Whoops…Did I Use the Wrong Concept to Predict E-Commerce Trust? Modeling the Risk-Related Effects of Trust versus Distrust Concepts

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Abstract

Significant work has been initiated on trust in e-commerce settings, but little research has addressed distrust. Because of its connection to the insecurities that are found in risky situations, disposition to distrust is particularly suited to addressing issues of high risk, while disposition to trust is better suited for low risk issues. High risk issues include: a) perceptions that the Web is risky and b) a willingness to depend on a specific unknown Web vendor in light of that risk.

This theoretical position serves as the basis of a model of what causes consumers to initially decide to trust/distrust the Web and to explore and trust a Web site. The model includes three disposition to trust constructs and one disposition to distrust construct. As proposed, the study found that disposition to trust predicted the low risk Web constructs, while disposition to distrust predicted the high risk Web constructs. This suggests that disposition to distrust has greater potential for predicting high-risk outcome constructs in e-commerce. This article contributes by showing how various aspects of disposition to trust/distrust affect consumer Web perceptions in different ways, depending on their level of risk. For e-commerce research, the findings of this article suggest that perhaps scholars have been studying a less effective factor for addressing risk—disposition to trust--instead of what may be a more effective factor—disposition to distrust.

1. Introduction

The impact of consumer e-commerce is maximized as consumers become more willing to transact business with Web vendors [35]. However, unlike brick-and-mortar transactions, Web transactions involve both depending on an unseen and unknown vendor and transacting business on the Web--a medium with significant fiduciary, security and privacy risks [7]. Since e-consumers place personal and credit card information on the Web itself, the information is potentially accessible to others unless the vendor follows proper precautions [34]. This makes many people justifiably nervous about doing business on the Web [9]. Further, e-vendors may disappear into cyberspace after a transaction [31], making recourse impossible.

Thus, consumers who are aware of the risks often do not trust Web vendors. Consumers not only distrust specific Web vendors, but also the Web itself because safeguards society has established in brick-and-mortar commerce are missing on the Web. Hence, several researchers have remarked that trust is critical to the success of online vending [11, 15, 26]. If trust is important, what individual difference factors and institutional factors help build trust?

Disposition to trust, an individual attribute, has been found to be important in e-commerce (e.g., [11]). However, is it disposition to *trust* or disposition to *distrust* that matters more? Or are disposition to trust and distrust separate concepts? If disposition to trust is what matters, researchers are on the right track; if disposition to distrust is what matters, then researchers are driving down a blind alley.

The general term trust means to willingly become vulnerable to the trustee--another person, institution, or people generally--having taken into consideration the characteristics of the trustee [30]. Assuming distrust is the opposite of trust, as Lewicki et al. [18] argue, distrust means to not willingly become vulnerable to the trustee, having taken into consideration the characteristics of the trustee. The general terms trust and distrust can be decomposed into more specific constructs. Interpersonal trust means one is willing to depend on or be vulnerable to a *specific other*, based on that party's characteristics. Disposition to trust, meaning a tendency to be willing to depend on or become vulnerable to *general others* [29], is an individual difference factor posited to affect institutional and person-specific trust [20]. Disposition to *distrust* means a tendency to not be willing to depend on

or become vulnerable to general others. The difference between interpersonal trust/distrust and their dispositional relatives is that trust relates to a specific other party, while disposition to trust relates to general sets of others.

Distrust is only recently beginning to be noticed as an important e-commerce issue [8, 20]. Since fear or being insecure or nervous often describe people's feelings about the Web, it seems reasonable that distrust would also be important in risk-laden Web relationships because distrust embodies these insecure feelings [16]. So far, little has been done on Web distrust.

This article first contributes by examining psychological differences in the impacts of dispositional and institutional trust and distrust concepts on e-commerce perceptions. These differences are leveraged into a model predicting that trust concepts will initially have a greater effect on low risk perceptions, while distrust concepts will have a greater effect on high risk perceptions. The model is tested, with significant support found. The paper contributes by demonstrating the differences in dispositional trust versus distrust impacts and by showing that disposition to distrust is stronger than disposition to trust in predicting high-risk issues like trusting a specific Web site. The results also show disposition to distrust to be different from disposition to trust, helping alleviate confusion on this topic [21].

2. Theory Development

Luhmann [19], perhaps the most thorough trust theorist, argued both that trust and distrust are one construct and that they are distinct functional equivalents that act separately. The case that trust and distrust are not the same construct, but co-exist, is argued in [18, 20, 21]. Essentially, Lewicki et al. argued that trust is different from distrust because the two co-exist, have different consequences and causes, and factor separately. They presented evidence for each argument, including empirical evidence regarding Wrightsman's dispositional trust measures.

McKnight and Chervany [21] argued that a more frantic or emotionally aroused state lies behind distrust, making it reflect "the emotion-charged human survival instinct." The survival instinct, with an accompanying state of heightened arousal, enables people to address challenging or risky situations. Distrust is often charged with negative emotions: fear, worry, panic, paranoia, anger, and hate [18, 21].

