



# Technology Trust: The Next Value Creator in B2B Electronic Commerce

Pauline Ratnasingam

University of Vermont, Vermont, Tel: (802) 656-4043, Fax: (802) 656-8279, ratnasingam@bsad.uvm.edu

Paul A. Pavlou

University of Southern California, Tel: (213) 740-6817, Fax: (213) 740-73113, pavlou@marshall.usc.edu

## ABSTRACT

Whereas the traditional notion of trust primarily focuses on trust in a trading partner, trust in e-business also incorporates the notion of trust in the infrastructure and the underlying control mechanisms (technology trust), which deals with transaction integrity, authentication, confidentiality, and non-repudiation. This research examines the new character of trust in e-business, arguing that value creation in B2B e-commerce is heavily dependent on technology trust. Given the absence of adequate metrics to capture the novel character of trust in B2B e-commerce, this research develops and validates measures for technology trust, which is theorized to be a fundamental determinant of business value, captured both as perceived benefits and also as B2B e-commerce performance. This paper contributes to the emerging body of knowledge in the area of value creation and trust in e-commerce by attempting to bridge the gap between technological solutions (technology trust), and business value (perceived benefits and organizational performance). The proposed theoretical model is tested in organizations actively involved in B2B e-commerce through a mail survey questionnaire. The results drawn from a sample of 288 firms strongly support the proposed hypotheses, emphasizing the role of technology trust for the success of B2B e-commerce, even controlling for the effects of trading partner trust and perceived risks. The paper concludes by discussing the implications of this research for the value creation potential of B2B e-commerce.

## INTRODUCTION

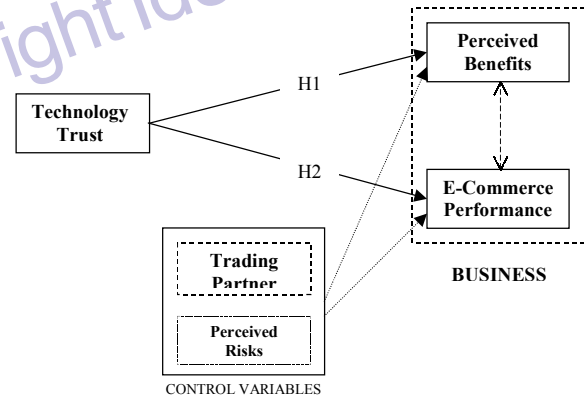
Internet-based information technology has revolutionized the way information is shared among organizations, resulting in radical transformations of organizational practices for procurement, deliveries, and financial transactions. The Internet era has also witnessed the parallel inception of a major directional change in interorganizational relationships, which encompasses relational contracting, working partnerships, and trust-based relationships (Dwyer, Schurr and Oh, 1987). The prominence of trust in e-business has been widely touted by practitioners and academicians alike (Heil, Bennis and Stephens, 2000; Keen, 2000). Consequently, Internet-based B2B e-commerce applications potentially result in profound changes in the patterns of interorganizational relationships between trading partners, which rely on close coordination to create value. Therefore, the role of interorganizational trust has become of fundamental importance for value creation in B2B e-commerce.

The literature on interorganizational relationships has shown that trust is a key factor for relationship success. Trust is a key element of social capital (Mayer et al. 1995), and it has been related to desirable outcomes such as supplier performance (Zaheer et al. 1998), satisfaction (Geyskens et al. 1998), competitive advantage (Barney and Hansen, 1994), and price premiums (Ba and Pavlou, 2001). Whereas the traditional notion of trust focused on trading partner relationships, trust in e-business also incorporates the notion of technology trust, which is defined as 'the subjective probability by which organizations believe that the underlying technology infrastructure and control mechanisms are capable of facilitating transactions according to their confident expectations'. Drawing upon the rich trust literature and recent conceptualizations for the role of trust in e-commerce (e.g. Lee and Turban 2001, Tan and Thoen 1998), trust is viewed both from social (trading partner trust), and also from a technological perspective (technology trust). This view is consistent with other researchers who proposed institution-based trust (McKnight et al., 1998) and structural assurances (Zucker, 1986). In this study we examine the new character of trust, aiming to provide theoretical and empirical insights on the following questions: (1) What is the nature and role of interorganizational trust in B2B e-commerce? (2) How can technology trust create value in B2B e-commerce?

## THEORY DEVELOPMENT

This paper focuses on the new dimension of trust (technology trust) and its impact on business value in B2B e-commerce. The conceptual framework specifying the proposed research hypotheses is shown in Figure 1.

