Group Decis Negot (2010) 19:279–300
DOI 10.1007/s10726-009-9181-y

Negotiator Satisfaction in NSS-Facilitated Negotiation

Zhen Wang · John Lim · Xiaojia Guo

Published online: 25 October 2009

Abstract Negotiator satisfaction plays an important role in the adoption and diffusion of Negotiation Support Systems (NSS). There is little knowledge about what factors shape the negotiator satisfaction in the NSS context. In this study, we investigated this factor from the perspectives of negotiator and end-user of NSS. We proposed a research model of negotiator satisfaction by incorporating negotiation outcomes and negotiator perception of the system and negotiation process. The empirical findings with 116 data points indicated that objective confirmation, perceived fairness, perceived control and perceived collaborative atmosphere significantly influence negotiator satisfaction. The implications of this study are discussed.

Keywords Negotiator satisfaction · Expectancy-value model · Disconfirmation theory · Equity theory · NSS

1 Introduction

Both researchers and practitioners are motivated to study user satisfaction. It is generally believed that the level of satisfaction is likely to influence user behavior. High user satisfaction is essential vis-à-vis the adoption and diffusion of information systems (Davis 1989). Advocated by Nolan and Seward (1974), user satisfaction was frequently used to measure system effectiveness in information systems research. Poor user

Z. Wang · J. Lim · X. Guo (✉)
School of Computing, National University of Singapore, Singapore, Singapore
e-mail: disgxj@nus.edu.sg

Z. Wang
e-mail: wangzhen@comp.nus.edu.sg

J. Lim
e-mail: jlim@nus.edu.sg

attitudes towards the system may restrict the system introduction to workplace (Joshi 1992). The evolutionary nature of satisfaction and the variability of its determinants have caught increasing attention in research (e.g., Khalifa and Liu 2003). This paper focuses on satisfaction investigation in negotiation research.

With the fast development of IT, there is an increasing use of Negotiation Support Systems (NSS) in both internal and external negotiations. Recent empirical research on NSS has shown that computer-aided negotiations generally yielded higher joint outcomes, better contract balance, and greater satisfaction (e.g., Delaney et al. 1997; Goh et al. 2000; Jones 1988; Rangaswamy and Shell 1997). It has been shown that negotiators with high degree of satisfaction are more likely to warrant future business with their partners (Oliver et al. 1994; Barry and Oliver 1996). An individual plays a dual role in computer facilitated negotiations: the *negotiator* as well as the *end-user* of the negotiation support systems. Thus, both negotiator performance and characteristics of the negotiation support system play important roles in negotiator satisfaction formation.

At the initial stage of NSS research, most of the empirical e-negotiation studies are focused on investigation of functional models (e.g., DSS model) and structural factors (e.g., degree of conflict). Recently, there are more published cognitive and behavior studies of e-negotiation. However, negotiator satisfaction is considered as a surrogate for NSS success in many of the studies, and simply grouped with other output measures. Some important questions are: what factors influence or help determine negotiator satisfaction? What are the interrelationships among these factors? To fill the gap, this study aims to theoretically and empirically investigate the factors that explain negotiator satisfaction in NSS-facilitated negotiation.

This paper is organized as follow. The next section provides background review of negotiation support systems, followed by a literature review of satisfaction research. Afterwards, the research model and hypotheses are presented. Then, research methodology and data analysis are detailed. Finally, we conclude the paper with a discussion of implications, limitations and future research.

2 Background Review of Negotiation Support Systems

The objective of NSS is to help negotiating parties reach a better agreement. In addition to the complexity of negotiation itself, to identify and achieve optimal outcomes may also be hindered by negotiators' limited information processing capacity and capability, cognitive biases, and socio-emotional obstacles (Bazerman et al. 1985; Foroughi et al. 1995). The challenges of negotiation and the cognitive limitations of human negotiators have led researchers to pursue computer support in the form of NSS (Goh et al. 2000). As defined in Kersten and Lai (2007), negotiation support system is software that implements models, procedures, communication and coordination facilities, supporting two or more parties and/or a third party in their negotiation activities. It can be used in preparing for negotiation, assessing negotiators' own and the opposite party's positions and interests, and suggesting better alternative solutions (Kersten and Noronha 1999). In the NSS literature, two major motivations of developing NSS have been identified (Rangaswamy and Starke 2000): (1) to improve the process and

outcomes of negotiations through latest technology applications, and (2) to overcome the limitations of traditional face-to-face negotiations with computer support.

Conceptually, NSS consists of two components (Lim and Benbasat 1993): Decision Support System (DSS) component with the reference to game theory and economic theory, and Electronic Communication (EC) component with the reference to social-psychological theory. The use of the DSS would help to refine the negotiator objectives, and enhance their capability and capacity of information processing and analyzing complex problems. Thus, negotiators with DSS support might achieve more efficient and balanced outcomes. EC would affect the way information is processed. The use of electronic communication channels can help to increase the level of perceived commitment and trust in the opposing party. As a consequence, agreements may be reached in a faster and more satisfied manner. In NSS-facilitated negotiation context, richer communication media, such as visual and audio channels, have been suggested to enable negotiators to make use of social cues to support the communication process (Lim and Yang 2004).

In addition to the traditional NSS, the autonomous negotiation agent becomes more popular owing to the rapid advancement in IT (Beam and Segev 1997). Instead of performing the negotiation task by human negotiators, negotiation agent could prepare and negotiate on behalf of their human "clients", especially for well-structured negotiation tasks. Governed by computational rules (Goh et al. 2000), these negotiation agents may include a concession model with general strategies of concession in multiple-issue negotiations (e.g., Matwin et al. 1991), a case-based reasoning to planning and support of negotiations (e.g., Sycara 1990), and a genetic algorithm-based learning technique (e.g., Oliver 1997). Negotiation agent can bring significant benefits, such as time saving, avoiding unnecessary cognitive bias (e.g., face-saving), lowering transaction cost, and increasing the efficiency of settlements (Oliver 1997; Rangaswamy and Starke 2000). As the technology has yet to fully mature, future research is needed to develop ontology and strategy (Beam and Segev 1997), set up infrastructure (Lo and Kersten 1999), and build negotiation protocols (Yuan et al. 2003).

3 Literature Review of Satisfaction

Satisfaction, initially defined in job performance research, refers to 'a pleasurable or positive emotional state resulting from the appraisal of one's job' (Locke 1976, p. 1300). It has been studied in various disciplines, including marketing, psychology, sociology, information systems, management science, organizational behavior, etc. Conceptually, satisfaction is different from attitude (Tse and Wilton 1988). Satisfaction is a transient, experience-specific affect; while attitude is a relatively more enduring affect transcending all prior experiences (Oliver 1980, 1981).

In marketing research, product and service attributes, purchase process, and after-sales services are the noticeable factors that have significant influence on consumer satisfaction. However, performance alone is not sufficient to cause satisfaction, rather its relative strength to consumers' beliefs in different contexts (Bettman 1974). Based on the Disconfirmation Theory (Oliver 1980, 1981; Tse and Wilton 1988), consumer

satisfaction is defined as the perceived discrepancy between prior expectations/norms and the actual performance of the product/service as perceived after its consumption.

In human decision and psychological studies, negotiator satisfaction is modeled as a function of utility maximization (Gillespie et al. 2000), expectancy disconfirmation (Oliver et al. 1994), internal social comparisons with negotiation opponents (Loewenstein et al. 1989), and external social comparisons with other negotiators undertaking similar tasks (Novemsky and Schweitzer 2004).

