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User Acceptance of Web-Based Negotiation Support Systems: The Role of Perceived Intention of the Negotiating Partner to Negotiate Online

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Abstract With the rapid growth of web-based services and global trade, there is some commercial potential for web-based Negotiation Support Services (WNSS). This market potential, however, is somewhat untapped. While previous studies had examined WNSS adoption by individual decision makers, this situation is not fully realistic, as the conformity of all negotiating partners is required for web-based negotiation to happen. Therefore, this study extends the technology acceptance model for the context of e-negotiation through the inclusion of perceptions regarding the intention of the negotiating partner to use WNSS (i.e., perceived intentions). An empirical investigation, based on phone interviews with potential users, supports the research model. The perceived intention of the negotiating partner to agree to use WNSS was found to have significant positive effect on individuals' acceptance of WNSS and its antecedents. Adding this construct into WNSS acceptance theory advances our understanding of WNSS adoption and provides important insights for scholars and practitioners.

Keywords Online negotiation · Dispute resolution · Negotiation Support Systems · Technology acceptance · Critical mass · Perceived intention of the other party

Introduction

Negotiation is an interactive communication and decision-making process between two or more parties who seek a consensus decision and cannot apply unilateral actions to achieve their objectives (Bichler et al. 2003). Unfortunately, it is a complex, unstructured process that in some cases requires higher processing and communications capabilities than humans possess. While it is an important commercial mechanism, it imposes challenges on managers and individuals due to its convoluted character. Scholars and practitioners have studied negotiations for decades and

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examined the two facets of negotiations: negotiations as ''art'' and as ''science'' (Raiffa 1982). These studies have yielded numerous descriptive frameworks to explain negotiation-related phenomena (e.g., Barry and Friedman 1998) and normative-prescriptive guidelines to improve the process and its results (e.g., Kolb 1985).

One of the advancements in the negotiations domain stems from the use of information systems and communication media to support negotiation processes and decisions. Negotiation Support Systems (NSS) are interactive, computer-based tools intended to support negotiating parties in reaching an agreement (Jelassi and Foroughi 1989). NSS include hardware, software, people, procedures and data. These components interact to assist individual negotiators, teams and other parties involved in negotiations (e.g., mediators or arbitrators) by advising, offering solutions or facilitating the process (Carmel et al. 1993). NSS that use the Internet as the electronic media for providing negotiation support are referred to as Web-based NSS (WNSS) (Kersten 2003). These systems provide varying levels of structured communications and decisions support (Lim and Benbasat 1993); and offer both dispute resolution mechanisms (i.e., dealing with infringements of existing contracts) as well as contract formation services (i.e., creating new agreements). Recently, some experimental and commercial ventures started deploying such systems over the Internet, using electronic mail (email) and instant messaging (IM) as underlying communications components. For example, SquareTrade (http://www.squaretrade.com) provides online dispute resolution services to eBay's (http://www.ebay.com) customers and the Electronic Courthouse (http://www.theelectroniccourthouse.com) provides online mediation and arbitration services for commercial dispute cases.

So far, empirical studies of the merit of computer-mediated negotiation were conducted in relative isolation and yielded inconclusive and fragmented theory. Obtained conclusions are context dependent and are difficult to be generalized beyond the specific system, users and the case used in the experiment. For example, Drolet and Morris (2000) found that face-to-face negotiations in mixed-motive conflicts facilitate coordination of a mutually beneficial settlement. However, in a different context, namely escalated conflict, it was found that computer-mediated negotiations drive higher integrative behavior than do face-to-face ones (Dorado et al. 2002). Additional studies were conducted in various contexts and yielded both cases in favor and against computer mediated negotiations (see Bazerman et al. 2000 for a good review).