3. Model Concept Definitions

Following [20, 23], several more concepts are defined. Institutional Constructs: *Institution-based trust* means the trustor believes that needed structural or environmental conditions are present [32] to enhance the probability of achieving a successful outcome in an endeavor. In e-commerce, institution-based trust can mean such beliefs in the Web itself. *Institution-based distrust* means the trustor believes that favorable conditions that are conducive to situational success on the Web are not in place. Two more detailed constructs represent institutional trust/distrust. *Structural assurance of the Web* means one believes that protective structures conducive to Web success are in place. On the Web, such safeguards include security features like encryption, protective privacy policies and practices, and policing of vendor abuses. *No-structural-assurance of the Web* means one believes that protective structures that are conducive to situational success are not in place**.** Specific Perception Constructs: Specific Internet person-object perceptions are those beliefs and intentions that relate to specific Internet vendors or sites, rather than the Internet as a whole (institution-based trust). These perceptions include perceived site quality, willingness to explore the Web site, and trusting intention in the Web site. *Trusting intention in Web site* means willingness to depend on the site, even though the consequences may be negative. *Willingness to explore site* means readiness or eagerness to look at or to investigate use of a particular Web site. *Perceived site quality* means perceptions of how well the Web site is built and works.

4. Model Development

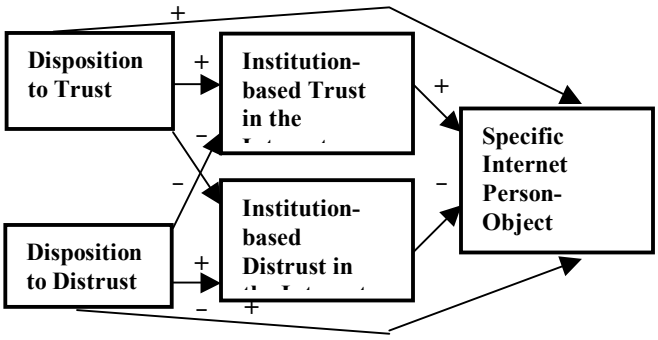


Figure 1 General Model

The following addresses the left hand side of Figure 1, building on [20]. Most of the following is argued from the logic of trust in initial relationships [23]. In the initial relationship, one has little or no first-hand information about the trustee, meaning the parties are unfamiliar [2]. The initial relationship period is critical because the e-commerce consumer chooses to use or not use the site during the initial relationship period. Unless consumers are willing to explore the site and willing to

depend on the site, they will not be willing later to purchase from the site. The initial period is also critical because the opinions and beliefs formed early tend to continue into the future, perpetuated by belief maintaining mechanisms [10].

Disposition to trust should positively affect trust in the Web institution at first because one who trusts other people generally will likely trust institutions involving people. For example, disposition to trust general others should be related to general trust in the Web because the Internet is built and maintained by unknown others. Similarly, disposition to distrust should negatively affect trust in institutions from the cynical side. One with higher disposition to distrust (being more suspicious) should have less institution-based trust in the Web because they would be less likely to believe the Web has adequate structural support. Thus, in the initial relationship:

Proposition 1: Disposition to trust will positively affect institution-based trust in the Web, while disposition to distrust will negatively affect institution-based trust in the Web.

Similarly, disposition to trust should negatively affect institution-based distrust in the Internet because one who trusts others generally should think positively enough to mitigate cynical beliefs about the Internet. Further, disposition to distrust should be positively related to institution-based Web distrust because disposition to distrust will cause one to distrust the Web, since it partakes of the cynical nature as institution-based distrust.

Proposition 2: In the initial relationship, disposition to trust will negatively affect institution-based distrust in the Web, while disposition to distrust will positively affect institution-based distrust in the Web.

Disposition to trust/distrust will probably also color perceptions about specific Web sites (e.g., Web site quality, trusting intention in a Web site, willingness to explore the site) because people tend to keep initial impressions consistent [23]. Note that specific Internet perceptions were defined above to be positive in nature. Those with high disposition to trust would have higher perceptions of Web site quality, since they are likely to be less critical. Those with higher disposition to distrust, being more cynical, would have lower site quality perceptions and lower willingness to explore a given Web site, and would be less likely to have trusting intention toward the site.

Proposition 3: In the initial relationship, disposition to trust will positively affect specific Web person-object perceptions, while disposition to distrust will negatively affect specific Web person-object perceptions.

The proposed linkage from institution-based trust to specific Internet person-object perceptions (Figure 1) is justified based on [23]. They argue that beliefs about the environment/task will influence perceptions about the specific people involved in the environment or task. If the environment is favorable, those in the environment will be seen as favorable too, because institution-based trust reflects how safe or secure the institution is. For example, people who trust legal protections covering home building are likely to trust a building contractor because legal protections make one feel safe. Similarly, distrust in the Internet environment will be negatively related to specific perceptions about a Web site because negative institutional perceptions will translate to specific perceptions.

Proposition 4: In the initial relationship, institution-based trust in the Web will positively affect specific Web person-object perceptions, while institution-based distrust in the Web will negatively affect these perceptions.

This general model contributes by specifying opposite roles for dispositional and institutional trust/distrust constructs and may be tested. However, we shall now argue that *the general model is woefully inadequate* both because it is at too high a level and because it does not fully take into account the unique natures of trust and distrust. Further, this model looks at trust and distrust at a high level, which Bigley and Pearce [2] warned is parsimonious but dangerous because it may not coincide with empirical reality. Therefore, the next section creates a more detailed model that focuses on the psychological differences between trust and distrust. Good theory carves at the joints [14], but must first determine the detailed level at which to carve. Attempting such a task (and hoping to be better than mediocre butchers!), we now introduce more detailed disposition to trust constructs.