In information systems studies, user satisfaction is defined as the 'multidimensional attitude towards various aspects of MIS… and various user constructs such as feelings of participation and understanding' (Raymond 1985). User satisfaction is considered as one of the most important measures of information systems success. It is commonly agreed that system quality and information quality explained a large portion of end-user satisfaction (Doll and Torkzadeh 1988; DeLone and McLean 1992). A number of studies have been conducted to improve the understanding of satisfaction in the IS research field. For instance, the end-user satisfaction model suggested five system attributes that affect user satisfaction towards a system, including content, format, accuracy, ease of use, and timeliness (Doll and Torkzadeh 1988; Doll et al. 1994). DeLone and McLean (1992) proposed a widely accepted IS success model in which system quality and information quality are positively related to user satisfaction.

The importance of user satisfaction towards NSS cannot be overemphasized. It is found in Vetschera et al. (2006) that user satisfaction imposes a strong positive effect on user intention to use NSS ultimately. Nevertheless, there is a lack of agreement on the conceptual definition of the user-satisfaction construct in NSS research. Throughout the NSS research literature, different conceptual definitions and operationalizations of user satisfaction have been used. Consistent with the IS literature, in this paper, we define satisfaction as the multidimensional attitude towards various aspects of negotiation process and outcomes as well as the negotiation support systems.

3.1 Theories of Satisfaction

In the satisfaction research literature, three remarkable streams have been noted: the Expectancy-Value Model, the Disconfirmation Theory, and the Equity Theory. The Expectancy-Value Model explains what factors might influence one's satisfaction; the Disconfirmation Theory rationalizes why an individual is satisfied; and the Equity Theory emphasizes that fairness plays an important role in yielding satisfaction.

3.1.1 Expectancy-Value Model

According to the Expectancy-Value Model, user satisfaction emerges from a multiple belief structure in a linear additive form (Melone 1990; Song et al. 2005). Specifically, the evaluations of system/product/service attributes shape the user's satisfaction. For example, in service quality study, users assess tangibility, reliability, responsiveness, assurance and empathy (Parasuraman et al. 1988); in end-user computing study, users evaluate system attributes: content, accuracy, format, timeliness, and ease of use (Doll et al. 1994), and attributes of information quality: relevance, understandability,

reliability, adequacy, scope, and usefulness (McKinney et al. 2002). The notion that performance affects satisfaction forms the basis of the expectancy-value model. Effort expectancy and performance expectancy are the two major types of expectancy towards system in IS research. In NSS context, the former refers to the degree of effort reduction associated with the use of a system, such as ease of use and time to settlement. The later refers to the degree of outcome associated with the use of a system, such as individual outcome, contract balance, effectiveness of the system, etc.

Based on the Expectancy-Value Model approach, the Theory of Reasoned Action (TRA) was proposed to predict one's behavior by his/her attitude towards the behavior (Fishbein and Ajzen 1975). This theory is remarked by its ease of implementation in the applied settings (Melone 1990). In IS research, TRA and its variants are supported by a number of empirical studies. Ajzen and Fishbein (1977) recommended using this theory only for situations in which behavior is under volitional control. Furthermore, Ajzen (1988) suggested adding new constructs to the model, such as perceived control.

In line with the research, the Technology Acceptance Model (TAM) (Davis et al. 1989) was developed. TAM states that an individual's acceptance towards an information technology (IT) is determined by two particular beliefs: perceived usefulness (PU) and perceived ease of use (PEOU). Similar to TRA, TAM postulates that system usage is determined by behavioral intention to use, which is jointly determined by the individual's attitude towards using system and perceived usefulness. Both PU and PEOU predict attitude towards using the system, while PU is also influenced by PEOU. Scholars studied end-user satisfaction in various contexts by adopting TAM or its variants, such as corporate IT acceptance (Adams et al. 1992; Chin and Todd 1995; Doll et al. 1998), and use of web-based IS (Gefen and Straub 1997; Teo et al. 1999; Morris and Dillon 1997; Lederer et al. 2000). In general, TAM has received wide support from these studies. However, TAM was suggested to include the social influences (Mathieson 1991), and some factual information to belief structures. Besides, TAM was considered being too general to be applied in a particular context (Agarwal and Prasad 1998; Venkatesh and Davis 1996, 2000), thus the uniqueness of negotiation should not be neglected in NSS research. In e-negotiation, end-users (non-IT employees) need effective, controllable, and user-friendly systems to facilitate their inter- and intra-organization negotiation. These system-related factors will be investigated in this study.

3.1.2 Disconfirmation Theory

Originally developed in marketing research, the Disconfirmation Theory provides a primary foundation of satisfaction research (Tse and Wilton 1988). Based on this theory, the gap between the perceived actual performance and cognitive standards determines user satisfaction (Churchill and Surprenant 1982). The perceived actual performance might be influenced by the system, the context and the individual characteristics (Oliver 1980). An individual is more likely to be satisfied if there is a confirmation or positive disconfirmation, particularly when the perceived actual performance meets or exceeds the cognitive standards.

Serving as the benchmarks in evaluation processes, cognitive standards (e.g., expectations, desires, norms) may be affected by personal experience, individual

characteristics, and understanding of the environment and task (Khalifa and Liu 2003). Expectations are different from desires (Chin and Lee 2000); expectations are formed based on prior experience and individual's knowledge (Zeithaml et al. 1990), whereas desire, a more stable construct, refers to people's inner needs and wants. It has been argued that norms are not applicable for new products/services (Cadotte et al. 1987), as the user might 'either not bother or is unable to form concrete expectations' (Khalifa and Liu 2004, p 41). While desire is mostly individual characteristic and is not within external control, we examine only expectation in this study.

In consumer behavior research, the Disconfirmation Theory has been widely applied to understand consumer satisfaction and post-purchase behavior. In addition to examining what attributes affect user satisfaction, this theory also explains why an individual is satisfied. Generally, it has received support from studies in different circumstances, including automobile repurchase (Oliver 1993), restaurant service (Swan and Trawick 1981), and online banking service (Bhattacherjee 2001). However, the Disconfirmation Theory has been criticized for its logical inconsistencies and inadequacies in the case of extremely high/low expectations. Unrealistically high expectations are usually correlated with low satisfaction.

3.1.3 Equity Theory

Fairness and equity are concepts that have been studied since the time of Aristotle. They are the core constructs of the Equity Theory (Adams 1963, 1965), which purports that people will try to maximize their returns in social exchange. This theory can be applied in nearly all social settings (Walster et al. 1978). Equity refers to the evaluation result of the discrepancy between one's inputs and rewards in comparison to another's inputs and rewards. If this discrepancy exits, according to the Equity Theory, people would be motivated to reduce the discrepancy.

In IS research, the inputs of using a system might include training procedures, cognitive requirements, effort and time of using the system, costs of acquiring and maintaining the system, etc. (Woodroof and Kasper 1998). If the returns are greater than the inputs required to generate those returns, the process would be considered efficient, fair and satisfying. In a cross-sectional survey, among all the short-listed factors, equity was shown to have the greatest influence on the overall user satisfaction (Joshi 1992).

In computer-assisted negotiation, negotiators will compare the change in equity status of self, in terms of inputs and outcomes, as a result of using the new system compared to the old system or the old way without a system. Negotiators might also evaluate the fairness of the system on helping them to achieve agreements in comparison to their opponents. Particularly, they tend to compare whether the benefits brought by the new system is equally shared among selves and their opponents.