In line with the vague broad benefits of online negotiations and the profound experience individuals have with face-to-face ones, service providers have strived to identify the appropriate context for such services, and to understand factors that drive the adoption of online negotiations. A unique attribute of online negotiation systems is that their use requires consent from at least two users (i.e., the negotiators). This dyadic nature of use makes e-negotiation systems different from many other information systems. It has been shown that one's beliefs regarding the other's intentions can affect his/her perceptions and behaviors (for example see Armstrong et al. 2001; Axelsson et al. 2003; Harris et al. 2004). Specifically, in the e-negotiation context, past experiences of service providers demonstrates that the agreement of the other party to participate in online negotiations is difficult to achieve and is a major impediment to the acceptance of online negotiations (Katsh and Rifkin 2001, p. 56). This unique online negotiation characteristic, nevertheless, was not explored in technology acceptance studies in general, nor specifically in NSS adoption investigations.

This paper fills this void by examining the effects of potential users' beliefs regarding the intention of their negotiation partners to accept online negotiations (i.e., Perceived Intention) on their attitudes toward WNSS, and intentions to use online negotiations in the future. Moreover, WNSS-specific dimensions of usefulness are examined. Behavioral intentions to use information systems are determined by perceived usefulness (PU) of a system and attitudes towards a system, among other constructs (e.g., Karahanna et al. 1999). The perceived intention construct is added as a predictor of attitudes and behaviors to an adapted technology acceptance model (TAM) (Davis 1989) in order to explain these relationships in the online negotiations context. This model is believed to accurately depict the perceptions and behaviors of WNSS users, and can provide insightful information for NSS researchers and online negotiation service providers.

To examine the suggested model and address the associated research questions, the remainder of the paper is structured as follows. The next section outlines current research on NSS and reviews extant empirical studies of NSS adoption. In addition, it outlines the theoretical foundations of the research model and presents the study's hypotheses. The research methodology section portrays the development of measures and data collection. The subsequent section presents statistical results; while a summary of the findings and discussion of the academic and practical implications are provided in the last section.

Theoretical background

Current research on NSS and NSS adoption

Traditionally, NSS are viewed as a branch of Group Decision Support Systems (GDSS) (Fjermestad and Hiltz 1998). The scope of NSS in recent literature, however, was widened to include other types of interactions. While early research viewed NSS in a narrow context of intra-group decision making (for example see Carmel et al. 1993), recent studies have extended the scope of e-negotiations to include inter-organizational negotiations or even consumer-to-consumer online auctions (Strobel and Weinhardt 2003). So far, the study of such systems and services has dealt mainly with the development of various NSS tools (e.g., Kersten 1985), the efficiency and effectiveness of this new negotiation method (e.g., Hollingshead et al. 1993); and provided a conceptual review of potential benefits and challenges of conducting online negotiation (e.g., Hornle 2003). However, many behavioral issues in the e-negotiation context are relatively untapped.

From a holistic point-view, NSS can offer three levels of support: process support, decision support and negotiation automation (Yuan et al. 2003). Process support NSS frame process boundaries, structure the negotiation procedures, and register offers and interactions by utilizing electronic communications technologies like secured chat-rooms and email in a structured manner. Decision support NSS uses the electronic media to suggest optional solutions, and to evaluate alternatives. Optimal solutions are difficult to achieve in negotiations due to the conflict of interest between the parties, weak processing capacities and capabilities of the parties, cognitive biases and socio-emotional tendencies (Bazerman et al. 1985). Accordingly, research consistently argues that negotiations do not always lead to agreement and

even then, outcomes are typically not on the Pareto-optimal frontier (for example see Sebenius 1992). Decision Support NSS address these pitfalls through the use of preference elicitation methods coupled with multi-attribute utility approaches. The next level of negotiation support—agent based NSS, attempts to automate negotiation through the use of software agents over electronic media. This research stream, however, is still in its infancy.

Altogether, these systems can enable negotiation where it is infeasible, invaluable or difficult to meet face-to-face; and, drive processes and decision-making to increase satisfaction with the negotiation process and outcome. Thus, NSS play a dual role of an enabler and a driver; and can potentially add value to negotiation processes. These benefits, however, did not yet lead to adoption by individuals and organizations (Lim et al. 2002). Adoption studies address this issue and examine how information systems can turn into a business (Legris et al. 2003).

