationship between computer self-efficacy and online purchasing intent. This finding suggests that a sense of confidence in one’s ability to use computers can potentially contribute to a sense of trust or distrust as one interacts with an ecommerce web site and decides whether to make a purchase, or reveal personal information.

## **Research questions**

Following McKnight, et al. (2003), measures of trust and distrust should reveal different patterns of responding and different relationships with variables related to ecommerce transactions. For example, one potential determining factor in the decision-making process leading to the risk perception decision is experience using computers and the Internet, as well as self-reported knowledge of computers and the Internet. Experience and knowledge would also presumably guide a person as they evaluate the level of risk of a transaction. The greater the amount of experience a person has with computers and the Internet, the more likely they would be to feel comfortable with ecommerce transactions, and thus, the greater the sense of trust they would experience. Low levels of experience and knowledge, then, should be related to a sense of distrust.

A second factor that may be involved is one’s confidence in the ability to use computers, as measured by a Computer Self-Efficacy scale. Low self-efficacy (independent of one’s self-reported levels of knowledge and experience with computers and the Internet) may lead to feelings of discomfort, and thus, the experience of distrust as one engages in an ecommerce transaction. On the other hand, high self-efficacy may be associated with an experience of trust.

Thirdly, measures of trust and distrust should be related to actual self-reported shopping behavior and a tendency to use services such as bill paying and online banking over the Internet. A sense of trust should be related to a tendency to engage in low risk behaviors (e.g., looking for shopping-related information, news, or investment information), as well as higher risk behaviors such as shopping, bill paying, and banking over the Internet. Distrust should be related to a tendency to engage in lower risk behaviors only. These research questions are summarized by the research model shown in Figure 1.



**Figure 1. Research Model**

## Methodology

### *Participants*

The online questionnaire constructed for this study was available to undergraduate students enrolled in four different sections of IS-related courses at a regional university in the southeastern United States during Fall Semester. The IS courses were taught by three professors, using WebCT to supplement traditional course activities. All student participants were familiar with WebCT, and the questionnaires were available to them online throughout the semester using WebCT's survey feature. This feature allows enabled students to read and submit answers to the questions online. Extra credit was offered to students as an incentive for completing the surveys.

Three hundred forty students participated in this investigation. Fifty eight percent of the participants were male and 42% were female; the average age of the participants was 20.16. Though the sample is not representative of the population at large, it has been reported that the average online consumer is younger and more educated than most consumers (OECD, 1998), therefore, the present group would fall into the category of those most likely to use the Internet for ecommerce related transactions.

### *Research Instruments*

Measurement items were grouped into two categories. First, a set of items represented a combination of standard demographic questions combined with items designed to probe the participants experience and knowledge of the Internet and computer systems. The latter included items reflecting the amount of purchasing over the Internet the participants had engaged in, as well as the use of the Internet as a source of entertainment and information from which purchasing decisions could be made. Second, a series of scales adapted from the literature were used. These included measures of Computer Self-Efficacy (Campeau & Higgins, 1995), and Perceptions of Trust and Distrust of the Internet as a shopping medium (Cheung and Lee, 2003). The latter scale was divided into independent measures

of Trust and Distrust based on the results of a factor analysis that revealed the two-dimensional character of the unified scale.

## Preliminary Results

A series of questions designed to measure prior experience with computers and the Internet were asked of each participant, along with questions about their self-reported knowledge of computers and the Internet. Descriptive statistics are reported in Table 1. For 'Knowledge' questions, responses ranged from 1=No Knowledge to 5=Expert. 'Frequency' responses ranged from 1=Do Not Use to 6=Daily > 3hrs. Finally, 'Experience' ranged from 1=Less than a year to 6=more than 15 years. The participants then, on average, see themselves as possessing 'Reasonable' knowledge of computers and the Internet; use computers and the Internet between one and three hours a day, and have between six and 10 years of Internet experience.