3.2 Satisfaction in NSS Research

Satisfaction is an important measure of negotiation outcome (King and Hinson 1994). Negotiator satisfaction in NSS-facilitated negotiation would be affected by each

component of this "human-computer system", which consists of negotiators from each party, negotiation support systems, and a particular task with some social structural factors. From the negotiator's perspective, if they achieve a higher joint outcome and better contract balance, they are likely to be more satisfied. In addition to performance, improved relationship with opponents and enjoyable interacting process would also increase the negotiators' satisfaction. From the end-user's perspective, attributes related to the negotiation support system would influence user satisfaction as well, such as ease of use, usefulness, degree of control, etc.

Even though there are very few empirical studies on negotiator satisfaction formation, many important and relevant findings have been documented. In face-to-face negotiation, Conlon and Ross (1993) conducted a series of mediation studies, which showed negotiators who set lower expectations are more satisfied with their outcomes. Consistently, Oliver et al. (1994) found that the difference between negotiators expectations and outcomes is significantly correlated with negotiator satisfaction. In Foroughi et al. (1995) experiment, it showed that NSS supported dyads achieved greater satisfaction than Non-NSS dyads. NSS dyads reported greater satisfaction than the DSS only and Non-NSS dyads in Delaney et al. (1997) study. This suggested that the electronic communication component positively influenced satisfaction. Similar result was recorded in Purdy et al. (2000) study. In a field experiment, Chen and Kersten (2006) showed that negotiator satisfaction was significantly affected by system functionalities.

4 Research Model and Hypotheses

4.1 Research Model

The current study examines negotiator satisfaction by incorporating the Expectancy-Value Model, the Disconfirmation Theory, and the Equity Theory. As negotiators in NSS-facilitated negotiation perform dual roles of negotiators and end-users, both the negotiation process/achievements and the system used could affect their satisfaction. Moreover, negotiation always involves more than one party; hence, according to the Equity Theory, one's perception of fairness would play an important role of his/her satisfaction. Based on the prior satisfaction literature and the characteristics of negotiation, we propose a research model of negotiator satisfaction (see Fig. 1).

4.2 Hypotheses

Both output-oriented outcomes and affect-oriented measures should be employed to measure user satisfaction (Melone 1990). Output-oriented outcomes refer to the objective allocations of negotiated resources that result from the bargaining encounter, whereas affect-oriented outcomes refer to the subjective social perceptions held by negotiating parties following the encounter (Oliver et al. 1994).

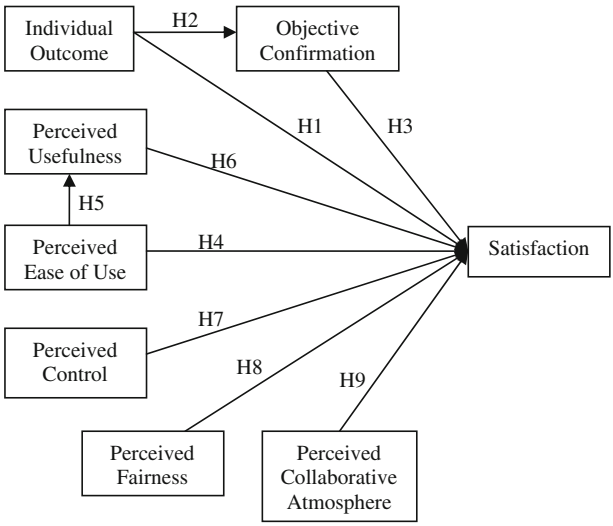


Fig. 1 The proposed research model on negotiator satisfaction

4.2.1 Negotiation Outcome

In marketing and negotiation research, individual outcome is considered as one of the most appropriate measures for the effectiveness of a negotiation. According to Expectancy-Value Model, if an individual could successfully reach an agreement in negotiation, he/she is likely to be satisfied (Oliver et al. 1994; Foroughi et al. 1995). In multi-issue negotiation, individual outcome refers to the multi-attribute utility scores of the final agreement. The higher the utility score, the more valuable this agreement is. Consequently, a high value agreement would result in greater negotiator satisfaction. Hence, we hypothesize:

H1 Greater individual outcome achieved in an agreement will lead to higher negotiator satisfaction.

In addition to individual outcome, its relative value to one's expectation has a strong association with overall satisfaction as well (Rushinek and Rushinek 1986). Based on the Disconfirmation Theory (Churchill and Surprenant 1982), the gap between the actual negotiation outcome and negotiator's expectation determines his/her satisfaction. When the outcomes meet or exceed the initial expectation, one would be satisfied (Bhattacherjee 2001). In this study, we use objective confirmation to measure this gap; specifically, the extent to which the negotiator's expectation is confirmed. Objective confirmation is positively related to negotiator satisfaction, as it reflects the realization of negotiator expectation. Hence, we hypothesize:

H2 The individual outcome achieved in a negotiation is positively related to the negotiator's objective confirmation.

H3 Greater objective confirmation will lead to higher negotiator satisfaction.

4.2.2 Perceptions on Negotiation Support Systems

The major difference between NSS and other information systems is that NSS focus on supporting its users to reach better agreements. NSS can be used to prepare for negotiation, assess negotiators' own and the opposite party's positions and interests, suggest and evaluate alternative solutions (Kersten and Noronha 1999), and facilitate the communication among negotiating parties (Lim and Benbasat 1993; Lim and Yang 2004). A negotiator in NSS-facilitated negotiation can be considered as the end-user of the system, so his/her satisfaction is a behavior-related attitude that forms during the negotiation process. Drawing from Vetschera et al. (2006), perceived usefulness and perceived ease of use towards NSS positively affect user's satisfaction. As defined in Lim (2003), in the NSS context, perceived usefulness refers to the extent to which a person believes that using NSS will improve his or her negotiation performance, whereas perceived ease of use refers to the degree to which a person expects the usage of NSS to be free of effort. In a similar vain, DeLone and McLean (1992, 2003) affirm the interrelation between system use and user's satisfaction. According to them, positive experience with system use will lead to greater user's satisfaction. As perceived usefulness and perceived ease of use are essential aspects of system experience, they should also exhibit such relationship with user's satisfaction. Furthermore, it is believed that there is causal relationship between perceived ease of use and perceived usefulness in that the easier it is to use a system, the more effort user can allocate to other activities, thus contributing to overall task performance, which induces perceived usefulness of the system (e.g., Davis et al. 1989). Therefore, we hypothesize the following:

H4 Higher perceived ease of use of NSS will lead to higher negotiator satisfaction.

H5 Negotiators' perceived ease of use of NSS is positively related to their perceived usefulness of NSS.

H6 Higher perceived usefulness of NSS will lead to higher negotiator satisfaction.

4.2.3 Perceived Fairness

One approach to study negotiator satisfaction involves internal social comparisons. It considers the importance of evaluating one's outcome relative to his/her counterpart's outcome. According to the Equity theory (Adams 1963; Walster et al. 1978), users assess whether the benefits of a new system are being shared fairly among users. The perception of equity affects user evaluation of the particular system. Specifically, Joshi (1989) showed that fairness significantly influence user satisfaction with IS function. Users, who perceive inequity in the allocation of MIS resources, are likely to be dissatisfied (Joshi 1989). Loewenstein et al. (1989) defined a similar construct as *social utility* to predict satisfaction in a bargaining context. Across three experiments they found social utility to be positively related to satisfaction. Hence, we hypothesize:

H7 Higher level of perceived fairness will lead to higher negotiator satisfaction.