Figure 1: Conceptual framework and research hypotheses



### The Novel Character of Trust in B2B E-Commerce

Following extant definitions of trust (e.g. Doney and Cannon, 1997; Gambetta, 1988) applied to an e-commerce context, interorganizational trust in B2B e-commerce is defined as 'the subjective probability with which organizational members collectively assess that a particular transaction will occur according to their confident expectations'. The focus on a particular transaction suggest that trust in B2B e-commerce covers several targets that need to be trusted for a transaction to occur according to an organization's expectations, namely the trading partner and also the underlying technological infrastructure. Therefore, the novel character of trust focuses both on (a) technology trust and also on (b) trading partner trust.

## TECHNOLOGY TRUST

Technology trust is based on technical safeguards, protective measures, and control mechanisms that aim to provide reliable transactions from timely, accurate, and complete data transmission (Cassell and Bickmore, 2000). Technology trust also deals with digital signatures, encryption mechanisms (public key infrastructure), authorization mechanisms (User IDs and passwords), and best business practices that enforce regular audit, top management commitment, standards, and contingency procedures (Bhimani, 1996; Jamieson, 1996; Parker, 1995; Marcella et al., 1998). The proposed construct of technology trust in B2B e-commerce is comparable to conceptualizations from other researchers in business-to-consumer e-commerce. For example, Tan and Thoen (1998) used the term 'control trust' to refer to embedded protocols, policies, procedures in e-commerce that help to reduce the risk of opportunistic behaviors among consumers and Web retailers. Similarly, Lee and Turban (2001) measured trustworthiness of Internet shopping based on consumer evaluations of technical competence and Internet performance levels (such as speed, reliability and availability).

Table 1 provides a description of seven key dimensions of technology trust. These include transaction confidentiality, integrity, authentication, non-repudiation, access controls, availability, and best business practices (Jamieson, 1996; Marcella et al., 1998; Parker, 1995). First, confidentiality mechanisms aim to protect e-commerce transactions and message content against unauthorized reading, copying, or disclosure using encryption mechanisms. Second, integrity mechanisms provide transaction accuracy and assurance that the e-commerce transactions have not been altered or deleted. Third, authentication mechanisms provide transaction quality of being authoritative, valid, true, genuine, worthy of acceptance or belief by reason of conformity to the fact that reality is present. Fourth, non-repudiation mechanisms protect the originator of e-commerce transactions and uses acknowledgement procedures applying digital signatures. Fifth, availability mechanisms protect transactions against weaknesses in the transmission media and protect the sender against internal fraud or manipulation by using authorization mechanisms such as user authentication. Availability mechanisms focus on the 'human' entity and provide assurance to authorized trading partners that they have access to the system as and when required. Sixth, access control mechanisms provide authorization mechanisms thereby assuring that transactions are sent and received without interruption. Access control mechanisms, on the other hand, focus on technology by examining the quality and security of network access controls. Finally, best business practices focus on policies, procedures, standards, and top management commitment that enforce regular audit, and ensure the smooth functioning of interorganizational transactions.

## BUSINESS VALUE

Business value has two major components: (a) perceived benefits and (b) actual performance.

## Perceived Benefits

Perceived benefits refer to business value received by organizations having adopted e-commerce. We identify three types of perceived benefits - perceived economic, perceived relational, and perceived strategic benefits (Doney and Cannon, 1997; Fearson et al., 1998; Ganesan, 1994; Morgan and Hunt, 1994; Nath et al., 1998; Riggins and Rhee, 1998; Senn, 2000; Smith and Barclay, 1997). First, perceived economic benefits are derived from the automated processes that contribute to direct savings in costs and time (efficiency). Second, perceived relational benefits refer to positive trading partner trust relationships in the form of open communications, information sharing, cooperation, and commitment. Finally, perceived strategic benefits refer to closer ties between trading partners, improved reputation, business continuity, organizational performance, and the potential for competitive advantage.

## Technology Trust and Perceived Benefits

Technology trust draws from e-commerce technologies, third party services, and organizational actors (auditors, security analysts, and top management personnel) who are committed to enforcing best business practices. The proposed link between technology trust and perceived benefits is popular among scholars who have studied trust in organizations using e-commerce technologies. The relationship also draws from the literature on security services in e-commerce (Chellapa and Pavlou, 2001; Jamieson, 1996; Lee and Turban, 2001). Most e-commerce technologies are embedded in automated security protocols that enable firms to ensure partner authentication. Implementing encryption mechanisms protects online transactions from being intercepted, manipulated, and deleted, thus contributing to transaction integrity (Marcella et al., 1998; Riggins and Rhee, 1998; Senn, 2000). Transaction integrity leads to economic benefits from savings in time and costs (Nath et al. 1998). For example, Mukhopadhyay, Kekre and Kalathur (1995), conducted a study of nine Chrysler assembly centers and found that EDI improved the quality of information sharing and reduced inventory, transportation, and administrative costs.