Two recent studies have explored acceptance of NSS. First, Lim (2003) used a sample of 92 managers in Singapore to explore two competing adoption models: The Theory of Planned Behavior (TPB) (Ajzen 1991) and the TAM (Davis 1989). The findings suggest that subjective norms and perceived behavioral control are pivotal determinants of intention to adopt NSS in an organizational context. Attitude and perceived usefulness were not identified as major antecedents. Subjective norms in the above-mentioned study refer to the social pressure placed by co-workers, vendors and clients; and perceived behavioral control refers to the ease of performing a behavior based on judgments of available resource and constraints.

A second study (Vetschera et al. 2006), assessed intentions to use NSS using a modified TAM. This study is based on experiments involving over 2,000 students out of which 1,200 usable responses were obtained. The experiments were conducted over the Internet using a specific experimental WNSS, namely INSPIRE (Kersten and Noronha 1999), with users from various countries negotiating a commercial case. The pairing of the negotiators was prearranged, and thus, subjects were not bothered with the real-world issue of the agreement of their negotiating partner to resolve the dispute online. The findings suggest that NSS assessment is influenced by post-experience perceptions of usefulness and ease of use as well as by the negotiation outcome. A Probit model was used to show that system assessment has a positive, but very weak, effect on intention to use the system. In conclusion, one of the main gaps between this experimental setting and the real-world is that all students negotiated online without having to persuade the other party to do so. Accordingly, the dual-adoption issue of WNSS is ignored in this model as well.

Additional studies have explored user acceptance of similar or tangent applications. For example, Dasgupta et al. (2002) examined user acceptance of an e-collaboration technology. Though WNSS may use an array of e-collaboration tools, their scope can go beyond merely collaboration, and include other components such as standalone analytical support (For example, Negotiator (Bui 1992) is a standalone NSS). Thus, the conclusions drawn from this study are applicable to the examined application only (''Promtheus''), and are not generalizable to WNSS. Also, the perceived intention of a collaborating partner to use the system was somewhat less relevant in the former study and was not explored.

Furthermore, all aforementioned studies use multiple regressions to assess one set of linkages between independent and dependent variables at a time. A simultaneous examination of the structural and measurement models is desirable as it incorporates the measurement errors of the observed variables into the model analysis (Gefen

et al. 2000b). The latter analysis may yield a more accurate model assessment. Thus, this study applies structural equation modeling for hypothesis validation.

Research model and development of hypotheses

The TPB (Ajzen 1991) and its predecessor—The Theory of Reasoned Action (TRA) (Fishbein and Ajen 1975) are the most commonly used models to explain intentions (see a meta-review in Sheppard et al. 1988). Such attitude models from social psychology were suggested as feasible means to explain computer-user behavior. Consequently, TAM (Davis 1989) was proposed, and became a common model to explain IS acceptance (see review in Legris et al. 2003). In contrast to TPB and TRA which are applicable to any intention formation, TAM is designed specifically to explain behavioral intention to use information systems. The seminal TAM study compared its explanatory power with the one of TRA in an information systems context, and concluded that TAM explains substantially more variance in system usage than TRA does (Davis 1989). TPB and TRA, however, deliver more specific information on characteristics of the system under examination (Mathieson 1991). Accordingly, this study adapts the TAM framework to explore acceptance of WNSS, but uses system-specific perceptions for the measurement model.

The purpose of this study is to examine the effect of beliefs regarding the intention of the negotiating partner to use WNSS on negotiator's acceptance of such systems. Building on the definition of intention by Harisson et al. (1997), Perceived intention of the other party (PIOP) in the e-negotiation context is conceptualized as a negotiator's perception regarding the strength of the conscious plan of his or her negotiating partner to use WNSS. Specifically, in this study we seek to examine how perceived intention of the negotiating partner to negotiate through WNSS forms attitudes towards WNSS and behavioral intention to use WNSS. Note that the concept of perceived intention of the counterpart to negotiate online is different from subjective norms (as conceptualized in TPB studies). While the subjective norms construct reflects the normative pressures an online negotiator faces, perceived intentions represent more normative beliefs that lead to behavioral outcomes. Thus, using the lens of the Theory of Planned Behavior (Ajzen 1991), perceived intentions is a context-specific perception that is derived from normative beliefs, and not a peer pressure factor. The proposed research model is depicted in Fig. 1. The theoretical development of the hypotheses is presented below.