The detailed model adapts four particular disposition to trust constructs from [20]. *Faith in humanity--general* means one assumes that general other people are typically well meaning and reliable [37]. *Suspicion of humanity--general* means one assumes general other people are not well meaning and reliable. Faith in humanity and suspicion of humanity are defined to be opposites under the testable position that trust and distrust are distinct [18]. *Faith in humanity--professionals* means one assumes most professionals are competent at their task. These constructs hail from psychology. *Trusting stance*, from economics [26], means that, regardless of beliefs about people generally, one assumes better outcomes result by dealing with people as though they are well meaning. It is a personal strategy to trust others at first.

5. Detailed Model Justification

Recently, a few researchers have begun to address distrust issues [2], though usually not in the same study as they address trust issues. Bigley and Pearce point out that some who address distrust view it as the opposite of trust [27] and others view it as independent from trust [33].

Lewicki and associates viewed distrust as separate from trust ("high distrust is not the same thing as low trust"-[18: 444]) but connected to it, in that both exist in a relationship at the same time. They contrast their view with the "old view" that trust and distrust are one bipolar construct [18: 440]. They illustrate their view by describing in 2 X 2 format how four combinations of high/low trust and high/low distrust can coexist.

McKnight and Chervany [20, 21] posited that trust and distrust each embody a different emotional makeup. One who trusts is calm because one rests assured things will be okay. Doubts and fears have been put aside [10]. One who distrusts needs tactics like controls or preemptive strikes [18] for assurance. Luhmann [19: 71-72] said distrust becomes "emotionally tense" because one has to take "burdensome" steps that may or may not work. McKnight and Chervany [20] compare trust and distrust to an elephant. Trust is like a docile zoo elephant munching on hay, while distrust is like a "raging wild bull elephant" protecting the herd from attack [20: 42]. Fear and feelings of paranoia [16] permeate those with high distrust, causing them to feel exposed or at risk due to betrayal.

As we compared such statements on the nature of trust/distrust with Lewicki et al.'s discussion of their trust/distrust 2 X 2, it seemed clear that one issue that differentiates low and high distrust is perceived risk. For example, the low trust/low distrust cell is described as when the parties have "no reason to be wary and watchful" and will not usually interact in a way that involves complex interdependencies or risk assessments [18: 446]. Similarly, in the high trust/low distrust cell, parties have no reason to suspect the other and experience pooled (simple) interdependence. Both of these descriptions of low distrust reflect low perceived risk. On the other hand, the descriptions of the high distrust cells say that parties use caution, controls, and have complex interdependence, all of which indicates perceived risk is high. Hence, we speculate that risk levels impact the effects of trust versus distrust constructs in that distrust is more highly associated with high-risk constructs.

We do not argue that distrust constructs alone relate to constructs embodying risk. It is more likely to be a matter of degree. It appears that trust matters in situations of low risk, while distrust matters in situations of high risk. That is, distrust constructs will be more powerful antecedents of perceptual constructs that embody high levels of risk than will trust constructs. This is because when risk is high, the trustor relies more on the wary, suspicious side to assess the future and its consequences than on the optimistic, positive side. Note that the case is clear only with high and low risk, so both trust and distrust may be connected to the medium risk variables. Overall, the implication of this theorizing is that the psychological processes behind distrust are more salient in very risky situations than are those behind trust.

Proposition 5: Dispositional and institutional *trust* constructs will more strongly affect low to medium risk perceptual constructs, while dispositional and institutional *distrust* constructs will more strongly affect medium to high risk perceptual constructs.

Detailing this proposition into testable hypotheses will be done in two steps: 1. identify the levels of risk inherent in the model's dependent variables, and 2. link the trust/distrust concepts to the dependent variables according to the risk levels of the dependent variables.

Step 1: We propose (Figure 2) that trusting intention in the Web site and no-structural-assurance involve high levels of risk, while the other dependent variables have medium or low risk. To be willing to depend on the Web site (trusting intention) puts the consumer at risk in several ways. The Web site may be a hoax--collecting money but not delivering the goods. The site may not have proper security controls, putting one's personal information at risk. The site may be collecting personal information unbeknownst to the consumer. By contrast, willingness to explore the site, which implies giving no information and making no commitment, embodies no more risk than window-shopping at the mall. No-structural-assurance, a distrust concept, embodies the high risk feeling of not being secure about the Internet itself. This concept embodies beliefs, for example, that encryption and other technological and legal safeguards are not in place to control access to credit card and other personal information, a scary possibility. Hence, we felt it should be rated as a high risk concept while structural assurance, which treats these safeguards in a positive way, is rated medium risk, since it is worded to assure instead of to concern, to put aside doubts instead of to dwell on them. Perceived site quality is rated low risk because it embodies no risky consequences to the consumer, implying neither a commitment nor a relationship.

Step 2: Next, we connected the independent variables to the dependent variables in a way that reflected both Figure 1 linkage valences and Proposition 5, with one theory-driven exception explained below. First, suspicion of humanity, a disposition to distrust variable, was linked to the three dependent variables that embody medium or high risk (see

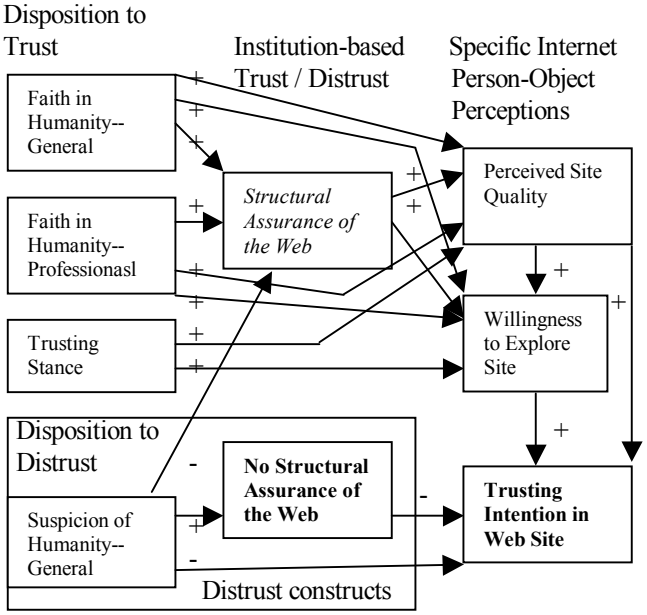
Figure 2).

