

Association for Information Systems AIS Electronic Library (AISeL)

AMCIS 2002 Proceedings

Americas Conference on Information Systems
(AMCIS)

December 2002

WHY DO ORDER EFFECTS MATTER IN ONLINE AUCTIONS? A PROPOSED MODEL

Ananth Chiravuri

University of Wisconsin-Milwaukee

K. Ramamurthy

University of Wisconsin-Milwaukee

Follow this and additional works at: <http://aisel.aisnet.org/amcis2002>

Recommended Citation

Chiravuri, Ananth and Ramamurthy, K., "WHY DO ORDER EFFECTS MATTER IN ONLINE AUCTIONS? A PROPOSED MODEL" (2002). *AMCIS 2002 Proceedings*. 41.

<http://aisel.aisnet.org/amcis2002/41>

This material is brought to you by the Americas Conference on Information Systems (AMCIS) at AIS Electronic Library (AISeL). It has been accepted for inclusion in AMCIS 2002 Proceedings by an authorized administrator of AIS Electronic Library (AISeL). For more information, please contact elibrary@aisnet.org.

WHY DO ORDER EFFECTS MATTER IN ONLINE AUCTIONS? A PROPOSED MODEL

Ananth Chiravuri and K. Ramamurthy

University of Wisconsin-Milwaukee

ananthc2@uwm.edu

ramurthy@uwm.edu

Abstract

E-commerce is set to boom, particularly online auctions. While there is a wealth of research on e-commerce, there has been little research on the presentation order effects (primacy and recency) of information on consumers in an e-commerce context, specifically online auctions. This issue is significant, as prior studies in the field of cognition have established that the order in which information is presented affects information retention in memory. These order effects should become particularly relevant in an e-commerce setting wherein consumers are exposed to huge amounts of information and consequently make decisions based on such information. Specifically, the objective of this study is to propose a model that posits the order effects of ratings (primacy and recency) on the reputation of a seller in an online auction setting. In addition, the study also examines the effect of reputation of a seller on the bid price offered by a buyer and finally its effect on trust between buyers and sellers.

Keywords: Electronic commerce, online auctions, order effects, primacy effects, recency effects, reputation

Introduction

The advent of the Internet, in particular the World Wide Web, has given rise to both electronic markets and electronic hierarchies. Lower coordination costs are posited to lead to a shift toward electronic markets (Malone, Yates & Benjamin, 1987). The huge volume of Business-to-Business transactions and Business-to-Consumer transactions that are taking place over the web validates this. The total worldwide value of goods and services purchased by businesses through e-commerce solutions will increase from \$282 billion in 2000 to \$4.3 trillion by 2005, according to International Data Corp (IDC) (www.cyberatlas.com). According to Nielsen// NetRatings and Harris Interactive, more than 106 million people shopped online in December, 2001 and spent a record \$9.9 billion during the holiday season, an increase over last year's \$6.9 billion (www.cyberatlas.com). The State of Online Retailing 4.0, a new Shop.org study conducted by The Boston Consulting Group, states that the North American online retail market was expected to grow 45 percent in 2001, reaching \$65 billion (www.bcg.com). Of particular interest to this study is the phenomenon of online auctions.

Online auctions are structured markets in which businesses or individuals can post items that are then bid on by the market participants (Kollock, 1999). Looking at the popularity of auction sites such as ebay, a general consumer auction site, the phenomenon of online auctions is growing rapidly. According to a recent Forrester Research report, while 21% of online North American households have bid at online auctions, 6% – or 3.9 million households – have both bid and sold (Forrester Research, 2001).