Theoretical development

TAM posits that two perceptions—perceived usefulness (PU) and perceived ease of use (PEOU) of the system in question are the primary factors that determine usage behavior. Perceived usefulness is defined as prospective users' assessment of the ability of the system to improve their performance; and, perceived ease of use is defined as the degree of expectation that the use of the system would be free of effort (Davis 1989). In an online negotiation context, performance improvement includes enhancement of efficiency and effectiveness of both the process and the outcome.

In subsequent TAM studies, however, ease of use was found to be a less important determinant of system usage (Adams et al. 1992; Taylor and Todd 1995).

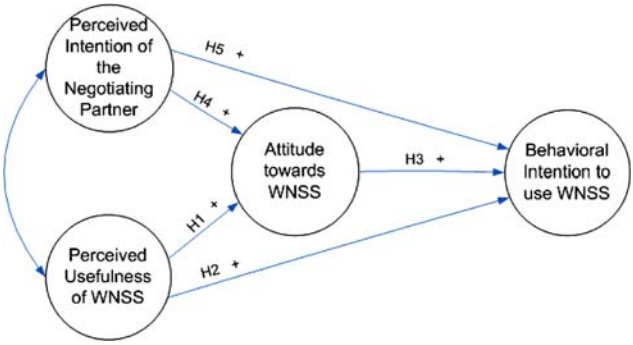

Fig. 1 A research model for the adoption of WNSS

Moreover, in some studies, the effect of perceived ease of use on system usage was not found to be statistically significant (e.g., Dasgupta et al. 2002). Later studies have demonstrated that PEOU is an ephemeral construct in the sense that it plays an important role in explaining BI when users are exposed to the system for a short while, but prolonged exposure makes it a less-relevant construct (Venkatesh et al. 2003). In addition, it is difficult to form perceptions of ease of use without actually seeing the system or even just trying it for awhile. Taking into account that most individuals in our study were not exposed to WNSS systems, and that the research methodology applied (phone-survey) does not allow system trials, the PEOU construct is omitted from our study.

TAM contends that the effect of usefulness perceptions on usage behavior is partially mediated by attitudes towards the system in question. Attitude is an individual's psychological tendency that is expressed by positive or negative evaluation of a particular entity (Eagly and Chaiken 1993, pp. 1–21). Attitude is a tendency because it is not necessarily an enduring condition. It is an internal state that lasts for at least a short time. In an online negotiation context, it reflects positive or negative feelings about using WNSS.

In organizational environments, TAM maintains that in addition to the mediated effect, there should be a direct effect of usefulness perceptions on usage behavior. This direct effect received strong support in many pre-adoption studies (e.g., Taylor et al. 1995; Venkatesh et al. 2003). Thus, it is believed it holds true also in the case of pre-adoption of WNSS. Furthermore, Behavioral Intentions to use a system (BI) were found to be highly correlated with actual usage of a system (Davis 1989). Therefore, behavioral intentions are a reasonable proxy when measures of actual behavior are infeasible. Based on the aforementioned TAM reasoning, the following relationships are hypothesized:

Hypothesis 1 Perceived usefulness of WNSS will have a positive direct effect on attitude toward WNSS.

Hypothesis 2 Perceived usefulness of WNSS will have a positive direct effect on behavioral intention to use WNSS.

Hypothesis 3 Attitude toward WNSS will have a positive direct effect on behavioral intention to use WNSS.