Hypothesis 1: Suspicion of humanity-general will: a) positively affect no-structural-assurance of the Web; negatively affect b) trusting intention in the Web site and c) structural assurance of the Web, but not affect the low risk dependent variables.

No-structural-assurance of the Web was linked to the high risk trusting intention concept.

Hypothesis 2: No-structural-assurance of the Web will negatively affect trusting intention in the Web site, but will not affect the low risk dependent variables.

Faith in Humanity-General and –Professionals will affect the low risk constructs, perceived site quality and willingness to explore site. In addition, they will affect structural assurance [23], because it only embodies moderate risk, but will not affect the high-risk no-structural-assurance construct. Trusting stance will relate positively to the low risk perceived site quality and willingness to explore site. Because trusting stance does not embody assumptions about *people*, as faith in humanity does, it will not relate to structural assurance because the links McKnight et al. [23] justifies from disposition to trust to institution-based trust are based on people perceptions that could only be caused by faith in humanity. None of the disposition to trust constructs will be significantly related to the high risk trusting intention or no-structural-assurance.



Dependent variable lettering:
Bold=High risk Italic=*Medium risk* Plain=Low risk

Figure 2 Detailed Research Model

Hypothesis 3: Faith in humanity (general, professional) and trusting stance will positively affect perceived site quality, willingness to explore site, and (except trusting stance) structural assurance of the Web, but will not affect the high risk dependent variables.

The impact of structural assurance of the Web, which inheres medium risk, is not as clear to predict as the other variables. However, contrasting its impacts with those of the high risk no-structural-assurance construct, we speculate that structural assurance will affect perceived site quality and willingness to explore the site because these inhere low risk. Consumers who have low structural assurance of the Web would not feel a Web site is safe (and therefore helpful); thus their perception of the Web site's quality and their desire to explore the site would probably be lower than those who have high structural assurance. Structural assurance will probably not affect trusting intention in the Web site because it is a high risk variable. This conjecture contradicts a proposition of the [23] model, but seems reasonable.

Hypothesis 4: Structural assurance of the Web will positively affect perceived site quality and willingness to explore the site but will not affect trusting intention in the Web site.

Perceived site quality should positively affect willingness to explore the site and rely on the site because one who thinks the site is well done is more likely to want to examine and use it. It also stands to reason that if one is willing to explore the site, then one will be more willing to take the next step by relying on it.

H5a: Perceived site quality will positively affect willingness to explore the site and trusting intention in the Web site.

H5b: Willingness to explore the site will positively affect trusting intention in the Web site.

6. Model Caveats

The detailed model will probably only be operative during the initial stage of a person's relationship with a Web site, because it assumes that (and works because) trustors are quickly making assumptive judgments about trust-related issues. Also, the model is not longitudinal, and results measured over time are likely to differ from the results we detail below. The Internet provides an appropriate setting for testing the above model because it embodies serious types and degrees of risk [7, 9]. The model may or may not work in other settings.

7. Methodology and Results

7.1. Subjects and Procedures

1048 students (1022 were undergraduates) from three large U. S. universities participated in the study.

Respondents were motivated to participate through course extra credit. The average respondent age was 20.6. Fifty-four percent were female. Although university students do not represent all Internet users, they represent a group likely to use the Internet. Online consumers are generally younger and better educated than conventional consumers, making student samples close to the online consumer population [25]. Respondents had an average of 3.5 years of Internet experience. Responses were made to questions framed to fit a one to seven Likert scale. Descriptive statistics for the model constructs are shown in Table 1.

Respondents first responded to a questionnaire that included the disposition to trust/distrust and institution-based trust/distrust variables. Respondents were not taken to a Web site, but the study Web site was described. Therefore, their judgments of the Web site were based on second-hand information, placing them in the initial relationship phase, per [23]. Finally, subjects completed a questionnaire that included the specific person-object perception constructs.

Table 1. Descriptive Statistics

Construct	Mean	Median	Std. Dev.
Faith in Humanity-General	4.2	4.2	0.95
Faith in Humanity-Professionals	4.8	5.0	1.04
Suspicion of Humanity-General	3.4	3.3	1.04
Trusting Stance	5.1	5.3	1.36
Structural Assurance	3.9	4.0	1.41
No-structural-assurance	3.5	3.5	1.36
Perceived Site Quality	5.0	5.0	1.06
Willingness to Explore Site	5.2	5.3	1.43
Trusting Intention in Site	3.9	4.0	1.12

7.2. Measures and Measurement Model

Following the above construct definitions, scales were created (Appendix). The disposition to trust/distrust scales were adapted from scales reviewed by [37], except for the new trusting stance scale. The no-structural-assurance items were adapted from Georgia Institute of Technology's surveys of Web usage (www.cc.gatech.edu/gvu/user_surveys/). The other scales were developed for this study.