4.2.4 Perceptions on Negotiation Process

Perceived control refers to 'people's perception of the ease or difficulty of performing the behavior of interest' (Ajzen 1991). It reflects past experiences and anticipated impediments and obstacles. Unlike consumers who have very little control over the product performance, negotiators can significantly influence their negotiation outcome. In negotiation, perceived control refers to the sense of ownership in the negotiation process (Yang et al. 2005). When individuals perceive greater control of the negotiation, they perceive fewer obstacles and more opportunities in hand. As a result, the negotiators are more satisfied. Hence, we hypothesize:

H8 Higher perceived control will result in higher negotiator satisfaction.

When the negotiation process is perceived as more collaborative, negotiators tend to engage less non rational escalation of conflict and negative framing (Foroughi et al. 1995) and to focus more on the task by solving problems and expanding the pie. While both parties consistently try to address their opponents' concern, they may develop a good relationship, which favors future cooperation. As a result, they are more likely to feel satisfied. Hence, we hypothesize:

H9 Greater perceived collaborative atmosphere will result in higher negotiator satisfaction.

5 Research Methodology

To test the hypotheses, we need collect both objective data (e.g., individual outcome) and subjective data (e.g., negotiator perceptions). A laboratory experiment was conducted. Data was collected via the system logs and questionnaires.

5.1 Instrument Development

A point sheet adopted by Jones (1988) study was used to assign weights to all negotiation issues. The more important a negotiation issue is, the higher the utility score should be assigned. The utilities of the individual values are then used to calculate a total, multi-attribute utility score for *individual outcome*. Negotiator's expectation was measured in the pre-negotiation questionnaire. *Objective confirmation* was calculated as the difference of individual outcome and expectation (Oliver et al. 1994).

Based on extensive literature review on information systems and marketing, the scale of this study was developed. In this research, we used reflective constructs to measure negotiator perceptions. Table 1 summarizes the item sources of the latent constructs. This post-negotiation questionnaire used the 7-point Likert scale (1 = strongly disagree, 7 = strongly agree).

To check the construct validity, principal components analysis was carried out with Varimax rotation. It extracted five latent variables with Eigenvalues above 1. Based on the test results and revision of the items, one item from perceived usefulness, one item from perceived collaborative atmosphere, and one item from perceived fairness were removed.

Table 1 Item sources of the latent constructs

Constructs	Sources
Perceived ease of use	3 items—Pavlou (2003), 1 item—Davis (1989)
Perceived usefulness	3 items—Pavlou (2003)
Perceived control	4 items—Morris and Marshall (2004)
Perceived fairness	3 items—Joshi (1989)
Perceived collaborative atmosphere	4 items—self developed
Negotiator satisfaction	5 items—Doll and Torkzadeh (1988)

Fig. 2 Experimental design

NSS Type		
	Traditional	40 subjects (20 dyads)
	Semi-Auto	40 subjects (20 dyads)
	Agent	36 subjects (18 dyads)

5.2 The Experiment

5.2.1 Subjects

To conduct this experiment, a total of 130 students from a large university were recruited. By checking the completion of questionnaire and the reverse item, 14 data sets were discarded. To motivate the subjects' participation, they were given a small gift as the basic reward. The dyad with the best performance in this experiment received $100 shopping voucher as a bonus reward.

5.2.2 Design and Manipulations

The study was designed as one-factorial dyadic experiment manipulating the types of NSS used (see Fig. 2 for the experimental design). Particularly, they are the traditional NSS, the semi-auto negotiation agent, and the auto negotiation agent (see Appendix 2). Compared with one specific type of NSS, this design enriches the spectrum of our data, and yields greater generalizability of the findings. Subjects were randomly assigned to use one of the three systems. Except the training material of user manual for different systems, subjects received identical text content and instructions. Random assignment to role, dyad and system type was used to ensure internal validity.

5.2.3 Experiment Task

This experiment task was adapted from Jones (1988) study, which involved negotiation between a seller (Baines Distributor) and a buyer (James Enterprise, Inc.) over four issues—unit price, purchased quantity, time of first delivery, and warranty period—for

a purchase agreement for an engine sub-component called turbochargers. Appendix 1 describes the experimental procedure in detail.

6 Data Analyses and Results

6.1 Manipulation Check

A few questions were asked in a pre-negotiation questionnaire to check if subjects understood their roles and the system to be used for the purpose of manipulation check. The responses indicated a successful manipulation.

6.2 PLS Analysis

6.2.1 Measurement Model Testing

Partial least squares (PLS) is applied for data analysis, as the research topic is relatively new with relatively small sample size (Fornell and Bookstein 1982). The measurement model describes how well the links between the latent variables and their observed measures (Byrne 1998). The purpose of the measurement model testing is to ensure the high construct convergent validity (Cook and Campbell 1979) and discriminant validity (Campbell and Fiske 1959).

Three tests are used to determine the convergent validity: (1) the reliability of questions, (2) the composite reliability of constructs, and (3) the average variance extracted by constructs. The results (see Table 2) show that all questions had reliability score greater than 0.5 (Chin 1998); the composite reliabilities of constructs with multiple indicators were above 0.7 criterion (Nunnally 1978); the average variance extracted of each construct was higher than 0.6; cronbach's alphas were higher than 0.7. These results indicate that the convergent validity of this study was established.

We adapt the method proposed by Lastovicka and Thamodaran (1991) to examine the discriminant validity. They suggested using Average Variance Extracted (AVE), which provides information about the amount of variance captured by the construct in relation to the amount of variance due to measurement error. For every construct, if the square root of its AVE is greater than its correlation with other constructs, then discriminant validity is established. Elements on diagonal line are the square root of corresponding AVE, which are all greater than their correlations with other constructs (see Table 3). This indicates that the requirement of discriminant validity was fully satisfied.

6.2.2 Testing the Structural Model

Given established convergent and discriminant validities, structural model testing was performed to check significance of hypothesized paths and explanatory power (see Fig. 3). Our model explains 63 percent variance of negotiator satisfaction. A bootstrapping procedure was used to estimate the significance of the path

Table 2 Psychometric properties of the measurement model

Constructs	Smallest item loading	Composite reliability	Cronbach's alpha	Ave
Individual outcome (OUT)[a]	1.000	1.000	1.000	1.000
Confirmation (CONF)[a]	1.000	1.000	1.000	1.000
Ease of use (PEOU)	0.808	0.898	0.849	0.687
Usefulness (PU)	0.915	0.930	0.849	0.868
Fairness (FAIR)	0.886	0.913	0.815	0.840
Control (CTRL)	0.904	0.951	0.931	0.829
Atmosphere (ATMO)	0.671	0.874	0.775	0.702
Satisfaction (SA)	0.826	0.949	0.932	0.787

[a] Objectively measured with single-item

Table 3 Discriminant validity of constructs

Construct	OUT	CONF	PEOU	PU	FAIR	CTRL	ATMO	SA
OUT	1.000							
CONF	0.493	1.000						
PEOU	0.157	0.280	0.829					
PU	0.254	0.286	0.485	0.964				
FAIR	0.280	0.150	0.266	0.355	0.917			
CTRL	0.121	0.183	0.551	0.542	0.246	0.910		
ATMO	0.288	0.235	0.345	0.396	0.456	0.316	0.838	
SA	0.411	0.383	0.392	0.541	0.547	0.579	0.510	0.887

coefficients. All statistical tests were at 5% level of significance using two-tailed t-tests.

