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# A B-TO-C TRUST MODEL FOR ON-LINE EXCHANGE

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## Abstract

*The purpose of this research is to develop a theoretical multi-dimensional model of trust for on-line exchanges in B-to-C e-commerce. The overall objective of this study is to investigate the determinants of the trust in on-line exchanges that lead to the success of transactions using content analysis, a relatively novel methodology in the MIS research area.*

**Keywords:** On-line exchanges, multi-dimensional trust model, business-to-consumer, content analysis

## Introduction

Trust in on-line exchanges is a complex social phenomenon that reflects technological, behavioral, social as well as organizational aspects of interactions among various human or non-human agents. Trust is a subjective degree of belief about a system or a specific agent within a particular context (Misztal 1996). As such, the issue of trust has been addressed from different perspectives, including multi-agent approaches (e.g., Brainov & Sandholm 1999; Castelfranchi 1998; Marsh 1994), social, institutional approaches (e.g., Canzaroli, et al. 1999; Coleman 1990; Gambetta 1990), behavioral, psychological approaches (e.g., Hollins 1998; Dirks & Ferin 2000), economic, game-theoretic approaches (e.g., Dasgupta 1990; Goodwin 1996; Snijders 1996), and managerial, organizational approaches (e.g., Jeffries & Reed 2000; Olson & Olson 2000; Resnick et al. 2000; Urban et al. 2000). Albeit the specific focus on certain issues of trust, previous research tends to be disjointed, case-specific, and/or loosely integrated. For example, studies on technological trust investigated the issues of privacy, security, public key infrastructure, and other technical aspects of trust (Bhimani 1996; Jamieson 1996; Rivest 1998; Benassi 1999), but scarcely looked at social, behavioral elements of trust. Likewise, the economic, game theoretic approach focuses specifically on dynamic nature of trust in terms of mathematical formulations. Researchers hardly agree even on the definition of trust (Swarup & Fabrega 1999).

In this research initiative, we address the issues of trust in Business-to-Consumer (B-C) on-line exchanges from a *multi-dimensional perspective*, in which we integrate diverse perspectives from social, managerial, behavioral, and technological disciplines into a *holistic model* of trust in on-line exchanges, utilizing a *contingent modeling approach*. The overall objective of this study is to investigate the determinants of the trust in on-line exchanges that lead to the success of transactions.

## A Theoretical Framework for B-to-C On-line Exchange

This research-in-progress is about the trust building mechanism in B-to-C on-line exchange environments. In order to study the phenomenon of trust, we develop a preliminary theoretical framework. One of the critical aspects of such a framework is of course the technology dimension, namely the *technological infrastructure* of B-to-C services and applications by an organization. Another critical aspect would include the *process stages* that form the essential stages that a consumer goes through to complete an on-line transaction.

The infrastructure layer captures and portrays the IT infrastructure of e-commerce in a layered architecture (Shaw 1999), namely 1) the e-commerce technology infrastructure (implemented in both hardware and software), 2) the e-commerce services, and the 3) the e-commerce business applications.

The process stages of our framework essentially capture the three generic stages of trust-formulation model in on-line exchanges (Urban et al. 1999). The *web site/information* stage is concerned with general trust in the Internet and in the information content of a specific web site. In this stage, a customer is concerned especially with such properties of web sites as accuracy, up-to-datedness, completeness, unbiasedness, competitiveness, and credibility. A customer trusts a web site when the information conveyed on the site presents such qualities. The *product* stage relates to specific trust regarding the product/service that a customer intends to purchase. In this stage, a customer is concerned about the properties of the particular product/service portrayed in the web site. The properties include durability, reliability, brand equity, transience, competitiveness, and availability. The third stage, *transaction* stage, is concerned about how the delivery will be fulfilled and how the after-sales services will be provided. This stage is involved with factors such as pricing and payment options, financial planning (complexity), sales-related service (refund policy, after-sales, etc.), promotions, and delivery fulfillment. These three stages form a linear process that a customer must go through to complete a transaction.

Besides the process stages and technological infrastructure, there are two more dimensions that affect overall transaction process and thus the level of trust. The first is the *institutional* dimension, which captures the concept of *institutional* trust. This dimension deals with (i) legal environments of on-line exchange which forms a trust environment independent of subjective level of customer trust, (ii) guarantors (i.e., banks, credit companies, financial institutions) which guarantees the completion of the transaction in financial terms, and (iii) advisors and trust brokers (credit bureau and industry specific advisor such as TruckTown.com) which accredits, authenticate, and approves a particular web-site. In this research, we are not concerned with legal environment as it is rather dependent on specific types of on-line exchanges. The second is the *consumer-behavioral* dimension that deals with customer involvement in the trust assessment process. This dimension includes such elements as risk-assessment, privacy, satisfaction, sophisticatedness, and subjective assessment of trustworthiness of the website based on personality and past transaction history.