Authorized login procedures, e-mail acknowledgments, and confirmations provide confidentiality, authentication, and non-repudiation security services that contribute to business value. Such functional acknowledgments in the form of email feedback, or other e-commerce protocols provide reliable and timely feedback mechanisms that increase trading partner satisfaction and contribute to relationship-related benefits. For example, Ba and Pavlou (2001) suggest that trust and other benefits are generated if appropriate feedback mechanisms are implemented. Organizations who demonstrate skills in producing high-quality goods, products, and services thus achieve high levels of trustworthiness. B2B e-commerce applications thus enable product and service differentiation, tighter links with trading partners, and overall business value.

*H1: Technology trust is positively associated with perceived benefits in B2B e-commerce.*

Table 1: Description of technology trust dimensions

Source	Confidentiality	Integrity	Authentication	Non repudiation	Access Controls	Availability	Best Business Practices
Bhimani 1996	Privacy	Accuracy	Genuine	Acknowledgement	Unauthorized access	Allows Authorized Access	Auditing
Jamieson 1996	Protection from unauthorized Reading, copying	Completeness	Originality	Non-denial	Protects Transmission Media	Protection from hackers	Standards Written policies Procedures
Marcella et al, 1998	Protection against Disclosure	Reliability	Authoritative Valid	Acknowledgement	Protects Manipulation	Authorized access	Risk analysis Contingency Procedures
Parker 1995	Privacy	Not being Altered	Being true		Authorized access	Right to use	High quality standards

### E-Commerce Performance

In this study, e-commerce performance is evaluated in two ways. First, an economic view deals with the transaction volume, dollar value, sales, and profit that contribute to tangible business value. Second, a relational view examines the extent of actual organizational satisfaction and commitment in business relationships that results in intangible business value.

### Technology Trust and E-Commerce Performance

Technology trust contributes to increased e-commerce performance in several ways. Efficiency benefits from technology trust concentrate on reducing transaction costs, derived from speed and automation of e-commerce technologies. In addition, these applications provide real-time tracking information technologies where technology trust allows firms to log into the supplier's extranet web site, track shipment details, and estimate arrival dates of the goods they ordered (Riggins and Rhee, 1999). Subsequently, trustworthy firms are able to satisfy their end customers' needs by delivering the goods on time, thus contributing to increased customer satisfaction and relationship-related business value. Increased satisfaction from technology trust in turn leads to perceived strategic benefits and actual economic benefits, increasing the volume, diversity, and dollar value of e-commerce transactions (Doney and Cannon, 1997; Iacovou et al., 1995; Smith and Barclay, 1997). Tallon et al. (2000) argue that 'management practices' have an important role in the process of IT strategies intent towards a firm's business value, suggesting that best business practices can increase technology trust and ultimately influence B2B e-commerce performance.

*H2: Technology trust is positively related to increased performance in B2B e-commerce.*

## RESEARCH METHODOLOGY

The proposed model was empirically tested on a sample of 2500 organizations provided by www.greatlists.com using a survey methodology. These organizations were chosen on the basis that they have been actively using e-commerce technologies. The associations these firms had with their trading partners include exchange relationships from a cross-section of industries in retail-wholesale trading, manufacturing-distribution, computer-communications, financial services, education, and health. These organizations come from both small-medium enterprises (50–500 employees) and large organizations (more than 500 employees) and their organizational reach is regional, national and global. The questionnaire was targeted at top-level management (including IT managers, e-commerce co-ordinators and senior operations managers) who have wide experience and are best positioned to assess their organization's e-commerce activities, performance, and collective trust perceptions. The participants have been employed for more than ten years and have wide experience in their B2B e-commerce operations. They were asked to respond based on their perceptions of their relationships with a self-selected trading partner.

### Control Variables

*Trading Partner Trust.* The traditional view of trust in the trading partner is defined as 'the subjective probability with which organizations assess that another organization will perform potential transactions according to their confident expectations'. This study identifies three types of trading partner trust. First, competence trust emphasizes reliance on trading partners' skills, technical knowledge, and ability to fulfil B2B e-commerce contracts. Second, predictability trust emphasizes belief in a trading partner's consistent behaviour that provides sufficient knowledge for other trading partners to make predictions on the other organization's reliability, honesty, and predictability (Lewicki and Bunker, 1996). Finally, goodwill trust emphasizes reliance on trading partners' care, concern, and benevolence that al-

lows a trading partner to make commitments and further invest in mutual relationships (Mayer, Davis and Schoorman, 1995).