Prior studies on online auctions indicate that (participants') ratings are important. Standifird (2001) examined the role of reputation on the bid price and concluded that positive ratings of a seller had little or no influence on the final bid price. Conversely, he observed that the impact of a negative rating was both significant and substantial. However, his study did not examine the role of the order effects (primacy and recency) on the bid price that a buyer of an item is willing to pay. This is important since research has indicated that typically the first presented piece of information (primacy effect) and the last presented piece of information (recency effect) assume undue importance in the mind of the decision maker (Sage, 1981). Additionally, prior research (Hogarth, 1980; Kahneman and Tversky, 1979) has established that the order in which information is presented affects information retention in memory. These studies would therefore suggest that the order in which information is presented in online auction environments could influence both the (perceived) importance of the information that is retained in memory and,

thus, influence the auction participants' decision. Consequently, this study proposes to expand the present research on reputation to include the order effects of information on the "price bid" of a buyer. Specifically, the objective of this study is to further extend the present stream of research in Information Systems and electronic commerce by examining the presentation order (primacy and recency) effects of ratings on the reputation of a seller and consequently, on the price a buyer is willing to bid for an item. Since trust follows reputation, this paper will also examine the order effects of reputation information on trust.

The paper is structured as follows: the next section examines prior research on reputation and order effects. The operational definitions of the constructs used for this study followed by the propositions are described in section 3. Finally in section 4, we conclude the article with a discussion on the potential implications of this study for IS managers and practitioners.

Previous Research

Prior research (Kollock, 1999; Standifird, 2001) has examined the role of reputation in e-commerce and has presented evidence to indicate that reputation affects the bid price of an item. Kollock (1999, 1998) examined the use of reputation reporting systems to encourage trustworthiness and his preliminary findings indicated that, for some high-value goods, the sellers' reputation had a positive and statistically significant effect on the price buyers paid for identical goods of equivalent quality. This effect of reputation seemed to diminish or disappear for low value goods. A similar study by Standifird (2001), examining the role of reputation in determining the bid-price of a product, clearly indicated the importance of reputation in e-commerce transactions, specifically online auctions. The study concluded that positive ratings of a seller appeared to have little or no influence on the final bid price. On the contrary, the impact of a negative rating/comment was both significant and substantial. The loss due to a single negative comment was far greater than the gain of a single positive comment.

The importance of reputation is also well illustrated in the organizational management area. Barney (1986) indicates that a positive reputation is a strategic factor that can be employed to earn above average profit. A "reputation" can be valuable (Hall 1992) and rare and hard to duplicate (Mahoney & Pandian, 1992). Similarly, studies in the management information systems area have established the importance of reputation (Fung & Lee, 1999; Zacharia & Moukas, 2000). Reputation also becomes important when considered in the context of trust. This is supported in findings from another study that suggests that a firm's reputation influences trust and this leads to alliances and other inter-organizational relationships (Oliver, 1988). Both of these concepts, reputation and trust, are closely related for individuals as well as for firms.

Previous studies (Hogarth, 1980; Kahneman & Tversky, 1979; Slovic & Lichtenstein, 1971) examined the role of order effects (primacy and recency) on the acquisition of information and have presented evidence to indicate that there was a significant and a substantial effect on the way the information is perceived by an individual. When the first item in a sequential presentation dominates perception, the effect is termed a primacy (order) effect. Likewise, when the last item assumes undue importance a recency (order) effect is said to occur (Umanath et al., 1990). The theory behind the primacy effect is that items from early input positions are recalled more readily than items from middle input positions because the former are subject to smaller amounts of intraserial proactive inhibitions; that is, prior learning inhibits recall of subsequent information (Srull, 1984). Similarly, research on recency effects is based on theoretical models of belief-revision advanced by Einhorn and Hogarth (1985, 1987), the most recent version of which is referred to as 'the Belief-Adjustment Model' (Hogarth & Einhorn, 1992). In these models, Einhorn and Hogarth posit that individuals are sequential processors of information who employ an anchoring and adjustment strategy to incorporate new evidence in an evaluation task.