As summarized in Table 4, individual outcome is a strong predictor of objective confirmation ($t = 6.737$, $p < 0.01$), but not a significant predictor of negotiator satisfaction. Objective confirmation was a significant predictor of satisfaction ($t = 1.962$, $p < 0.05$). Perceived control ($t = 3.981$, $p < 0.01$), perceived fairness ($t = 3.680$, $p < 0.01$), and perceived collaborative atmosphere ($t = 2.286$, $p < 0.01$) were significant predictors of negotiator satisfaction. Perceived ease of use significantly predicted perceived usefulness ($t = 6.747$, $p < 0.01$). However, both perceived ease of use and perceived usefulness were not significant predictors of negotiator satisfaction at $\alpha = 0.05$ level.

7 Discussion and Implications

7.1 Discussion of Results

The objective of this study is to empirically investigate negotiator satisfaction from both negotiation and end-user computing perspectives. The findings explained up to 63% variance of negotiator satisfaction. In line with the Disconfirmation The-

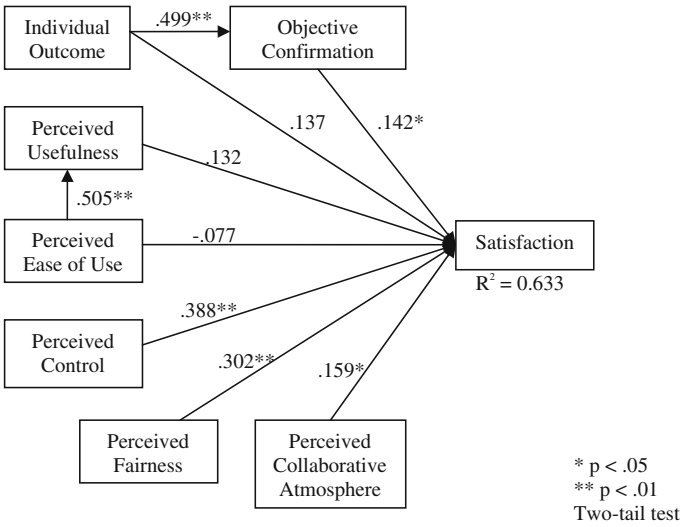


Fig. 3 Structural model

Table 4 Results of hypothesis testing

Hypothesis	Path coefficient	*t*-Value	Supported
H1: Outcome → satisfaction	0.137	1.515	No
H2: Outcome → confirmation	0.499	6.737**	Yes
H3: Confirmation → satisfaction	0.142	1.962*	Yes
H4: Perceived ease of use → satisfaction	−0.077	0.713	No
H5: Perceived ease of use → perceived usefulness	0.505	6.747**	Yes
H6: Perceived usefulness → satisfaction	0.132	1.213	No
H7: Perceived control → satisfaction	0.388	3.981**	Yes
H8: Perceived fairness → satisfaction	0.302	3.680**	Yes
H9: Collaborative atmosphere → satisfaction	0.159	2.286*	Yes

* $p < .05$, ** $p < .01$, two-tail test

ory development, this study provided supportive results that the gap between one's expectation and final outcome is a more significant predictor to satisfaction than the outcome itself. The results showed that perceived fairness is an important predictor of negotiator satisfaction when the negotiation is facilitated by an information system. Nonetheless, this study also revealed that negotiator satisfaction was significantly affected by the degree of perceived collaborative atmosphere and perceived control. Furthermore, negotiators' perceptions about the negotiation process appeared to be better determinants of satisfaction than the perceptions about the negotiation outcomes.

Although the findings showed affirmative results that perceived ease of use predicted perceived usefulness, neither perceived ease of use nor perceived usefulness was significantly related to negotiator satisfaction. A possible reason is

that the anticipating effect of perceived usefulness and perceived ease of use towards negotiator satisfaction could have been overshadowed by that of the other antecedents.

7.2 Implications

The findings of this study would enrich the knowledge regarding negotiator satisfaction in NSS context, and contribute toward system design and adoption. The implications are multifold. Firstly, the results show that negotiator satisfaction is a function of disconfirmation. Consistent with the findings in Oliver et al. (1994) study, the absolute negotiation outcomes indirectly affect negotiator satisfaction through the mediation of confirmation. This indicates that negotiators' expectation would also influence their satisfaction. Thus, it is important for them to have a good understanding of the task, so that they can establish a more realistic expectation about the negotiation outcome. Better preparation and planning of negotiation could be achieved with the assistance of NSS at the negotiation preparation stage (Lim 1999).

Secondly, perceived fairness is positively related to the negotiator satisfaction in this study. This indicates that system characteristics indeed influenced negotiator satisfaction formation. This finding is consistent with a cross-sectional survey in Joshi (1992) study, which showed that among all the short-listed factors, equity had the greatest influence on the overall user satisfaction. Thus, when introducing NSS to new users, besides making sure the negotiators understand how to use the system, it is also important to let the users be aware that the benefits of the system are equally shared among users.

Thirdly, both negotiation outcomes and perceptions of the negotiation process are important in shaping negotiator satisfaction. In addition to assisting negotiators reach positive settlements, NSS need to promote a collaborative negotiation atmosphere by exploring integrative potentials and facilitating effective information exchange. This positive negotiation process enables negotiators to focus more on the task and perceive less conflict, and consequently enhances negotiator relationship that fosters future cooperation.

Lastly, the finding also suggests that perceived control is a strong predictor of negotiator satisfaction. The negotiators might have a strong desire to control the process and outcome. In high-conflict negotiation, bargainers tended to ignore the systems' suggestions in favor of their own solutions, even though these were often not as good as the ones suggested by the system (Jones 1988). These findings indicate that perceived control is very important in NSS adoption. Specifically, fully automatic negotiation agents may not be the best choice for all kinds of negotiations. Although the use of agent may save negotiator's time and effort, they may feel they have little involvement in the negotiation process and less power to control the situation. When negotiators are able to reach consensus, they prefer to do it without external assistance (Hiltrop and Rubin 1982). In some contexts, a semi-auto negotiation agent might be more suitable, as it gives the negotiators certain level of control.

7.3 Limitations and Future Research

In this study, we collected subjects' expectation in pre-negotiation questionnaire. This procedure may introduce a priming effect to increase the level of salience on the expectation factor. Improvements of the experimental procedures are needed to minimize this effect. As noticed, there are only 116 valid data sets collected. A larger sample should be employed in future to improve the generalizability of findings. Another limitation of this study is that we used data collected from individuals who were grouped into dyads. This may bias our results, as intra-dyad responses might be correlated (Kenny and Judd 1986). In future research, researchers may randomly select one data point from each dyad to minimize this effect.

Functionality and human factors would be other potential dimensions in negotiator satisfaction research. In this paper, we did not study individual characteristics, such as gender, negotiation experience, and computer efficacy. For example, perceived ease of use might be affected by user experience in conducting negotiation and using software. Gender of the negotiator might moderate the causal relationships proposed in the model. These are the interesting directions for future research. Organizational support towards an information system would influence user satisfaction as well (Mahmood et al. 2000). It will affect one's perception and expectation of the system. Understanding the attitude of top management in shaping negotiator satisfaction forms another direction. More studies in this area are needed to enrich the knowledge pertaining to negotiator satisfaction.