The model was analyzed through Partial Least Squares (PLS), a structural equation modeling method. PLS is frequently used for exploratory research, especially with complex models that emphasize predicting causality [13]. Since no previous tests of this model (or anything like it) have been done, this study is speculative and exploratory. In PLS, the measurement model is first analyzed for construct validity; then the structural model is analyzed to test hypotheses about relationships among constructs. PLS is also especially appropriate for this study because the hypotheses relate to the presence (or not) of specific model linkages, rather than to the fit of the model itself.

PLS model loadings/cross loadings indicate that the measurement model had acceptable convergent and discriminant validity (Table 2), as follows. The ICR (internal composite reliability) figures (similar to Cronbach's alphas) indicate the internal consistency of each construct. All of these exceeded the 0.70 standard [6], with the lowest figure at 0.89. The AVE (average variance extracted versus measurement error) figures are all above the minimum acceptable level of 0.50 [4], indicating convergent validity within construct. The outer model loadings for each item exceeded 0.70, which also indicates acceptable item convergence by construct. All the latent variable intercorrelations are less than the square root of the corresponding AVEs, providing evidence that the constructs are discriminant from each other [6]. In fact, the intercorrelations are less than the AVE figures themselves. From these indications, we accepted the measurement model and proceeded to examine the structural model.

Table 2. Measurement Model Results

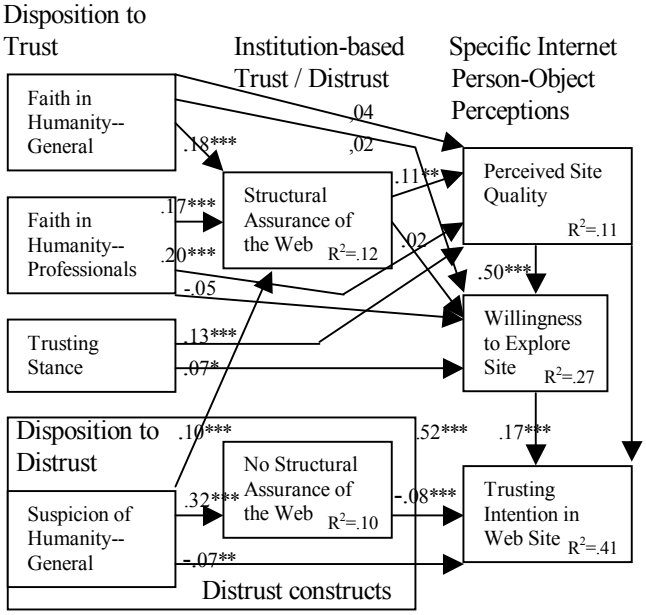
	Latent Variables:	ICR	1	2	3	4	5	6	7	8	9
1	FinH-Genl	**0.90**	**0.60**								
2	FinH-Profls.	**0.92**	0.49	**0.80**			*(AVE on diagonal)*				
3	SofH-Genl	**0.89**	-0.37	-0.06	**0.58**						
4	Tr'g Stance	**0.93**	0.39	0.40	-0.05	**0.82**					
5	Str. Assur	**0.96**	0.30	0.26	-0.18	0.18	**0.87**				
6	No-StrAssur	**0.92**	-0.09	-0.05	0.32	-0.04	-0.60	**0.67**			
7	Site Quality	**0.89**	0.20	0.29	-0.01	0.23	0.19	-0.01	**0.73**		
8	W to Explor	**0.94**	0.15	0.15	-0.01	0.19	0.13	-0.04	0.52	**0.84**	
9	Tr'g Intentn	**0.95**	0.20	0.18	-0.09	0.17	0.21	-0.12	0.43	0.61	**0.87**
	Square root of AVE:		**0.77**	**0.89**	**0.76**	**0.90**	**0.93**	**0.82**	**0.85**	**0.92**	**0.93**

7.3. Results—Structural Model

Given the spotty performance of disposition to trust variables in the past [12, 36] we expected very modest findings. Results are shown in Figure 3. Although as expected, the model coefficients were low, thirteen out of seventeen model links (76%) were supported at $p<0.05$ or better. Three of the links that did not work were proposed to

predict willingness to explore, which was only predicted by site quality ($p<0.001$) and trusting stance ($p<0.05$). The other proposed linkage that did not work was from faith in humanity-general to site quality. Given the preponderance of significant results, the model was largely supported. We make sense of the disconfirmed hypotheses later.

To fully test the hypotheses, however, it must be shown both that the proposed linkages worked (Figure 3) and that the independent variables did not predict dependent variables they were proposed not to predict. To test this, we added links from the trust variables to high-risk dependent variables and links from the distrust variables to low risk dependent variables, such that all the links suggested in Figure 1 were present.



Dependent variable lettering:
Bold=High risk Italic=*Medium risk* Plain=Low risk

Figure 3 Results for Trust/Distrust Model

Only 3 of the 12 additional links were significant, and the amount of additional variance explained (R^2) was minor (structural assurance-no change; Web risk-0.10 to 0.11; site quality-0.11 to 0.12; willingness to explore-0.27 to 0.28; trusting intention-0.41 to 0.42). This result provides additional support for the proposed detail model. None of the additional links from faith in humanity-general, trusting stance, or suspicion of humanity were significant. The link from no-structural-assurance to site quality was the most significant added link (beta = -0.102; $p<0.01$). Note that both structural assurance and no-structural-assurance were significant in this model. This makes some sense, in that perceptions that the Web environment is not safe may act as a hedge against the risk of too-favorable judgments of a Web site. The added link from structural assurance to trusting intentions was also significant (beta = 0.060; $p<0.05$), indicating that favorable perceptions of the Web environment affect trusting intentions in a particular Web site, as [23] proposed. The only change in the links from disposition to trust/distrust constructs was that the link from faith in humanity-professionals to no-structural-assurance was significant (beta = -0.063; $p<0.05$).