The importance of trust in transactions has also been well established (Ba et al., 1999; Brynjolfsson et al., 2000). Trust lowers the risk of transacting by establishing cooperative relationships (Mayer et al., 1998). Ganesan (1994) postulates that trust reduces transaction costs and ensures any inequities that might occur to be resolved. Empirical studies further confirm that trust beliefs are correlated with future interaction intentions (Doney & Cannon, 1997; Ramsey & Sodhi, 1997). The operational definitions of reputation, trust and order effects (recency and primacy) are explained in the next section.

The Research Model – Reputation, Trust and Order Effects

Reputation is described by Wilson (1985: pp.27-28) as a "characteristic or attribute ascribed to one person by another." We use the above definition in this study, as this meaning can be extended to businesses as well, in the online context. Accordingly, reputation serves as both a source of information and as a potential source of sanctions (Yamagishi & Yamagishi, 1994). This becomes clear in the online context where payment and delivery of goods or products are not simultaneous and the possibility of opportunistic behavior on the part of the seller increases the risk for the buyer. To compensate for this increased risk, the buyer must have some assurance from the seller that the seller will not act opportunistically (Kollock, 1999). Therefore, in this case

the seller's reputation becomes a source of information that can reduce uncertainty and guide the decision of whether or not to trust the partner. Because of this same dynamic, the existence of shared reputations between the partners serves as an incentive for each one to be trustworthy for fear of acquiring a bad reputation. However, this will be effective only when accurate information is collected and disseminated among likely exchange partners (Kollock, 1999). Another safeguard to compensate for the risk to the buyer is the availability of "escrow" as an insurance against the failure to receive the bid product/service as offered in the auction. However, it may be noted that this is *ipso facto* in that a bid has been offered which still requires that the buyers have a reasonable and accurate assurance of non-opportunistic behavior on the part of the seller. Therefore, "reputation" information continues to be very important.

Trust implies benevolence, integrity, and ability in an exchange relationship (Mayer et al., 1995) as well as predictability (McKnight et al., 1998). Trust is also defined as the generalized expectation of an individual that the promise of another individual can be relied upon (Rotter, 1971) and as a risky advance concession in the hope or expectation of a positive outcome (Luhmann, 1988). Mayer et al. (1995) characterize trust as "the willingness of a party to be vulnerable to the actions of another party based on the expectations that the other party will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party." We will use this definition, as it is appropriate in the online context.

As noted earlier, Einhorn and Hogarth (1985) posit that individuals are sequential processors of information who employ an anchoring and adjustment strategy to incorporate new evidence in an evaluation task. This model suggests that an order effect is expected when evidence is mixed in nature (confirming and disconfirming). If a person has strongly held initial beliefs regarding a hypothesis, a disconfirming piece of evidence will result in a large decrease in revised beliefs. Subsequent confirmatory evidence is then likely to lead to another substantial upward belief revision, that is, a contrast effect. In comparison, if the same person obtains positive evidence initially, little revision in beliefs is expected. Later disconfirming evidence leads to significant decreases in beliefs. The end result is that the "disconfirming-confirming order" is hypothesized to lead to higher final beliefs than the "confirming-disconfirming order," a recency effect.