8 Conclusion

User satisfaction is one of the key factors determining system adoption and diffusion. The study theoretically and empirically investigated the factors affecting negotiator satisfaction by integrating a negotiator perspective and an end-user perspective in the NSS-facilitated negotiation context. The empirical results show that both negotiation process and outcomes are important to form negotiator satisfaction. Moreover, perceived fairness of the negotiation support system is another significant predictor. More studies are needed to further understand the formation of negotiator satisfaction by incorporating factors of negotiator characteristics, organizational support, and different negotiation tasks.

Acknowledgments We wish to acknowledge the contributions of Yinping Yang and Yao Chen, the co-developers of the ProNeg system.

Appendix 1: Experiment Procedure

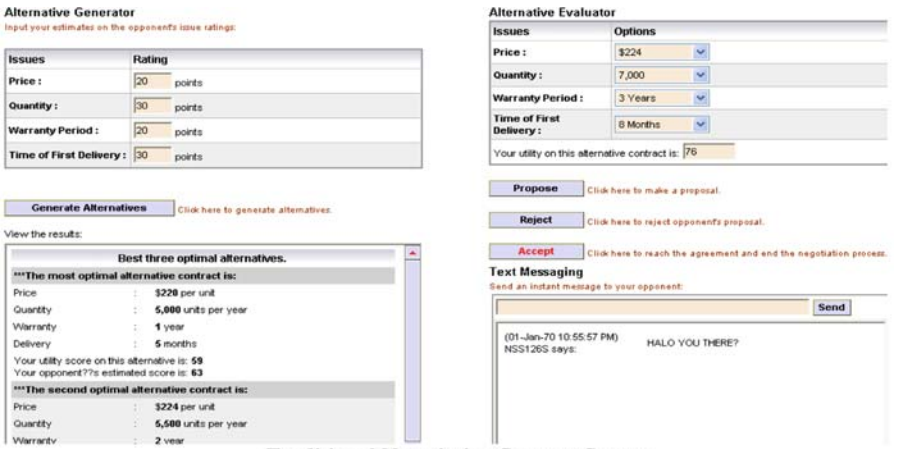
Two trained experimenters in charge of two multi-media laboratories carried out all the sessions using standardized guidelines and instructions. The negotiation process had three stages: pre-negotiation, actual negotiation, and post-negotiation.
In *pre-negotiation* phase, subjects were randomly assigned as buyers and sellers.

- *Instruction*: Subjects were given a packet of confidential task materials describing the general nature of the negotiation and what role they will play in the exercise. Both representatives were given a set of guidelines on the four issues acceptable for their companies.
- *Allocation*: Sellers and buyers were separately seated in two adjacent multi-media laboratories.
- *Training*: 10 min training on how to use the supporting systems was conducted in each laboratory.
- *Pre-negotiation questionnaire*: Each subject completed a questionnaire of personal information and a few questions to ensure there was no significant difference between the subjects, and they had understood the task. Negotiators' expectations were collected in this step.

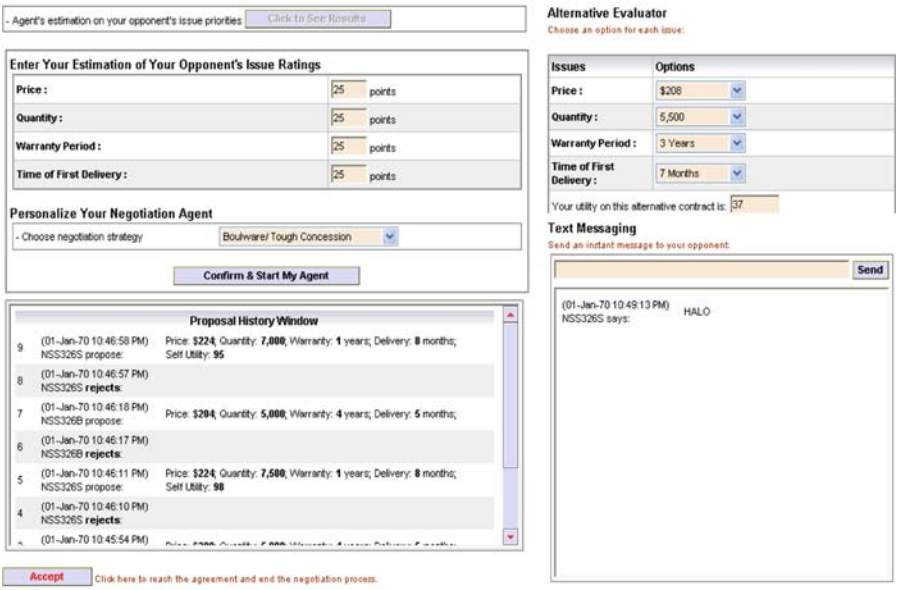
In *negotiation* phase, experimenters kept silent and conscious of potential collision between negotiating parties.
In *Post-Negotiation* phase, some assessments were recorded.

- *Post-negotiation questionnaire*: Upon settlement, subjects filled up an agreement form and a Post-negotiation questionnaire.
- *Post-negotiation record*: Instructors recorded down the ending time immediately in respective Experiment Log Sheets. Chat log files were saved to detect potential collision.
- *Reward:* At the end of each session, subjects were given away the basic rewards to appreciate their time and effort.
- *Leaving*: Upon leaving, subjects were warned explicitly not to reveal the experimental details to others.

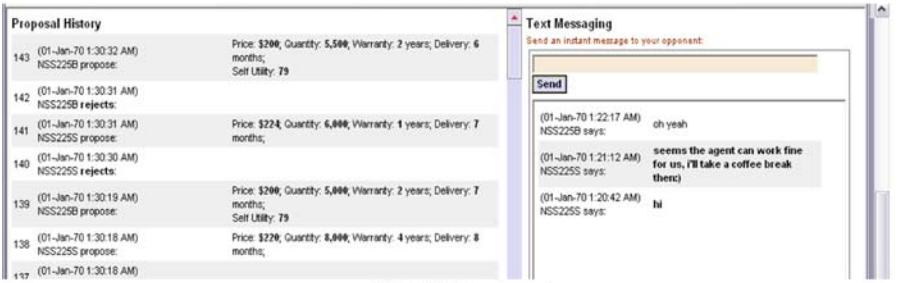
Appendix 2: Screenshots of the Negotiation Support Systems (ProNeg) Used in Experiment



Traditional Negotiation Support System



Semi-Auto Negotiation Support System



Negotiation Agent

References

Adams JS (1963) Towards an understanding of inequity. J Abnorm Soc Psychol 67(5):422–436. doi:10.1037/h0040968

Adams JS (1965) Inequity in social exchange. In: Berkowitz L (ed) Advances in experimental social psychology, vol 2. Academic Press, San Diego, pp 267–300

Adams DA, Nelson RR, Todd PA (1992) Perceived usefulness, ease of use, and usage of information technology: a replication. MIS Q 16:227–247. doi:10.2307/249577

Agarwal R, Prasad J (1998) A conceptual and operational definition of personal innovativeness in the domain of information technology. Inf Syst Res 9(2):204–215. doi:10.1287/isre.9.2.204

Ajzen I (1988) Attitudes, personality, and behavior. Open University Press, Chicago

Ajzen I (1991) The theory of planned behavior. Organ Behav Hum Decis Process 50:179–211. doi:10.1016/0749-5978(91)90020-T