*Perceived Risks.* Perceived risks refer to potential weaknesses, barriers and losses faced by organizations that have adopted e-commerce. Risks can either occur internally or externally, by human or non-human (e.g. technology-related risks), accidental or intentional and could be caused by disclosure, destruction, modification of e-commerce transactions, and by denial of service attacks from hackers (Das and Teng, 1996; Jamieson, 1996; Marcella et al., 1998). Ring and Van de Ven (1994) also classified risks as performance risks derived from the technology versus relational risks. This study identifies three types of perceived risks. First, perceived technology performance-related risks refer to misuse of e-commerce technologies, incompatible infrastructure, and uncertainties of e-commerce operations. Second, perceived relational risks refer to trading partner's lack of knowledge, exercising opportunistic behaviors, conflicting attitudes, and reluctance to change. Third, perceived general risks refer to poor business practices, environmental risks, and lack of standards and policies. Therefore this paper controls for the effect of trading partner trust and perceived risks on perceived benefits and e-commerce performance.

### Measure Development

Other than the technology trust construct, all measures were adapted from the literature, even if they had to be modified to reflect the study's specific context. These measures were adapted following standard psychometric scale development procedures (Bagozzi and Phillips 1982). In cases in which the construct measure required significant deviations, the items were adapted following the conceptual definition. All items were measured on five-point Likert scales anchored at 'strongly disagree' (1), to 'strongly agree' (5) and 'neither agree nor disagree' (3) neutral point.

### Technology Trust (TTRUST)

A three-stage procedure was employed following the recommendations of Straub (1989) for developing and validating new measurement instruments. First, we specified the domain of technology trust by reviewing the extant literature. Following this review and based on the proposed conceptual definitions, a preliminary version of the instrument was generated, which was assessed for content validity. In terms of the dimensionality of technology trust, the literature review revealed that technology trust has been viewed as a unidimensional construct. To test the measurement adequacy of technology trust and the other four constructs, the questionnaire was used as a semi-structured questionnaire in a case-study research (Ratnasingam and Klein, 2001) that refined the instrument. Second, we conducted several formal pretests, which assessed the measurement properties of the proposed scales and refined several items. Finally, we proceeded with a confirmatory study that validated the measures for their reliability and convergent and discriminant validity.

Technology trust was measured using twenty items to include different trust and security-based mechanisms drawing upon the descriptions of Jamieson (1996), Marcella et al. (1998), and Parker (1995). Given the newness of this measure, seven dimensions of technology trust were captured following Bhimani (1996) and Jamieson. *Confidentiality* examined privacy and security mechanisms, *integrity* examined the accuracy of business transactions, *authentication* examined trading partner's characteristics that uniquely identify transactions, *non-repudiation* assessed transaction feedback mechanisms, *availability* examined system availability and information for authorized partners, *access controls* examined network controls to prevent hackers from intruding into the system and provides access to authorized trading partners, and *best business practices* examined institutional standards, policies, and top management commitment.

Perceived benefits (BENEF) were measured using seventeen items drawing from the descriptions of Fearson et al. (1998), Nath et al. (1998), and Senn (2000) using three different dimensions - economic

benefits, relationship-related benefits, and strategic benefits. E-commerce Performance (PERF) was measured using ten items following Doney and Cannon (1997), Iacovou et al. (1995), Morgan and Hunt (1994), and Smith and Barclay (1997) and captured two performance dimensions - monetary value and relational performance. Trading Partner Trust (PTRUST) was measured with nineteen items following the descriptions of Doney and Cannon, (1997), Ring and Van de Ven, (1994), Smith and Barclay, (1997), and Mayer et al (1995), and captured competence, predictability, and goodwill trust. Finally, Perceived Risk (RISK) was measured using twenty-two items and covered three different risk dimensions – technology performance-related risks, relational risks, and general risks.

### Pretest and Survey Administration

The survey instrument went through two phases of extensive pretesting before administration. First, the instrument was reviewed by faculty for comprehensiveness and clearness. Second, IT managers, e-commerce coordinators, and senior operations managers were asked to complete the questionnaire and provide feedback. Based on these pretests, the survey instrument was revised for coherence, and it was mailed to the selected 2,500 organizations. The invitees were informed that the goal of the survey was to understand the concept of trust in electronic marketplaces, and they were assured that the results would be reported in aggregate to guarantee their anonymity. Given the study's need to assess collective organizational perceptions, the key respondents were asked to evaluate the perceptions of the entire group of people responsible for their firm's e-commerce efforts. To motivate organizations to respond, the respondents were offered a report that summarized the results of the survey and compared their company against other firms. A second wave of mailing was sent to the non-responding companies three week later. Finally, 40 responses were received through telephone interviews conducted by one of the authors.