### The Multi-Dimensional Trust Model

The combination of the two scales – the infrastructure layers and the process stages – along with two independent dimensions, institutional dimension and consumer-behavioral dimension, provide a powerful way of thinking of the trust building mechanism which involves the complex nature of on-line exchange. Figure 1 shows the dimensions as discussed above.

In this model, we aim to investigate the elements (or characteristics) that increase/decrease trust in on-line exchanges and provide and develop a comprehensive framework that allows us to pinpoint the issues of trust in on-line exchange and to evaluate the ‘trustworthiness’ of the exchanges.

Table 1 defines the multi-dimensions, related sub-dimensions, and their literature sources. These six dimensions

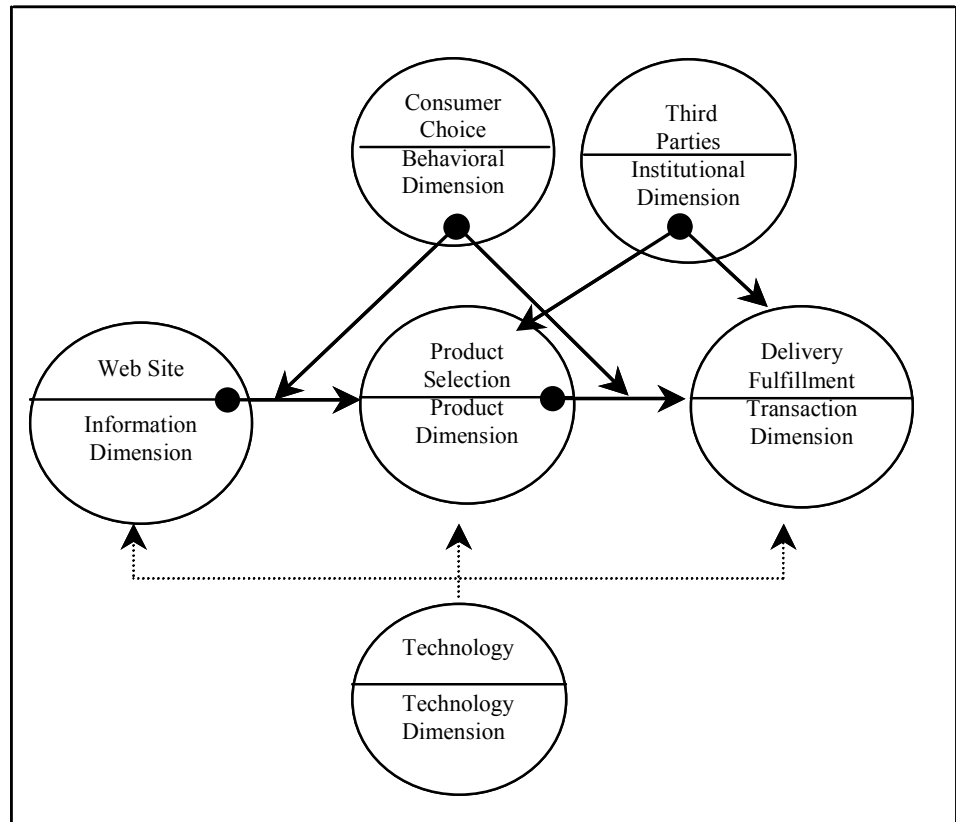


Figure 1. A Process-Oriented B-to-C On-line Exchange Model

reflect the actual on-line exchange process in which four different entities, i.e., seller, buyer, third party, and technology, interact to complete the on-line transactions. The figure 1 shows how on-line exchange can be built around the above dimensions.