In terms of support for the hypotheses, Table 3 shows that the most of the hypotheses were either fully or largely supported. The exception was the speculative Hypothesis 4: structural assurance proved to be a predictor of high risk trusting intention, which was not hypothesized, but not a predictor of low risk willingness to explore, which was hypothesized.

8. Discussion

The study results are generally supportive of proposition 5, that disposition to trust and institution-based trust will affect low/medium risk perceptions while disposition to distrust and institution-based distrust will affect medium/high risk perceptions. This implies that disposition to trust and distrust are very different constructs. The empirical results show that they are different, first, because they formed separate, discriminant factors. The PLS measurement model with its correlation matrix show the factors are distinct. For example, Table 3 shows that the highest correlation among disposition to trust and disposition to distrust variables is –0.37 between suspicion of humanity-general and faith in humanity-general. This indicates significant and large empirical differences between the disposition to trust and distrust variables. Structural assurance is correlated with no-structural-assurance at r = –0.60, which also distinguishes them, because a correlation of less than 0.60 indicates without question that two constructs are discriminant [3]. To verify trust and distrust constructs were discriminant via another method, we ran principal components exploratory factor analyses. The four dispositional variables formed four clear factors with eigenvalues between 1.3 and 5.9, and the two institutional variables formed two clear factors with eigenvalues of 1.6 and 6.0. In both analyses, each item loaded properly, indicating that suspicion of humanity separates from the disposition to trust variables, and that no structural assurance separates from structural assurance.

Table 3 Summary of Hypothesis and Model Support

	Number of Test Instances Supported (Out of Total Tests Done)						
	Distrust		Trust			All Dis Tr	All Tr
	H1	H2	H3	H4	H5		
Re: Links Hypoth'd	3/3	1/1	5/8	1/2	3/3	4/4	9/13
Re: Links not Hy'd	2/2	1/2	6/7	0/1	--	3/4	6/8
Total	5/5	2/3	11/15	1/3	3/3	7/8	15/21

Second, we found that the trust and distrust variables were different because of what they predicted. Faith in humanity constructs tended to predict structural assurance but not no-structural-assurance, while suspicion of humanity was the major predictor of no-structural-assurance. Perhaps this is because suspicion of humanity taps the part of the human psyche involved with assessing risk versus safety of a proposition. This may imply that suspicion of humanity is a more important predictor of institutional issues involving serious elements of risk, such as the Internet poses for consumers, than is faith in humanity. Hence, the fact that disposition to trust and distrust behaved so differently underscores the rising consensus that trust and distrust are different constructs [18]. The study found that one's positive view of general others (faith in humanity) affects one's positive view of structures making the Web safe (structural assurance), while one's negative view of general others (suspicion of humanity) affects one's negative opinions about the Web (no-structural-assurance).

These findings also underscore the importance of the distrust side for the risky aspects of the B2C relationship. Of the four dispositional variables, only suspicion of humanity predicted high-risk trusting intention. This may indicate that researchers should look more seriously at disposition to distrust rather than the more usual disposition to trust in their studies of e-commerce relationships. More specifically, it may indicate that one should assess the levels of risk in the aspect of the relationship to see which variable is more important. For example, when the consumer is merely exploring the site, it appears that disposition to trust–trusting stance is more salient, and neither institution-based trust helps predict willingness to explore. But when the relationship involves risk, such as intentions to depend on the site, disposition to distrust is more important than in disposition to trust. This needs testing in a longitudinal or process setting.

Trusting stance had no effect on either institution-based trust variable, but affected willingness to explore the site and site quality perception. This indicates that having a personal strategy to trust others does not affect assessment of institutional safety/risk, but still affects one's judgment of the quality of an unseen site and one's willingness to explore it further. Hence, the importance of trusting stance probably lies in the exploratory stages of a B2C relationship.

Faith in professionals produced different results than faith in humanity-general. The former predicted no-structural-assurance, indicating that beliefs about professionals are more closely tied to beliefs about Internet risks than are beliefs about people in general. Similarly, since it is presumably professionals that built the Website, it is not surprising that faith in professionals had a much stronger impact on site quality perceptions than did faith in humanity-general. This raises the possibility that one reason disposition to trust measures have failed to predict dependent variables in the past [12] is that they are too general. Respondents are able to distinguish among types of people in making judgments, and the category closest to the trustee will be most salient. This finding is important and needs to be researched.

Another intriguing finding was that while both institution-based trust variables affected trusting intention, neither affected willingness to explore. Apparently, respondents were willing to explore the site without consideration of institutional risks or safety. This is probably because exploring the site involves low risk. However, willingness to explore the site had by far the strongest effect on trusting intention in the Web site. Ironically, one is willing initially to explore the site without considering environmental risks, but then, one is more likely to have trusting intention in the site, which involves risk. Hence, vendors should encourage people to explore their site, because those who are willing to do so will also likely be willing to depend on the site.