### Response Rate and Non-response Bias

Out of the 2,500 participants, 120 letters were undeliverable, and 288 responses were obtained resulting in an effective response rate of 12.1%. Non-response bias was assessed by a comparison of sample statistics to known values for the population between (a) respondents and non-respondents and (b) early and late respondents. Early respondents were identified by selecting those that responded during the first week (53%), against those responding later (47%). These tests were based on sample characteristics – (a) organization size, (b) annual revenue, and (c) number of employees, and the actual scale responses. Both tests showed no significant differences for these three characteristics at the  $p < 0.1$  level; therefore, the risk of non-response bias to the internal validity of this study's results is restricted.

### Measure Validation

The questionnaire items were initially submitted to an exploratory factor analysis and item-to-total examination. All items tapping the same construct had high correlations, whereas items tapping different constructs had significantly lower correlations. Measure validation was initially examined for reliability analysis by computing Cronbach's alpha coefficient for each construct. All measures have extremely high levels of reliability, all above a 0.88 level. Next, a formal three-step sequence for assessing convergent and discriminant validity was employed. First, factor analysis was conducted (with rotations) to detect high loadings on hypothesized factors and low cross-loadings. Second, given the large number of questionnaire items, the factors were set to the expected number of constructs, and the survey items were reduced to their principal constructs. Third, principal components analysis was used as the extraction method for factor analysis with Varimax rotation. All items load significantly on their hypothesized factors, and using the 0.40 rule-of-thumb all cross-loadings are low, explaining 51% of the total variability. In sum, all items load on their hypothesized factors, which provides evidence of convergent

and discriminant validity (Bagozzi and Yi 1982). Hence, the responses to the multi-item measures generated an overall factor for each of the five constructs based on their weighted average.

## RESULTS

Test for the two hypotheses was provided by evaluating these multiple regression equations:

$$\text{BENEF} = a_0 + b_1 \text{TTRUST} + b_2 \text{PTRUST} + b_3 \text{RISK}$$

$$\text{PERF} = a_1 + b_4 \text{TTRUST} + b_5 \text{PTRUST} + b_6 \text{RISK}$$

### Perceived Benefits

Table 2 shows the results of the regression analysis with perceived benefits as the dependent variable ( $R^2=.36$ ,  $F=75.2$ ,  $p < .001$ ). The impact of technology trust on perceived benefits is significant ( $b_1=.52$ ,  $t=10.06$ ,  $p < .001$ ), validating H1. The control effect of trading partner trust was significant ( $b_2=.15$ ,  $t=2.99$ ,  $p < .01$ ), validating previous research, while the effect of risk was positive, yet non-significant. Multicollinearity was not a serious concern since all relevant checks returned a tolerance value above 0.70.

Table 2: Regression analysis results

Variables	Construct	Perceived Benefits	t-value	Performance	t-value
Independent	Technology Trust	0.517	10.06***	0.426	7.43***
Control	Partner Trust	0.150	2.99**	0.213	3.78***
	Perceived Risks	0.06	0.73	0.07	0.83
	R-squared (adjusted)	0.355		0.526	
	F ratio	$F_{3,284} = 75.2^{***}$		$F_{4,283} = 105.2^{***}$	

Note: \*  $p < 0.05$ , \*\*  $p < 0.01$ , and \*\*\*  $p < 0.001$

### E-commerce Performance

As shown in Table 2, technology trust ( $b_4=.43$ ,  $t=7.43$ ,  $p < .001$ ) is positively associated with e-commerce performance, rendering strong support for H2. Trading partner trust was a significant control variable on e-commerce performance ( $b_5=.21$ ,  $t=3.78$ ,  $p < .001$ ), supporting the extant literature. The control effect of perceived risk was substantial and partially significant ( $b_6=1.89$ ,  $p < .1$ ). Multicollinearity was not a serious concern since all relevant checks returned a tolerance value above .70. Finally, the variance explained by this regression was particularly high ( $R^2=.53$ ,  $F=105.2$ ,  $p < .001$ ), suggesting that the proposed independent factors largely influence B2B e-commerce performance.