Ajzen I, Fishbein M (1977) Attitude-behavior relations: a theoretical analysis and review of empirical research. Psychol Bull 84:888–918. doi:10.1037/0033-2909.84.5.888

Barry B, Oliver RL (1996) Affect in dyadic negotiation: a model and proposition. Organ Behav Hum Decis Process 67(2):127–143. doi:10.1006/obhd.1996.0069

Bazerman MH, Magliozzi T, Neale MA (1985) Integrative bargaining in a competitive market. Organ Behav Hum Decis Process 35:294–313. doi:10.1016/0749-5978(85)90026-3

Beam C, Segev A (1997) Automated negotiations: a survey of the state of the art. Wirtschaftsinformatik 39(3):263–268

Bettman JR (1974) A threshold model of attribute satisfaction decision. J Consum Res 1(September):30–35. doi:10.1086/208588

Bhattacherjee A (2001) An empirical analysis of the antecedents of electronic commerce service continuance. Decis Support Syst 32:201–214. doi:10.1016/S0167-9236(01)00111-7

Byrne BM (1998) Structural equation modeling with LISREL, PRELIS, and SIMPLIS: basic concepts, applications, and programming. Lawrence Erlbaum, London

Cadotte ER, Woodruff RB, Jenkins RL (1987) Expectations and norms in models of consumer satisfaction. J Mark Res 24(August):305–314. doi:10.2307/3151641

Campbell DT, Fiske DW (1959) Convergent and discriminant validation by the multitrait-multimethod matrix. Psychol Bull 56:81–105. doi:10.1037/h0046016

Chen E, Kersten GE (2006) Measuring ENS success: user satisfaction, technology acceptance and strategic analysis. http://interneg.concordia.ca/interneg/research/papers/2006/03.pdf

Chin WW (1998) The partial least squares approach for structural equation modeling. In: Marcoulides GA (ed) Modern methods for business research. Lawrence Erlbaum Associates, Hillsdale, NJ, pp 295–336

Chin WW, Lee MKO (2000) A proposed model and measurement instrument for the formation OfIS satisfaction: the case Of end-user computing satisfaction, In: Proceedings of the 21st ICIS

Chin WW, Todd PA (1995) On the use, usefulness, and ease of use of structural equation modeling in MIS research: a note of caution. MIS Q 19(2):237–246. doi:10.2307/249690

Churchill GA, Surprenant C (1982) An investigation into the determinants of customer satisfaction. J Mark Res 19(November):491–504. doi:10.2307/3151722

Conlon DE, Ross WH (1993) The effects of partisan third parties on negotiator behavior and outcome perceptions. J Appl Psychol 78:280–290. doi:10.1037/0021-9010.78.2.280

Cook TD, Campbell DT (1979) Quasi-experimentation: design and analysis for field settings. Rand McNally, Chicago

Davis FD (1989) Perceived usefulness, perceived ease of use, and user acceptance of information technology. MIS Q 13(3):319–340. doi:10.2307/249008

Davis FD, Bagozzi RP, Warshaw PR (1989) User acceptance of computer technology: a comparison of two theoretical models. Manag Sci 35(8):982–1003. doi:10.1287/mnsc.35.8.982

Delaney MM, Foroughi A, Perkins WC (1997) An empirical study of the efficacy of a computerized negotiation support system. Decis Support Syst 20(3):185–197. doi:10.1016/S0167-9236(96)00051-6

DeLone WH, McLean ER (1992) Information systems success: the quest for the dependent variable. Inf Syst Res 3:60–95. doi:10.1287/isre.3.1.60

DeLone WH, McLean ER (2003) The DeLone and McLean model of information systems success: a ten-year update. J Manag Inf Syst 19(4):9–30

Doll WJ, Torkzadeh G (1988) The measurement of end-user computing satisfaction. MIS Q 12(2):259–274. doi:10.2307/248851

Doll WJ, Xia W, Torkzadeh G (1994) A confirmatory factor analysis of the end-user computing satisfaction instrument. MIS Q 18:453–461

Doll WJ, Hendrickson A, Deng X (1998) Using Davis's perceived usefulness and ease-of-use instrument for decision making: a confirmatory and multi-group invariance analysis. Decis Sci 29:839–869. doi:10.1111/j.1540-5915.1998.tb00879.x

Fishbein M, Ajzen I (1975) Belief, attitude, intention, and behavior: an introduction to theory and research. Addison-Wesley, Reading

Fornell C, Bookstein FA (1982) Two structural LISREL and PLS applied to consumer exit-voice theory. J Mark Res 19:440–452. doi:10.2307/3151718

Foroughi A, Perkins WC, Jelassi MT (1995) An empirical study of an interactive, session-oriented computerized negotiation support system (NSS). Group Decis Negot 4(6):485–512. doi:10.1007/BF01409712

Gefen D, Straub DW (1997) Gender differences in the perception and use of e-mail: an extension to the technology acceptance model. MIS Q 21(4):389–400. doi:10.2307/249720

Gillespie JJ, Brett JM, Weingart LR (2000) Interdependence, social motives, and outcome satisfaction in multiparty negotiation. Eur J Soc Psychol 30:779–797. doi:10.1002/1099-0992(200011/12)30:6<779::AID-EJSP15>3.0.CO;2-7

Goh KY, Teo HH, Wu HX, Wei KK (2000) Computer-supported negotiations: an experimental study of bargaining in electronic commerce. In: Proceedings of the 21st annual international conference on information systems, Brisbane, pp 104–116

Hiltrop JM, Rubin JZ (1982) Effects of intervention conflict of interest on dispute resolution. J Pers Soc Psychol 42:665–672. doi:10.1037/0022-3514.42.4.665

Jones BH (1988) Analytical negotiation: an empirical examination of the effects of computer support for different levels of conflict in two-party bargaining. Ph.D. Dissertation, Indiana University, Bloomington

Joshi K (1989) The measurement of fairness or equity perceptions of management information systems users. MIS Q 13(3):343–358

Joshi K (1992) A causal path model of the overall user attitudes toward the MIS function: the case of user information satisfaction. Inf Manage 22(2):77–88. doi:10.1016/0378-7206(92)90063-L

Kersten GE, Lai H (2007) Negotiation support and e-negotiation systems: an overview. Group Decis Negot 16(6):553–586. doi:10.1007/s10726-007-9095-5

Kersten GE, Noronha SJ (1999) WWW-based negotiation support: design, implementation, and use. Decis Support Syst 25:135–154. doi:10.1016/S0167-9236(99)00012-3

Khalifa M, Liu V (2003) Satisfaction with internet-based services: the role of expectations and desires. Int J Electron Commer 7(2):31–50

Khalifa M, Liu V (2004) The state of research on information system satisfaction. J Inf Technol Theory Appl 5(4):37–50

Kenny DA, Judd CM (1986) Consequences of violating the independence assumption in analysis of variance. Psychol Bull 99(3):422–431. doi:10.1037/0033-2909.99.3.422

King WC, Hinson TD (1994) The influence of sex and equity sensitivity on relationship preferences, assessment of opponent, and outcomes in a negotiation experiment. J Manage 20(3):605–624. doi:10.1016/0149-2063(94)90005-1

Lastovicka JL, Thamodaran K (1991) Common factor score estimates in multiple regression problems. J Mark Res 28:105–112. doi:10.2307/3172730

Lederer AL, Maupin DJ, Sena MP, Zhuang Y (2000) The technology acceptance model and the world wide web. Decis Support Syst 29(3):271–278. doi:10.1016/S0167-9236(00)00076-2