Perceptions about the quality of the site were also very important. The strong effects of site quality on willingness to explore and on trusting intention show that site quality opinions are key to the consumer-vendor relationship in terms of exploring and trusting the site. Willingness to explore was predicted primarily by site quality. Perceived site quality also affected trusting intention, which implies that before one sees the Web site, what one perceives about its quality affects one's trust in it. Since quality perceptions preceded experience with the trustee, this accords with McKnight et al.'s [23] theorizing that initial trust is based on assumptions about the attributes of the trustee. This is like the "what is beautiful is good" effect observed in social psychology [5]. That is, one infers trustworthy attributes for the trustee based on whatever minimal physical signs one

has, making conclusions that extend beyond the available evidence [10, 19].

When both institutional variables were treated as predictors of trusting intentions (to test links proposed not to exist), structural assurance had about the same predictive power as did no-structural-assurance. This shows that both institution-based concepts have significant power to influence perceptions of the risk of a specific Internet site. It is also possible that no-structural assurance would be a stronger predictor of distrusting intention (a more risk-laden variable than trusting intention), which, in turn, may be a more powerful predictor of consumer willingness to do risky Internet transactions like provide one's name and address, social security number, or credit card information. These ideas need further research.

9. Other Caveats and Limitations

The results are generalizable only to young American university students and not to general Web users. The familiarity of respondents with this Web site was low by design, so these results won't hold where respondents become more familiar with a site. The process of how trust develops as familiarity grows needs additional research.

10. Final Suggestions for Research

In addition to suggestions above, several fruitful avenues for future research exist. First, the relatively low R^2 figures for institution-based trust/distrust, site quality, and willingness to explore indicate that additional factors should be identified. Perhaps the following potential factors could be tested: Web experience, computer anxiety, perceived importance of Web security issues, and personal innovativeness [1]. Second, more should be done to delineate the differential roles of disposition to trust and distrust. Since faith in humanity and suspicion of humanity played very different roles, researchers should be careful not to conflate these constructs. Third, all the variables were measured in a single session with little passage of time. It would greatly increment understanding to test these relationships longitudinally.

11. Implications for Practice

Web practitioners should remember the strong effects of Web site quality on consumer willingness to explore the site and to depend on the site. Also, it is important to recognize that site quality judgments are influenced both by institutional and dispositional trust. Those consumers with varied levels of disposition to trust and distrust will likely have different trust assurance needs. Even a high quality Web site may not seem trustworthy for one with low disposition to trust because s/he may be more critical of the quality level. Practitioners should be aware that faith and suspicion of humanity are two very different concepts that have different effects. Given the strong effects of suspicion of humanity, it may be more important at the purchase stage to manage suspicion by overcoming consumers' general fears about others than to leverage their general faith about others.

Overall, the results of the study show that differences in individual disposition to trust affect consumer perceptions and willingness; therefore, site creators may need to develop measures to deal with these differences. Just as face-to-face salespeople try to get to know the potential customer so they can relate to them better, so in the future, Web vendors will try to gain a competitive advantage by understanding the individual consumers better—including knowledge of their propensity to trust or distrust. By asking a few targeted questions, vendors could easily segment customers by the level or type of privacy or security concerns and by their levels of disposition to trust and distrust.

12. Conclusion

Risk is endemic to e-commerce scene and needs to be addressed by both trust and distrust concepts. This paper shows that several types of institution-based trust and disposition to trust influence site quality, willingness to explore, and trusting intention in the site. It clearly shows distinct roles for disposition to trust versus distrust and structural assurance versus no-structural-assurance. Disposition to trust and structural assurance (trust concepts) tend to affect low or medium risk constructs, while disposition to distrust and no-structural-assurance (distrust concepts) affect high risk constructs, such as willingness to depend on the Web site. This suggests that the long-neglected distrust concepts need to be escorted to center stage in order to better address risk issues on the Internet.

13. References

[1] Agarwal, R. and Prasad, J., (1998), "A conceptual and operational definition of personal innovativeness in the domain of information technology," *Information Systems Research*, 9(2), pp. 204-215.

[2] Bigley, G. A. and Pearce, J. L., (1998), "Straining for shared meaning in organization science: Problems of trust and distrust," *Academy of Management Review*, 23(3), pp. 405-421.

[3] Carlson, D., K. Kacmar, L. Williams. 2000. Construction and initial validation of a multidimensional measure of work-