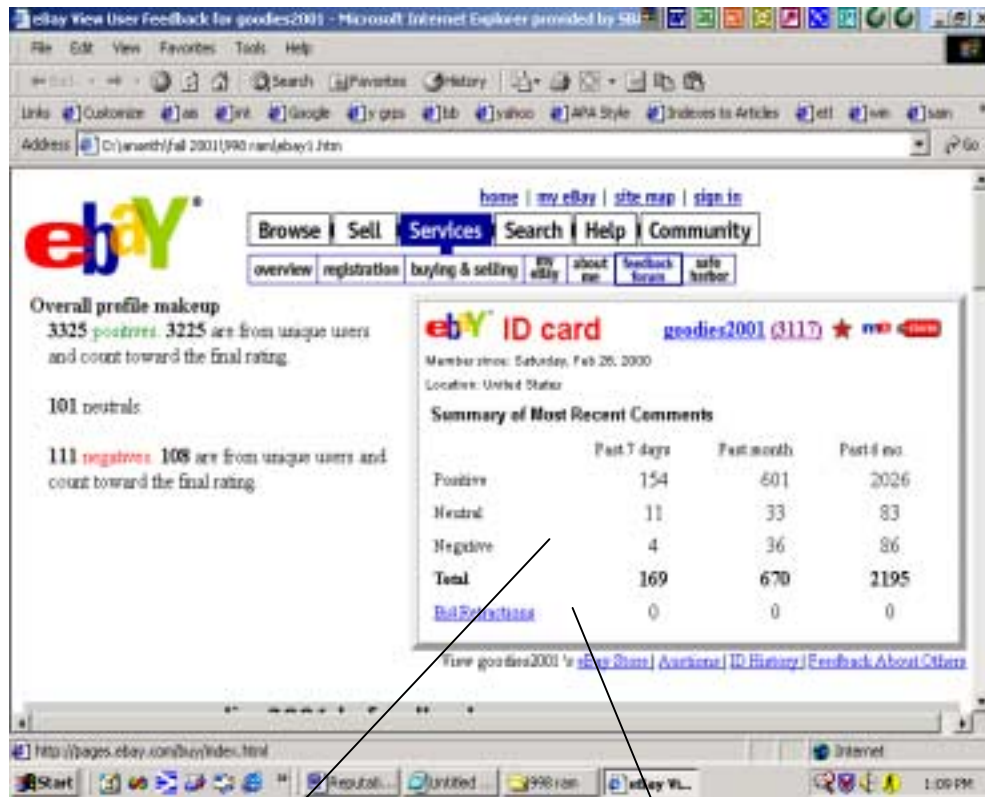
Kahneman and Tversky (1980) posit that order effects would lead to biases and consequently individuals typically use heuristics to make decisions. When the first item in a sequential presentation dominates perception, the effect is termed a primacy order effect. When the last item assumes undue importance a recency (order) effect is said to occur (Umanath et al. 1990). This is illustrated with a screen shot – adapted from ebay's site as shown in Figure 1.

Suggested Propositions

The research studies from the previous section indicate that the order of information presentation plays a role in the final decision of the individual. When the information is asymmetric (where sellers and buyers are not privy to all the relevant information of either party) and there exist conditions of high risk and uncertainty as in the online world, we propose that online consumers use heuristics based on reputation ratings to make the final decision. However, the order in which the information about (a person's or vendor's) ratings is presented is likely to lead to different decisions. From the previous section, it is noted that when evidence is mixed in nature, disconfirming effects are likely to be stronger than confirming effects. This would seem to apply in the case of online auctions too wherein a buyer typically is presented with different comments on the seller: positive, negative and neutral, similar to mixed evidence. Findings from a previous study (Standifird, 2001) indicate that when faced with a situation like the one described, disconfirming effects (negative comments) would play a greater role than confirming effects (positive comments). In addition, we posit that this will be moderated by the order in which information is presented. When a buyer is exposed to negative comments or ratings first, we propose that disconfirming effects would result in them getting anchored in their mind. All the other values are adjusted accordingly with reference to the anchor, negative ratings and therefore primacy effects would lead to greater effects than recency effects. Therefore, negative ratings presented first should affect the reputation of a seller more than the positive ratings. This can be stated as follows:

P1: Primacy effects of negative ratings affect the reputation of a seller more than that of positive ones, other things being equal.

