

# An Overview of Trust Evaluation Models within E-Commerce Domain

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## INTRODUCTION

This chapter outlines various models which can be used to predict users' trust on online shopping, to enhance user's trust on online vendor, and to estimate the risk in an online transaction. The discussed models are selected to provide an overview of different aspects which can be used by the service providers and developers to identify the factors which impact user's online trust. The factors that have been identified can be further used as a guide to enhance user's trust levels. The rest of the article is organized as follows. In the next section, four models are discussed starting from Cheung and Lee (2000) conceptual model of trust in electronic environment to the model presented by Mahmood (2006a) that relies on mathematical equations to assist user to compare and evaluate online retailers. After discussing the presented models, the impact and effect of Web 2.0 technologies are discussed in future directions. The potential use of FOAF and RDF to create completely decentralized repository of users' trust evaluations which can be tapped into any application that uses Web 2.0 is also discussed in future directions. Concluding remarks and model comparison are presented in the conclusion.

## BACKGROUND

In electronic commerce the gap between payment and delivery of service or product is substantial as compared to physical transactions. These gaps impact the users' estimated trust on the service provider as well as on user's decision to commit or abort a transaction. Although the estimation of trust is based on personal, subjective properties, recently, several models have been proposed to translate trust into quantifiable terms. Such models target to assist the user's to establish the degree of trust so that the user can make an informed decision while committing a transaction in electronic environment. The right degree of trust has been defined as the risk that the user accepts in case of failure is estimated to be less than the expected subjective utility in case of success (Castelfranchi & Falcone, 2000).

## AN OVERVIEW OF TRUST MODELS

### Trust in Internet Shopping: Model and Measurement

Cheung and Lee (2000) showed that consumer trust in online shopping can be predicted by following two sets of experiences: factors which contribute to the sense of merchant's trustworthiness, and external factors which are linked to the external environment. The merchant's associated sense of trustworthiness is linked to its perceived integrity, competence, security and privacy controls in place. The external environment contributing factors include third party recognition (e.g., trusted party seals of approval) and legal framework. The model showed that the combined effect of both sets of factors on consumer's overall trust belief is mediated by the consumer's tendency to trust. The model also acknowledges the relationship between perceived risk and online consumer's trust response.

### A Model of Internet Trust from the Customer's Point of View

Ang, Dubelaar, and Lee (2001) proposed a model of trust which focuses on consumer's perception on online retailer's trustworthiness. The authors used the following equation to describe the process by which a consumer makes a decision to commit a transaction or not:

$$G_b = p_b L_b,$$

where

$G_b$  = Gain to the user from the transaction

$p_b$  = Subjective probability that the online merchant will be untrustworthy

$L_b$  = The loss the consumer will suffer in case of fraud

Ang et al., in their study, argued that in order to further capture the market share the online retailer will either have to increase the LHS or reduce the RHS. For example, the

Figure 1. A conceptual model of trust in Internet shopping (Cheung & Lee, 2000)

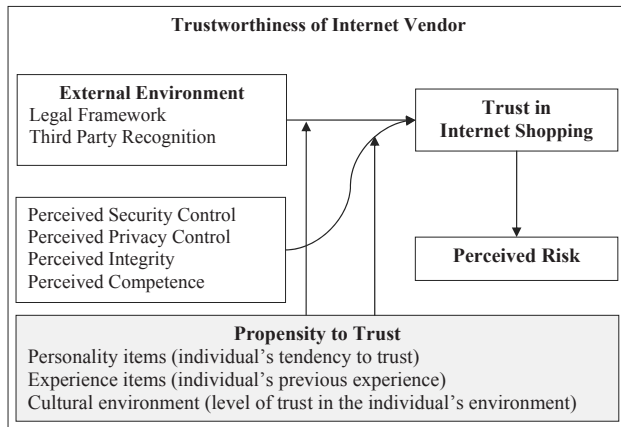


Table 1. Trust variables and corresponding levels

Levels	Trust Variables		
	Ability to deliver	Willingness to rectify	Personal privacy
	Known Brand	30-days guarantee	Has privacy policy statement
	Unknown Brand	No guarantee	No Privacy policy statement

LHS can be increased by giving more discounts to the customer. This will also reduce the computer value of RHS as the value of Lb will decrease. RHS can also be reduced by portraying a sense of trustworthiness. In the study following three aspects of trustworthiness in an online transaction were identified:

1. Ability of the merchant to deliver the product or service. This aspect could be highlighted with the help of previous customer's comments, access to detailed information regarding the product and availability of widely known respected brands
2. The willingness of the merchant to rectify the problem and honor its commitments for example, money-back guarantee, access to physical customer service centre or phone support system, and so forth
3. Clear statement from the merchant on the use of user's personal information that is, whether the information will be shared with third parties or not

The following table summarizes the identified trust variables and their corresponding levels used in the study

## A Model of Trust for E-Commerce System Design

Egger (2000) states that "Traditional HCI analysis and design methods can be employed effectively to address usability aspects of ecommerce interfaces, but they may fail to deliver when it comes to designing trust-inducing features susceptible to convert users into customers. Indeed, the discipline of HCI currently lacks substantive knowledge about how trust is formed, maintained and lost in B2C e-commerce" (pp. 101). The author identified six factors which were later grouped into three following categories:

1. **Purchase knowledge:** Knowledge acquired before the user interacts with the system, this could be the reputation of the system, referral or user's previous experience
2. **Interface properties:** Interface properties consist of two sub properties, namely familiarity and attitude. Familiarity refers to both experience in terms of both navigation and online technology while attitude is the first impression the system makes on the user with respect to information presentation
3. **Information content:** Information content consists of risk, transparency and cooperation components. The risk component outlines the financial risks and security measures for example, insurance, and so forth. Transparency component refers to openness of the merchant in terms of privacy policy and business policies, while the cooperation content of information focuses on assisting effect of merchant and user.

## Trust Evaluation in Electronic Environment

Mahmood (2006a) based his trust evaluation model on the notion that in business to consumer e-commerce trust consists of two non-separable aspects. First, it involves the trust in other party and second, trust in the transaction medium. The view of trust, adopted by Mahmood, is also consistent with the generic model of trust presented by Tan and Theon (2001). In the same study Mahmood (ibid), suggested that while committing an online transaction the user mainly considers functional and financial risk factors. The risk factors are evaluated on the basis of user's subjective initial trust assessment of functional and financial aspects of a transaction. Functional risk factors primarily relate to the business, that is, trust in party, rather than the actual

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