family conflict. *Journal of Vocational Behavior*, 56(2) 249-276.
[4] Chin, W.W., (1998), "The partial least squares approach to structural equation modeling," in *Modern Methods for Business Research*, ed. G. A. Marcoulides, Lawrence Erlbaum, Mahway, New Jersey, pp. 295-336.
[5] Dion, K. K., Berscheid, E. and Walster, E. (1972), What is beautiful is good. *Journal of Personality and Social Psychology*, 24, pp. 285-290.
[6] Fornell, C., and Larcker, D., (1981), "Evaluating structural equation models with unobservable variables and measurement error," *Journal of Marketing Research*, 18, pp. 39-50.
[7] Grazioli, S. and Jarvenpaa, S., (2000), "Perils of Internet fraud: An empirical investigation of deception and trust with experienced Internet consumers," *IEEE Transactions on Systems, Man, and Cybernetics*, 30, pp. 395-410.
[8] Grazioli, S. and Wang, A. (2001). "Looking without seeing: Understanding unsophisticated consumers' success and failure to detect Internet deception, *Proceedings of the 22nd International Conference on Information Systems*, pp. 193-203.
[9] Hoffman, Donna L., Novak, Thomas P. and Peralta, M., (1999), "Building consumer trust online," *Communications of the ACM*, 42(4), pp. 80-85.
[10] Holmes, J. G., (1991), "Trust and the appraisal process in close relationships," in *Advances in Personal Relationships,* eds. W. H. Jones and D. Perlman, 2, Jessica Kingsley, London, pp. 57-104.
[11] Jarvenpaa, S. L. and Tractinsky, N., (1999), "Consumer trust in an Internet store: A cross-cultural validation," *Journal of Computer-Mediated Communication*, 5(2), pp. 1-33.
[12] Johnson-George, C. and Swap, W. C., (1982), "Measurement of specific interpersonal trust: Construction and validation of a scale to assess trust in a specific other," *Journal of Personality and Social Psychology*, 43(6), pp. 1306-1317.
[13] Joreskog, K.G., and Wold, H., (1982), "The ML and PLS techniques for modeling latent variables: Historical and comparative aspects," in *Systems Under Indirect Observation: Causality, Structure, Prediction*, eds. K.G. Joreskog and H. Wold, North Holland, New York, pp. 263-270.
[14] Kaplan, A. (1964), *The Conduct of Inquiry*. Chandler, New York.
[15] Keen, P. G. W., (1997), "Are you ready for "trust" economy?" *ComputerWorld*, April 21, p. 80.
[16] Kramer, R. M. (1996), Divergent realities and convergent disappointments in the hierarchic relation: Trust and the intuitive auditor at work. In R. M. Kramer and T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research*: 216-245. Thousand Oaks, CA: Sage.
[17] Kramer, R. M. (1999), "Trust and Distrust in Organizations: Emerging Perspectives, Enduring Questions," *Annual Review of Psychology*, 50, pp. 569-598.
[18] Lewicki, R. J., McAllister, D. J. and Bies, R. J., (1998), "Trust and distrust: New relationships and realities," *Academy of Management Review*, 23(3), pp. 438-458.
[19] Luhmann, N., (1979), *Trust and Power*, John Wiley & Sons, New York.
[20] McKnight, D. H. and Chervany, N. L. (2001a). "Trust and Distrust Definitions: One Bite at a Time." In Falcone, R. Singh, M. and Tan, Y. H. (Eds.) *Trust in Cyber-Societies: Integrating the Human and Artificial Perspectives*. Berlin: Springer, pp. 27-54.
[21] McKnight, D. H. and Chervany, N. L. (2001b). "While Trust is Cool and Collected, Distrust is Fiery and Frenzied: A Model of Distrust Concepts," *Proceedings of the Americas Conference on Information Systems,* pp. 883-888.
[22] McKnight, D. H. and Chervany, N. L., (2001-2002). "What Trust Means in E-Commerce Customer Relationships: An Interdisciplinary Conceptual Typology." *International Journal of Electronic Commerce,* 6(2), pp. 35-59.
[23] McKnight, D. H., Cummings, L. L. and Chervany, N. L., (1998), "Initial trust formation in new organizational relationships, *Academy of Management Review*, 23(3), pp. 473-490.
[24] Nunnally, J. C., (1978), *Psychometric Theory*, second edition, McGraw-Hill, New York.
[25] OECD. (1998). *The Economic and Social Impact of Electronic Commerce,* Report available at: http://www.oecd.org/subject/e_commerce/summary.htm.
[26] Ratnasingham, P., (1998), "The importance of trust in electronic commerce," *Internet Research*, 8, pp. 313-321.
[27] Riker, W. H., (1971), "The nature of trust," in *Perspectives on Social Power*, ed. J. T. Tedeschi, Aldine Publishing Company, Chicago, pp. 63-81.
[28] Rotter, J. B., (1967), A new scale for the measurement of interpersonal trust. *Journal of Personality*, 35, 651-665.
[29] Rotter, J. B., (1971), "Generalized expectancies for interpersonal trust," *American Psychologist*, 26, pp. 443-452.
[30] Rousseau, D. M., Sitkin, S. B., Burt, R. S. and Camerer, C., (1998), "Not So Different After All: A Cross-Discipline View of Trust," *Academy of Management Review*, 23(3), pp. 393-404.
[31] Schmitt, R. B., (2001), "Lowering the bar: Lawyers flood web, but many ads fail to tell the whole truth," *Wall Street Journal*, February 15, pp. A1, A12.
[32] Shapiro, S. P., (1987), "The social control of impersonal trust," *American Journal of Sociology*, 93, pp. 623-658.
[33] Sitkin, Sim B. and Roth, Nancy L. "Explaining the Limited Effectiveness of Legalistic "Remedies" for Trust / Distrust." *Organization Science*. August, 1993, 4(3): 367-392.
[34] Tynan, D., (2000), "Privacy 2000: In web we trust?" *PC World*, June, 2000, pp. 103-116.
[35] Wang, H., Lee, M. K. O. and Wang, C., (1998), "Consumer privacy concerns about Internet marketing," *Communications of the ACM,* 41(3), pp. 63-70.
[36] Worchel, P. (1979) "Trust and Distrust." In: Austin, W. G., Worchel, S. (eds.): *The Social Psychology of Intergroup Relations*. Wadsworth, Belmont, CA, 174-187
[37] Wrightsman, L. S., (1991), "Interpersonal trust and attitudes toward human nature," in *Measures of Personality and Social Psychological Attitudes: Vol. 1: Measures of Social Psychological Attitudes*, eds. J. P. Robinson, P. R. Shaver, and L. S. Wrightsman, Academic Press, San Diego, CA, pp. 373-412.