Decision making on the Internet is made in an environment of low trust and high uncertainty. Therefore, the quality of a decision depends on how well the decision maker is able to acquire information, to analyze, evaluate and interpret it so as to discriminate between relevant and irrelevant bits of data (Sage, 1981). Extending the argument from the previous proposition on disconfirming and primacy effects, we propose that negative ratings, if presented first, would get anchored and this would lead to subjects rehearsing earlier input items while exposed to the neutral items (Tulving, 1951). Therefore, earlier items will be strengthened more than the middle items. We posit that recency effects of positive ratings would not be significant because of the greater effect of disconfirming information. This can be stated as follows:



If the first item influences perception then it is a primacy effect

If the last item assumes undue importance, it is a recency effect

Figure 1. Screen Shot Adapted from ebay Illustrating Primacy and Recency Effects

P2: Primacy effects of negative ratings affect a buyer's behavior more than those of positive ratings.

Additionally, we posit that when the order in which disconfirming information or negative ratings is presented affects buyers behavior. If negative ratings are presented earlier, they would inhibit the recall of subsequent information and we propose that this effect would be greater than when negative ratings are presented later. In the latter case, positive ratings that are presented earlier would act as an anchor and would facilitate recall that would overcome the recency effect of negative ratings. Therefore, we posit:

P3: Primacy effects will negatively affect a buyer's behavior more than recency effects, in the case of negative ratings, other things being equal.

P4: Sellers with Positive Ratings followed by negative ratings will be perceived by the buyers to have a relatively greater reputation than otherwise. This would lead to buyers willing to bid better/higher prices.

Also, Kollock (1999, 1998c) examined the use of reputation reporting systems to encourage trustworthiness and his preliminary findings indicated that for some high value goods, the sellers reputation had a positive and statistically significant effect on the price buyers paid for identical goods of equivalent quality. This effect of reputation seemed to diminish or disappear for low value

goods. These results indicate that buyer's perceptions seem to change according to the value of the good. We use these findings to propose that:

P5a: The order effects would be more important for a high priced product than for a low priced product, other things being equal.

P5b: Primacy effects of negative ratings affect a buyer's behavior more than those of positive ratings in the case of both a higher priced product and a lower priced product.

Since reputation of a firm or person affects trust in its relationships between other parties (Oliver, 1988) we posit that:

P6: Buyers will trust sellers with positive ratings followed by negative ratings than otherwise, other thing being equal.

The above set of six propositions can be subjected to an empirical investigation using a quasi- experiment design study within a laboratory setting using information, for instance, from the ebay site. Ebay, with a membership of more than 10 million members and over 4 million items auctioned daily, is predominantly based on the English auction. The ebay homepage includes links to categories of items. Alternatively, the potential bidder can use the smart search feature to find a specific item by entering descriptive items. The bottom of the page includes a link to the third party assurance provider TRUSTe. Sellers and buyers must first register with ebay and agree to the sites' basic terms of doing business. Unlike buyers, sellers pay ebay a listing fee and a sliding percentage of the final selling price. In addition, sellers can choose from a variety of enhanced and extra cost services, including having their auctions listed in boldface type and be included in lists of preferred auctions. In an attempt to address buyer concerns about seller reliability, ebay has instituted a rating system. Buyers can submit ratings of the sellers after doing business with them. Conversely, sellers can rate buyers as well. These specific feedback ratings are related to specific auctions and are designated as "positive," "negative," and "neutral." These ratings become a permanent part of the sellers overall reputation once placed and can be removed only under special circumstances. The ability to isolate the externally defined rating makes sites like ebay an ideal context for investigating the importance of reputation and trust in an e-commerce environment (Turban et al. 2000). As noted above, if the actual (positive, negative, and neutral) rating/feedback information is obtained from the eBay site they could be appropriately reordered to test the stated propositions.