**Table 1. Definitions of Trust Dimensions, Sub-Dimensions and Literature Sources**

| <b>Trust Dimensions</b>       | <b>Definitions</b>  | <b>Sub-Dimensions</b>  | <b>Literature Sources</b>  |
|-------------------------------|---|--|--|
| Information Content Dimension | Attributes that determine the trustworthiness of web-contents                           | Accuracy, up-to-datedness, completeness, non-bias, credibility, entertainment, usefulness, etc.  | Ducoff (1996), Janal (1997), Smith (1997), Susan (1997), Jana Edwards (1998), Judith Edwards (1998), Richmond (1999)   |
| Product Dimension             | Attributes of a product that promote or deter on-line-exchange                          | Durability, reliability, brand equity, transience, quality, variety, customization, competitiveness and availability, etc.   | Scott & Derlega (1983), Hill (1990), Chow & Holden (1997), Alba et al. (1997), Peterson et al. (1997), Elofson (1998), Fung & Lee (1999)   |
| Transaction Dimension         | Attributes that make on-line transactions trustworthy                                   | Transparency, pricing and payment options, financial planning, sales-related service (refund policy, after-sales, etc.), promotions, delivery fulfillment, etc.  | Eagly & Chaiken (1993), Edwards (1996), Henthorn (1997), Elledge (1997), Bakos (1997), Cassar, Swerdlow, Kim, & Johnson (2000), Chwelos & Brydon (2000), Wang, Hadvgi & Whinston (2000)  |
| Technology Dimension          | Information systems and software that enable the on-line exchange                       | Quality of media transmission, interface design and contents, security, reversibility, digital certificate, public-key cryptography, authenticity, integrity, confidentiality, non-repudiation, attributes of the system (benevolence, competency, predictability), etc. | Bhimani (1996), Jamieson (1996), Garfinkel & Spafford (1997), Henthorn (1997), Rivest (1998), Benassi (1999), Josang (1999), Ranum (1998), McClure & Scambray (1999), Oliveira et al. (1999), Markoff (1999), Rose, Khoo & Straub (2000) |
| Institutional Dimension       | The third parties and other institutional elements that shape institutional environment | Reputation, accreditation, authentication, approvals (e.g., advisors and guarantors), customer communities, legal requirements and authorities, etc.   | Lewicki & Bunker (1996), Benassi (1999), Ba et al. (1999), Salam, Rao, and Pegels (2000), Khazanchi & Sutton (2001)  |
| Consumer-Behavioral Dimension | Attributes that affects the trusting behaviors of consumers                             | Experience, familiarity, risk-assessment, privacy, satisfaction, and subjective assessment of trustworthiness, etc.  | Deutsch (1977), Baron & Byrne (1991), Morgan & Hunt (1994), Dion et al. (1995), Doney & Cannon (1997), Selnes (1998), Bellman et al. (1999), Urban et al. (1999), Bhatnagar, Misra, & Rao (2000), Kim, Cho, & Rao (2000)                 |

These dimensions are not completely orthogonal as they interact and are interdependent in building trust. Trust building has the following characteristics:

- It is a cumulative process as the level of trust in prior stages affects the trust level in later stages. For example, web site trust can be enhanced if it also provides privacy to the customers, a property of consumer-behavioral dimension (Urban et a. 1999). Web site trust also affects product information as the band equity of the company represented by the web site usually affects the product or service that the customer wants to obtain. A customer would have limited web trust when it conveys web site and product information at a very high trustworthiness level, but fails to provide delivery guarantees and after-sales services.
- It also represents an interactive process. For example, technology dimension confines the capacity of information displayed (i.e., what information to be displayed in what qualities); but, the information to be displayed also affects the types and levels of technology to be utilized to build the contents of the web-site. Consumer-behavioral dimension also interacts with other dimensions as, for example, the degree of sophisticatedness of customers affects the product contents displayed. But, on the other hand, product availability limits consumer choice. When a particular product is available only by a single seller, lesser level of trust in terms of consumer-behavioral dimension may be acceptable.

## **Research Design and Conclusion**

Based on the multi-dimensional model that has been developed, this research utilizes quantitative content analysis for analyzing publicly available secondary data, which will be collected from computerized databases containing articles, news stories, reports, and abstracts of national and regional newspapers, business and trade periodicals and magazines related on trust of B-to-C on-line exchanges.

This research aims to study the construction of multi-dimensional trust model in an on-line exchange environment between business to consumer, by building on literature from multi-disciplines. A matter to be considered in future research would be the optimal trust-building mechanism. This study is expected to enhance our understanding about trust-building mechanisms and the implementation of optimal level of trust in the context of on-line exchange.

Research on trust in on-line exchanges has thus far been limited and disjointed. The current research proposes a new research paradigm in which multi-dimensions of trust-building in on-line exchange are simultaneously investigated in a holistic manner. As such, we expect to provide new insights into the dynamics of trust in on-line exchange. From a practical perspective, the current research initiative will allow design of a multi-dimensional trust-building mechanism, utilizing the concept of optimal trust and rigorous computational models. The trust-building mechanism can in turn be applied to actual on-line exchange situations. In designing and implementing on-line exchange markets, decision makers can utilize the concepts of optimal trust building mechanisms for successful on-line exchanges in B-to-C environments.

## **References**

References will be provided on request.