## DISCUSSION

By rendering empirical support to the proposed model and hypotheses, this study provides several new insights on the new character of trust in B2B e-commerce. First, an important finding is the important role of the new target of trust, which is the underlying technological infrastructure and associated control mechanisms. Even if trust has been proven a source of favorable outcomes in traditional exchange relationships, this study shows that in the B2B e-commerce environment, technology trust is another source of business value. Second, a key finding of this research is the relative strength of the technology and trading partner trust on value potential and realization. Technology trust is shown to have a much stronger effect compared to trading partner trust, both on perceived benefits and also on e-commerce performance. Finally, this paper contributes to the trust literature by proposing a new scale with excellent measurement properties to capture the construct of technology trust, which is an important value-creator in B2B e-commerce.

### Research Implications

This research attempts to make a theoretical contribution to the area of trust in B2B e-commerce by integrating the trust literature with theories from security, privacy, and control to propose a new theoretical construct that describes the importance of trust in the

underlying technology infrastructure. The proposed new construct is hypothesized and shown to be a significant value creator in e-business. This study also makes an empirical contribution by proposing how trust can be strategically used beyond the traditional dyadic level to contribute to perceived benefits, organizational performance, and B2B e-commerce success. Therefore, the role of establishing trust in the underlying technology becomes a critical factor for understanding the value realization potential of today's B2B e-commerce.

Given the importance of technology trust in B2B e-commerce, future research could attempt to provide a comprehensive set of antecedents and consequences of technology trust (Doney and Cannon 1997). It is important to note that technology trust, similar to party trust, is a perceptual belief that has its basis on objective realities about the actual credibility of the underlying infrastructure and control mechanisms. Nevertheless, it is important to note that technology trust does not have its basis in interpersonal relationships, and the object of trust is an object. Therefore, trust solely focuses on the credibility dimension and cannot be extended to the benevolence (goodwill) dimension of trust that is possible in interorganizational relationships. Finally, we posit a positive relationship between technology and party trust since trust beliefs in a trading partner trust would give confidence that all technology-related issues will be adequately taken care of.

### Managerial Implications

Many managers have recognized the importance of trust in developing value for a sustainable competitive advantage in exchange relationships. This research proposes a new trust dimension that may help managers develop trustworthy exchange relationships. By properly utilizing technology trust, this study paves the way for managers to understand how the adoption of B2B e-commerce could positively affect their exchange relationships and their own trustworthiness for business value. This study provides a guide for early adopters of e-commerce technologies by improving their levels of awareness for the role and impact of these technologies on building collaborative exchange relationships. Executives must be aware of the importance of technology trust in the competitive global environment of B2B e-commerce. Although governance mechanisms may provide assurances that help mitigate perceived risks of e-commerce, our findings provide evidence that both technology trust and also trading partner trust are fundamental to successful B2B e-commerce. Therefore, this study informs managers of how the new character of trust can be strategically used to realize business value beyond transaction efficiencies and cost reduction.

### Limitations and Suggestions for Future Research

This research conceptually views trust as a collectively held belief by a group of organizational members. However, our empirical study was limited to a single respondent that was asked to evaluate the trust perceptions of the entire group. Future research should attempt to collect responses from several respondents within the organization to assess communal trust. Second, this research examines only a subset of the many possible relationships between technology trust and its antecedents and consequences. Since technology trust has been shown to be associated with favorable outcomes, future research could propose and examine its antecedents and consequences. Third, it is important to note that technological advances are likely to change the nature of technology trust; hence, it is important to note that the proposed operationalization describes the current state of practice. Finally, the results and implications of this research are constrained by the research method employed, and the proposed causal relationships are limited by the cross-sectional nature of the methodological design. Therefore, longitudinal research and alternative statistical methods could complement these empirical findings.

## CONCLUSION

In this study we proposed a new trust dimension that may help managers develop trustworthy exchange relationships. By properly

utilizing technology trust, this study paves the way for managers to understand how the adoption of B2B e-commerce could positively affect their exchange relationships and their own trustworthiness for business value. By proposing how technology trust can create business value, this research opens new avenues for research on promoting B2B e-commerce success. The results of this study clearly provided evidence that the role of technology trust in B2B e-commerce is important, as it promotes the development of trading partner trust. Technology trust and trading partner trust can in turn create business value and a win-win situation for building successful long-term collaborative relationships. This paper will hopefully entice researchers and practitioners to further examine how the new character of trust can be employed in e-business to realize value in today's e-business.