Discussion

This study presents the theory and rationale to extend the present research on reputation. This study aims to understand the role of the buyers in an online auction taking their biases and heuristics into account. This is perhaps one of the first studies to propose the role of order effects (primacy and recency) on the reputation of a seller and its consequent effect on the bid- price for an item in an online auction setting. Empirical investigation (as suggested using a laboratory based study) is necessary to examine the validity of the propositions. The findings from such a study might motivate online auction companies to organize the content on the ratings of a seller in a manner such that seller's reputation is enhanced. While the "ethical nature" of such actions is questionable, it is not our intention to suggest that they should mislead consumers. Rather, we expect empirical findings (by testing the model proposed here) might help companies increase their profits and market share by presenting information appropriately. The process can be explained as follows: higher reputation of sellers would lead to greater trust in them by the buyers. This in turn could lead to higher price bids. The final beneficiaries would be the auction companies as part of their revenues depend on the commissions that are collected as a percentage of the final sale value of an item. Appropriate information presentation could also lead to increased turnover of items. Information content might also need to be customized depending on the price of the product. Higher value items might be more affected by the order effects than lower priced items.

As is the case with all research studies, our study has a few limitations. First, the assumption that consumers make decisions using heuristics might not be true in all cases. When the value of a product goes up, consumers may tend to be highly involved. This leads to an extensive search for information about a product leading to a rational decision only after considering all the alternatives. There could be other confounding factors influencing buyer decision like the interface design. Research in marketing (Meyers-Levy & Peracchio, 1995) indicates that "separated" information is easier to process than "massed" information. The different levels of complexity (of information presented) could lead to different outcomes for a given product beyond mere order effects (of ratings).

References

- Ba, S., Zhang, H., and Whinston A. B. "Building trust in the electronic Market using an economic incentive mechanism," *Proceedings of the 1999 International Conference on Information Systems*, Charlotte, NC, Atlanta Omnipress, 1999.
- Barney, J. "Strategic Factor Markets: Expectations, Luck and Business Strategy," *Management Science*, 32, 1986, 1231-1241.
- Boston Consulting Group. "State of Online Retailing 4.0," Retrieved December 9, 2001, from the World Wide Web: <http://www.bcg.com>.
- Cyberatlas. " B2B E-Commerce Will Survive Growing Pains, " Retrieved December 9, 2001, from the World Wide Web: <http://cyberatlas.internet.com>.
- Cyberatlas. " New Records Predicted For Holiday E-Commerce," Retrieved December 9, 2001, from the World Wide Web: <http://cyberatlas.internet.com>.
- Doney, P.M., and Cannon, J. P. "An examination of the nature of trust in buyer–seller relationships," *Journal of Marketing*, 61, 1997, 35-51.
- Einhorn, H.J., and Hogarth, R.M. "A contrast/surprise model for updating beliefs," *Working Paper*, University of Chicago, Center for Decision Research, 1985.
- Einhorn, H.J., and Hogarth, R.M. "Adaptation and inertia in belief updating: the contrast/inertia model", *working paper*, University of Chicago, Center for Decision Research, 1988.
- Forrester Research, Inc. " Quote of the Day, " Retrieved December 10, 2001, from the World Wide Web: <http://www.forrester.com/Home/0,3257,1,FF.html/>.
- Fung, R.K.K., and Lee, M.K.O. "EC-Trust (Trust in Electronic Commerce): Exploring the antecedent factors," *Proceedings of the Fifth Americas Conference on Information Systems (AMCIS 1999)*, (Custom 2, 1999), Aug 13-15, Milwaukee, WI, 1999, 517-519.