**Table 1. Descriptive Statistics for Computer and Internet Knowledge and Experience Measures**

	Mean	Median	Std. Dev.
Self-Reported Computer Knowledge	3.04	3.00	.678
Self-Reported Internet Knowledge	3.23	3.00	.661
Frequency of Computer Use	4.60	5.00	.985
Frequency of Internet Use	4.43	5.00	.969
Years of Computer Experience	4.19	4.00	.796
Years of Internet Experience	3.70	4.00	.603

A series of preliminary regression analyses were undertaken in order to explore the nature of the support for the proposed research model. Two regression analyses were performed to assess the contribution of prior computer experience/knowledge and Self-efficacy to measures of Trust and Distrust. The first regression employed several classification variables as predictors: years of computer experience, computer knowledge, frequency of computer use, and self-efficacy, with Trust as the dependent variable. The resultant regression model was highly significant [ $F(7,316) = 7.094$ ;  $p < .001$ ] and yielded an R of .37 and a R Square of .136. Predictor variables that achieved significance were self-reported computer knowledge, self-reported Internet knowledge, and self-efficacy. Somewhat surprisingly, computer knowledge was negatively related to Trust.

The second regression employed the same predictors, with Distrust as the dependent variable. The resultant regression model was also highly significant [ $F(7, 317) = 4.796$ ;  $p < .001$ ] and yielded an R of .31 and a R Square of .1. Three of the computer experience/knowledge dimensions, and self-efficacy, were found to be significant predictors.

A final set of regression analyses was performed using Trust and Distrust as independent variables, and composite 'frequency of use' measures representing higher risk (e.g., making online purchases, banking online, online bill paying) and lower risk (e.g., educational/academic research, shopping information such as prices and product features, news and sports information) usage behaviors respectively. Descriptive statistics for these measures are given in Table 2. Responses for all frequency of use scales ranged from 1=Do not use to 5=multiple times per day.

**Table 2. Descriptive Statistics for Frequency of Use Measures**

	Mean	Median	Std. Dev.
Making Purchases (Hi Risk)	1.78	2.00	.841
Bank Online (Hi Risk)	2.23	2.00	1.212
Online Bill Paying (Hi Risk)	1.46	1.00	1.00
Invest Online (Hi Risk)	1.17	.798	.632
Educational Research (Lo Risk)	3.32	3.00	1.069
Shopping Info (Lo Risk)	2.37	2.00	1.026
News (Lo Risk)	2.77	3.00	1.195
Weather Info (Lo Risk)	2.41	2.00	1.138
Sports Info (Lo Risk)	2.29	2.00	1.338
Investment Info (Lo Risk)	1.30	1.00	.731

The first regression model (using a composite measure of lower risk behaviors as a dependent variable) was significant [ $F(2, 337) = 5.793$ ;  $p < .003$ ] and yielded an R of .18 and a R Square of .03. Trust was found to be a significant predictor. These results are summarized in Table 3.

**Table 3. Significant Predictors of Low Risk Behaviors**

	Beta	t	p <
Distrust	-.032	-.522	.602
Trust	.165	2.718	.007

The second regression model (using a composite measure of higher risk behaviors as a dependent variable) was also significant [ $F(2, 336) = 4.093$ ;  $p < .018$ ] and yielded an R of .15 and a R Square of .02. In this case, Distrust was found to be a significant predictor. These results are summarized in Table 4.

**Table 4. Significant Predictors of High Risk Behaviors**

	Beta	t	P <
Distrust	-.158	-2.589	.01
Trust	-.009	-.150	.881

## Conclusion

These preliminary results suggest that the constructs of Trust and Distrust are predicted by differing patterns of background experience and self-efficacy scores. Whereas high self-efficacy, along with higher levels of Internet knowledge and lower levels of computer knowledge seem to predict Trust, Distrust is better predicted by low self-efficacy, and lower levels of Internet knowledge and experience.

The patterning of results with respect to the use of Trust and Distrust as predictors of behavior also revealed some interesting differences. Higher risk behaviors such as a tendency to make purchases or pay bills online was better

predicted by lower levels of Distrust, while Trust was a better predictor for lower risk behaviors such as searching for product-related information, or news and sports information.

Overall, the preliminary findings of the present study provide some support for the idea that trust is better viewed as a two-dimensional construct that can be used to provide an explanation for the psychological underpinnings of a person's decision to engage in ecommerce transactions. Understanding this more person-centered process could, along with our knowledge of the role of institutional variables, contribute to a better overall understanding of the nature of ecommerce transactions.

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