## REFERENCES

1. Ba, S., Pavlou, P.A (2001) 'Evidence of the Effect of Trust Building Technology in Electronic Markets, Price Premiums, and Buyer Behavior', *MIS Quarterly* – forthcoming.
2. Bagozzi, R. P. and Philips L. W. (1982) 'Representing and Testing Organizational Theories: A Holistic Construal', *Administrative Science Quarterly* 27, 3: pp. 459-489.
3. Barney, J.B., and Hansen, M.H (1994) 'Trustworthiness as a source of competitive advantage', *Strategic Management Journal* 15: pp. 175-216
4. Bhimani, A. (1996) 'Securing the Commercial Internet', *Communications of the ACM* 39: pp. 29-35.
5. Cassell, J. and T. Bickmore (2000), "External Manifestations of Trustworthiness of the Interface," *Communications of the ACM*, 43, 12, 50-59.
6. Chellappa, R.K., Pavlou, P.A. (2001) 'Perceived Information Security, Financial Liability and Consumer Trust in E-Commerce Transactions', *Journal of Logistics Information Management*, (forthcoming)
7. Das, T.K., and Bing-Sheng Teng (1996) 'Risk Types and Inter-firm Alliance Structures', *Journal of Management Studies* 33: pp 827-843
8. Doney, P.M., and Cannon, J.P. (1997) 'An Examination of the Nature of Trust in Buyer-Seller Relationships', *Journal of Marketing* April: pp 35-51.
9. Dwyer, R.F., Schurr, P. H., and Oh, S. (1987) 'Developing Buyer-Seller Relationships', *Journal of Marketing* 51: pp 11-27.
10. Fearson, C., and Phillip, G. (1998) 'Self-assessment as a means of measuring strategic and operational benefits from EDI: the development of a conceptual framework', *European Journal of Information Systems* 7: pp 5-16.
11. Gambetta, D. (1988) *Trust: Making and Breaking Cooperative Relations*, Basil Blackwell, New York.
12. Ganesan, S. (1994) 'Determinants of Long-Term Orientation in Buyer-Seller Relationships', *Journal of Marketing* 58: pp 1-19.
13. Geyskens, I., Steenkamp, J.B., and Kumar, N. (1998) 'Generalizations about trust in marketing channel relationships using meta-analysis', *International Journal in Marketing* 15: pp. 223-248
14. Hart, P., Saunders, C (1998) 'Emerging Electronic Partnerships: Antecedents and Dimensions of EDI Use from Suppliers Perspective', *Journal of Management Information Systems* 14: pp. 87-111.
15. Heil, G., Bennis, W., and Stephens, D (2000) *Douglas McGregor, Revisited: Managing the Human Side of the Enterprise*, John Wiley and Sons.
16. Iacovou, C.L., Benbasat, I., and Dexter, A.S (1995) Electronic data interchange and small organizations: adoption and impact of technology, *MIS Quarterly*, 19, 4, 465-485.
17. Jamieson, R. (1996) 'Auditing and Electronic Commerce', *EDI Forum*, Perth, Western Australia.
18. Keen, P.G.W (2000) 'Ensuring E-trust', *Computerworld*, March 13.
19. Lee, M.K.O., and Turban, E (2001) 'A Trust Model for Consumer Internet Shopping', *International Journal of Electronic Commerce* 6, 1: pp. 75-92