- Ganesan, S. "Determinants of Long Term Orientation in buyer-seller relationships," *Journal of Marketing*, Chicago, 58(2), Apr 1994, 1-20.
- Hall, R. "The Strategic Analysis of Intangible Resources," *Strategic Management Journal*, 13(2), 1992, 135-144.
- Hogarth, R.M. *Judgement and Choice: The Psychology of Decision*, New York: Wiley, 1980.
- Hogarth, R.M. "Order Effects in Belief Updating: The Belief-Adjustment Model," *Cognitive Psychology*; Einhorn, Hillel J; Jan 1992. p.1.
- Kahneman, D., and Tversky, A. "Prospect theory: an analysis of decision under risk," *Econometrica*, 47, 1979, 263-91.
- Kahneman, D., and Tversky, A. "Psychology of Preferences," *Scientific American*, 1982, 161-73.
- Kollock, P. "The Production of Trust in Online Markets," *Advances in Group Processes*, Greenwich, CT: JAI Press, 1999.
- Kollock, P. "The Value of reputation," *Working paper*, UCLA, 1998.
- Luhmann, N. "Familiarity, Confidence and trust: Problems and alternatives," *Trust: Making and Breaking Cooperative Relations*, 1988, 94-107.
- Mahoney, J., and Pandian, J. "The Resource Based view within the conversation of Strategic management," *Strategic Management Journal*, 13(5), 1992, 363-380.
- Malone, T.W., Yates, J., and Benjamin, R. "Electronic Markets and Electronic Hierarchies," *Communications of the ACM (CACM)*, 30(6), 1987, 484-497.
- Mayer, R. C., Davis, J. H., and Schoorman, F. D. "An integrative model of organizational trust," *Academy of Management Review*, 20, 1995, 709-734.
- McKnight, H.D., and Chervany, N.L. "What is Trust? A conceptual analysis and an interdisciplinary model," *Proceedings of the Sixth Americas Conference on Information Systems (AMCIS 2000)*, Aug 10-13, Long Beach, CA, 2000.
- Meyers-Levy, J., and Peracchio. L.A. "Understanding the effects of color: How the correspondence between available and required resources affects attitudes," *Journal of Consumer Research*, 22, 1995, 121-138.
- Oliver, C. "The Collective Strategy Framework: An application to competing predictions of isomorphism," *Administrative Science Quarterly*, 33, 1988, 543-561.
- Ramsey, R.P., and Sohi, R.S. "Listening to your customers: the impact of perceived salesperson listening behavior on relational outcomes," *Journal of the Academy of Marketing Science*, 25, 1997, 127-137.
- Rotter, J.B. "Generalized Expectancies for Interpersonal Trust," *American Psychologist*, 26, 1971, 443-452.
- Sage, A. "Behavioral and Organizational Considerations in the Design of Information Systems and Processes for Planning and Decision Support," *IEEE Transactions on Systems, Man and Cybernetics*, Vol. SMC-11, No.9, September 1981, 640-678.
- Slovic, P., and Lichtenstein, S. "Comparison of Bayesian and Regression Approaches to the study of Information processing in Judgement," *Organizational Behavior and Human Performance*, 6(6), 1971, 649-744.
- Srull, T.K. Methodological Techniques for the study of person memory and social cognition. In R.S. Wyer, Jr., and T.K. Srull (Eds.) *Handbook of Social Cognition 2*. Hillsdale, NJ: Erlbaum, 1984.

- Standifird, S. "Reputation and e-commerce: eBay auctions and asymmetrical impact of positive and negative ratings," *Journal of Management*, 27(3), 2001, 279-296.
- Tulving, E. "Theoretical issues in free recall," In T.R. Dixon & D.L. Horton (Eds.), *Verbal behavior and general behavior theory*, Engelwood Cliffs, NJ: Prentice-Hall, 1968.
- Turban, E., Lee, J., King, D., and Chung, H.M. *Electronic Commerce: A Managerial Perspective*, Upper Saddle River, NJ: Prentice Hall, 2000.
- Umanath, N.S., Scammell, R.W., and Das, A.R. "An explanation of 2 screen report design variables in an information recall context," *Decision Sciences*, 21, 1990, 216-240.
- Wilson, R. "Reputations in games and Markets," In A. Roth, (Eds.), *Game-Theoretic Models of Bargaining*, Cambridge: Cambridge University Press, 1985.
- Yamagishi, T., and Yamagishi, M. "Trust and Commitment in the United States and Japan," *Motivation and Emotion*, 18, 1994, 129-165.
- Zacharia, G., and Moukas, A "Collaborative reputation mechanisms for electronic marketplaces," *Decision Support Systems*, 29 (4), 2000, p371-389.