Lim J (1999) Multi-stage support negotiation: a conceptual framework. Inf Softw Technol 41:249–255. doi:10.1016/S0950-5849(99)00006-3

Lim J (2003) A conceptual framework on the adoption of negotiation support systems. Inf Softw Technol 45(8):469–477

Lim J, Benbasat I (1993) A theoretical perspective of negotiation systems. J Manage Inf Syst 9(3):27–44

Lim J, Yang YP (2004) Videoconferencing NSS and Conflict Level: an experimental study. In: Proceedings of the IFIP technical committee 8 international conference on decision support systems: DSS2004, Prato

Lo G, Kersten GE (1999) Negotiation in electronic commerce: integrating negotiation support and software agent technologies. In: 29th Atlantic schools of business conference, Halifax

Locke EA (1976) The nature and causes of job satisfaction. In: Dunnette MD (ed) Handbook of I/O psychology, 1st edn. Rand-McNally, Chicago, pp 1297–1349

Loewenstein G, Thompson L, Bazerman MH (1989) Social utility and decision making in interpersonal contexts. J Pers Soc Psychol 57:426–441. doi:10.1037/0022-3514.57.3.426
Mahmood MA, Burn JM, Gemoets LA, Jacquez C (2000) Variables affecting information technology end-User satisfaction: a meta-analysis of the empirical literature. Int J Hum Comput Stud 52:751–771. doi:10.1006/ijhc.1999.0353
Mathieson K (1991) Predicting user intentions: comparing the technology acceptance model with the theory of planned behavior. Inf Syst Res 2(3):173–191. doi:10.1287/isre.2.3.173
Matwin S, Szapiro T, Haigh K (1991) Genetic algorithms approach to a negotiation support system. IEEE Trans Syst Man Cybern 21(1):102–114. doi:10.1109/21.101141
McKinney V, Yoon K, Zahedi FM (2002) The measurement of web-customer satisfaction: an expectation and disconfirmation approach. Inf Syst Res 13(3):296–315. doi:10.1287/isre.13.3.296.76
Melone NP (1990) A theoretical assessment of the user-satisfaction construct in information systems research. Manag Sci 36(1):76–91. doi:10.1287/mnsc.36.1.76
Morris M, Dillon A (1997) How user perceptions influence software use. IEEE Softw 14(4):58–65. doi:10.1109/52.595956
Morris SA, Marshall TE (2004) Perceived control in information systems. J Organ End User Comput 16(2):38–56
Nolan R, Seward H (1974) Measuring user satisfaction to evaluate information systems. In: Nolan RLManaging the data resource function. West Publishing, St. Paul
Novemsky N, Schweitzer ME (2004) What makes negotiators happy? The differential effects of internal and external social comparisons on negotiator Satisfaction. Organ Behav Hum Decis Process 95(November):186–197. doi:10.1016/j.obhdp.2004.05.005
Nunnally JC (1978) Psychometric Theory (2nd edn). McGraw-Hill, New York
Oliver RL (1980) A cognitive model of the antecedents and consequences of satisfaction decisions. J Mark Res 17(September):460–469. doi:10.2307/3150499
Oliver RL (1981) Measurement and evaluation of satisfaction in retail settings. J Retail 57(Fall):25–48
Oliver RL (1993) Cognitive, affective, and attribute bases of the satisfaction response. J Consum Res 20(December):418–430. doi:10.1086/209358
Oliver JR (1997) A machine learning approach to automated negotiation and prospects for electronic commerce. J Manag Inf Syst 13(3):83–112
Oliver RL, Balakrishnan PV, Barry B (1994) Outcome satisfaction in negotiation: a test of expectancy disconfirmation. Organ Behav Hum Decis Process 60:252–275. doi:10.1006/obhd.1994.1083
Parasuraman A, Zeithaml VA, Berry LL (1988) SERVQUAL: A multiple-item scale for measuring customer perceptions of service quality. J Retail 64(1):12–40
Pavlou PA (2003) Consumer acceptance of electronic commerce: integrating trust and risk with the technology acceptance model. Int J Electron Commer 7(3):69–103
Purdy JM, Nye P, Balakrishnan PV (2000) The impact of communication media on negotiation outcomes. Int J Conflict Manag 11(2):163–188. doi:10.1108/eb022839
Rangaswamy A, Shell GR (1997) Using computers to realize joint gains in negotiations: toward an electronic bargaining table. Manag Sci 43(8):1147–1163. doi:10.1287/mnsc.43.8.1147
Rangaswamy A, Starke K (2000) Computer-mediated Negotiations: review and research opportunities. In: Encyclopedia of microcomputers. Marcel Inc., New York, p 26
Raymond L (1985) Organizational characteristics and MIS success in the context of small business. MIS Q 9(1):37–52. doi:10.2307/249272
Rushinek A, Rushinek SF (1986) The effects of communication monitors on user satisfaction. Inf Process Manag Int J 22(4):345–351. doi:10.1016/0306-4573(86)90032-4
Song J, Jones D, Gudigantala N (2005) An investigation of cognitive antecedents to satisfaction using web-based decision support systems. In: Proceedings of the 26st annual international conference on information systems, Las Vegas, pp 711–724
Swan JE, Trawick IF (1981) Satisfaction explained by desired vs. predictive expectations. In: Bernhardt K, Dolich I, Etzel M, Kehoe W, Perreault W Jr, Roering K (eds) The changing marketing environment: new theories and applications. Educator's conference proceedings. American Marketing Association, Chicago, pp 170–173
Sycara KP (1990) Negotiation planning: an AI approach. Eur J Oper Res 46:216–234. doi:10.1016/0377-2217(90)90133-V
Teo TSH, Lim VKG, Lai RYC (1999) Intrinsic and extrinsic motivation in internet usage. Omega 27:25–37. doi:10.1016/S0305-0483(98)00028-0

Tse DK, Wilton PC (1988) Models of consumer satisfaction: an extension. J Mark Res 25(May):204–212. doi:10.2307/3172652

Venkatesh V, Davis FD (1996) A model of the antecedents of perceived ease of use: development and test. Decis Sci 27(3):451–481. doi:10.1111/j.1540-5915.1996.tb01822.x

Venkatesh V, Davis FD (2000) A theoretical extension of the technology acceptance model: four longitudinal field studies. Manag Sci 46(2):186–204. doi:10.1287/mnsc.46.2.186.11926

Vetschera R, Kersten G, Koeszegi S (2006) User assessment of internet-based negotiation support systems: an exploratory study. J Organ Comput Electron Commer 16(2):123–148. doi:10.1207/s15327744joce1602_3

Walster EH, Walster GW, Berscheid E (1978) Equity: theory and Research. Allyn & Bacon, Boston

Woodroof JB, Kasper GM (1998) A conceptual development of process and outcome user satisfaction. Inf Resour Manag J 11(2):37–43

Yang YP, Zhong Y, Guo XJ, Lim J (2005) An empirical study on negotiators' perceived control and system anxiety towards agent-based negotiation support tool. In: Proceedings of group decision and negotiation 2005, Vienna

Yuan YF, Head M, Du M (2003) The effects of multimedia communication on web-based negotiation. Group Decis Negot 12:89–109. doi:10.1023/A:1023016804379

Zeithaml VA, Parasuraman A, Berry LL (1990) Delivering quality service: balancing customer perceptions and expectations. Free Press, New York