20. Lewicki, R.J. and Bunker, B.B. (1996) 'Developing and Maintaining Trust in Work Relationships,' in Kramer, R.M. and Tyler, T.R. (eds) *Trust in Organizations: Frontiers of Theory and Research*, Sage Publications, Thousand Oaks, CA, 114-139.
21. Marcella, A.J., Stone, L., and Sampias, W.J (1998) 'Electronic Commerce: Control Issues For Securing Virtual Enterprises', *The Institute of Internal Auditors*.
22. Mayer, R.C., Davis, J.H., and Schoorman, F.D. (1995) 'An Integrative Model of Organizational Trust,' *Academy of Management Review* 20: pp. 709-734.
23. Mcknight, H.D., Cummings, L.L., and Chervany, N.L. (1998) 'Managers as initiators of trust: An exchange relationship framework for understanding managerial trustworthy behavior', *Academy of Management Review* 23: pp. 513-530.
24. Morgan, R.M., and Hunt, S.D. (1994) 'The Commitment-Trust Theory of Relationship Marketing', *Journal of Marketing* 58: pp. 20-38.
25. Mukhopadhyay, T., Kekre, S., and Kalathur, S (1995) 'Business value of information technology: A study of electronic data interchange', *MIS Quarterly* 19: pp 137-156.
26. Nath, R., Akmanligil, M., Hjelm, K., Sakaguch, T., and Schultz, M. (1998) 'Electronic Commerce and the Internet: Issues, Problems and Perspectives', *International Journal of Information Management* 18, 2: pp. 91-101.
27. Parker, D.B., (1995) 'A New Framework for Information Security to Avoid Information Anarchy', IFIP, pp. 155-164.
28. Parkhe, A. (1998) 'Understanding Trust in International Alliances', *Journal of World Business* 33: pp 219-240.
29. Ratnasingam, P. and Klein, S. (2001) 'Perceived Benefits of Interorganizational Trust in E-Commerce Participation: A Case Study in the Telecommunications Industry', *Americas Conference in Information Systems*, Boston, MA.
30. Riggins, F.J., and Rhee, H.S. (1998) 'Toward a Unified View of Electronic Commerce', *Communications of the ACM* 41,10: pp. 88-95.
31. Ring, P.S and Van de Ven, A.H. (1994) 'Developing Processes of Cooperative Inter-organizational Relationships', *Academy of Management Review* 19: pp 90-118.
32. Senn, J.A (2000) 'Business to Business E-Commerce', *Information Systems Management*, Spring: pp. 23-32.
33. Smith, J. B., and Barclay, D.W (1997) 'The Effects of Organizational Differences and Trust on the Effectiveness of Selling Partner Relationships', *Journal of Marketing* 51: pp. 3-21.
34. Straub, D. W. (1989) 'Validating Instruments in MIS Research', *MIS Quarterly* 13: pp. 146-169.
35. Tallon, P.P., Kraemer, K.L and Gurbaxani, V (2000) 'Executives Perceptions of the Business Value of Information Technology: A Process-Oriented Approach', *Journal of Management Information Systems* 16: pp.145-173
36. Tan, Yao-Hua., and Thoen, W. (1998) 'Towards a Generic Model of Trust for Electronic Commerce', *International Journal of Electronic Commerce* 3: pp. 65-81.
37. Zaheer, A., Mc Evily, B., Perrone, V. (1998) 'Does Trust Matter? Exploring the effects of Interorganizational and Interpersonal Trust on Performance', *Organization Science* 9: p. 141-159
38. Zucker, L.G. (1986) 'Production of trust: Institutional sources of economic structure: 1840-1920', in B.Staw and L.Cummings, (eds) *Research in organizational behavior*, Greenwich, CT.

0 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:

[www.igi-global.com/proceeding-paper/technology-trust-next-value-creator/31931](http://www.igi-global.com/proceeding-paper/technology-trust-next-value-creator/31931)

## Related Content

---

### Empirical Test of Credit Risk Assessment of Microfinance Companies Based on BP Neural Network

Hualan Lu (2023). *International Journal of Information Technologies and Systems Approach* (pp. 1-14). [www.irma-international.org/article/empirical-test-of-credit-risk-assessment-of-microfinance-companies-based-on-bp-neural-network/326054](http://www.irma-international.org/article/empirical-test-of-credit-risk-assessment-of-microfinance-companies-based-on-bp-neural-network/326054)

### A Graph-Intersection-Based Algorithm to Determine Maximum Lifetime Communication Topologies for Cognitive Radio Ad Hoc Networks

Natarajan Meghanathan (2018). *Encyclopedia of Information Science and Technology, Fourth Edition* (pp. 6536-6545). [www.irma-international.org/chapter/a-graph-intersection-based-algorithm-to-determine-maximum-lifetime-communication-topologies-for-cognitive-radio-ad-hoc-networks/184349](http://www.irma-international.org/chapter/a-graph-intersection-based-algorithm-to-determine-maximum-lifetime-communication-topologies-for-cognitive-radio-ad-hoc-networks/184349)

### Censorship in the Digital Age the World Over

Kari D. Weaver (2018). *Encyclopedia of Information Science and Technology, Fourth Edition* (pp. 7292-7301). [www.irma-international.org/chapter/censorship-in-the-digital-age-the-world-over/184426](http://www.irma-international.org/chapter/censorship-in-the-digital-age-the-world-over/184426)

### A Systematic Review on Prediction Techniques for Cardiac Disease

Savita Wadhawanand Raman Maini (2022). *International Journal of Information Technologies and Systems Approach* (pp. 1-33). [www.irma-international.org/article/a-systematic-review-on-prediction-techniques-for-cardiac-disease/290001](http://www.irma-international.org/article/a-systematic-review-on-prediction-techniques-for-cardiac-disease/290001)

### Condition Monitoring and Analysis Method of Smart Substation Equipment Based on Deep Learning in Power Internet of Things

Lishuo Zhang, Zhuxing Ma, Hao Gu, Zizhong Xinand Pengcheng Han (2023). *International Journal of Information Technologies and Systems Approach* (pp. 1-16). [www.irma-international.org/article/condition-monitoring-and-analysis-method-of-smart-substation-equipment-based-on-deep-learning-in-power-internet-of-things/324519](http://www.irma-international.org/article/condition-monitoring-and-analysis-method-of-smart-substation-equipment-based-on-deep-learning-in-power-internet-of-things/324519)