The Social Construction Theory (Fulk 1993) posits that within a social system, attitudes toward, and uses of technologies converge. Networks of inter-subjectively shared meanings can drive the common understanding of issues. Therefore, coordinated attitudes toward, and behaviors regarding technologies, are expected to be formed within social groupings. In line with this notion, it has been demonstrated that social impact on technology-related attitudes and behavior exists, and that it is stronger when individuals have affective ties to their group (Fulk 1993). Negotiation situations form such ad-hoc groups of at least two negotiators. The strength of the affective and functional relations within such groups depends on the context of negotiations (e.g., divorce negotiations are expected to be more affective than commercial ones). In ad-hoc online negotiation groups, all parties must at least conform to the use of WNSS through shared attitudes. Thus, the perceived intentions of the other party to use a WNSS, within the social system of the negotiators can affect one's attitude towards WNSS. Accordingly, the following hypothesis is suggested:

Hypothesis 4 Perceived intention of the negotiating partner to negotiate online will have a positive direct effect on attitude toward WNSS.

Two theoretical lenses may be used to explain the potential effect of perceived intentions of the other party to negotiate online on users' behavioral intentions to use WNSS. First, based on the Theory of Planned Behavior (Ajzen 1991), perceived intentions, as a context-specific belief, is expected to affect one's behavioral intentions to use with WNSS. Second, the Critical Mass theory (Markus 1987) can explain the effect of beliefs regarding the other negotiators on the adoption of WNSS. For new interactive communication mediums, such as WNSS, access to the medium functions as either an enabler, or as a barrier (Rice and Shook 1988). Universal access to interactive media forms perceptions that using the media is a feasible option (Markus 1987; Webster 1998). Thus, potential adopters of WNSS might reject such systems due to their beliefs that there is no 'critical mass' of users. Based on these two views, the following hypothesis is suggested:

Hypothesis 5 Perceived intention of the negotiating partner to negotiate online will have a positive direct effect on behavioral intention to use WNSS.

Research methodology

In order to empirically assess the suggested hypotheses and the research model, a telephone-based survey among 500 randomly selected senior managers of companies in Ontario, Canada was conducted. The companies' and CEOs' contacts were obtained from the Canadian Business Disc, published quarterly by InfoCanada. Contacts included CEOs of two industry sectors: manufacturing & services; and labor unions (i.e., firms that represent unionized employees in collective negotiations with employers over terms and conditions of employment). These two sectors were selected since it was believed that they apply negotiations on a daily basis and accordingly, can accurately depict perceptions regarding e-negotiations.

Initially, CEOs were contacted and were asked to provide contact information of the senior manager that most frequently deals with negotiation or dispute resolution.

It is believed that the selected mangers are experienced with these domains, and thus, can develop more accurate perceptions regarding WNSS. Moreover, it was assumed that senior managers' views are aligned with the vision and direction of the company as a whole and that they are decision makers (Harrison et al. 1997). Seventy two senior mangers have agreed to complete the phone interview, yielding an acceptable response rate of 14.4%.

The study began with an over-the phone introduction of a conceptual WNSS (see description in Appendix) followed by a set of statements to which respondents had to report their extent of agreement. The purpose of the description was to introduce the concept of WNSS in order to form beliefs, perceptions and attitudes towards WNSS. The first stage of technology diffusion includes exposure to the innovation and gaining some understanding of how it functions (Rogers 1995). Information about the system's characteristics is evaluated, and attitudes towards it are formed. Since none of the participants had previous experience with such systems, it was essential to let them understand the system before completing the questionnaire.

A set of WNSS-specific measures for perceived usefulness, attitude, behavioral intention and perceived intention of the negotiating partner was developed based on a review of NSS literature. The deviation from Davis' measures (Davis 1989) through the application of context-specific ones is expected to yield more information on WNSS usage factors and beliefs. Face validity (Straub 1989) of the research instrument was assessed by academics and industry practitioners. Their feedback led to adjustments in some questions and modifications of a few scales. Overall, it is believed that the use of this research instrument facilitated reliable and valid data collection, and in turn, helped address the proposed research questions. The research instrument is presented in Table 1.

Table 1 Research instrument

Construct	Measure ID	Measure statement
Perceived usefulness of WNSS (PU)	PU1	WNSS helps to reduce the need for traveling
	PU2	WNSS helps to arrange negotiation at anytime with great flexibility
	PU3	WNSS helps to create a structure in the negotiation process
	PU4	WNSS assists in obtaining dispute resolution services at lower cost
	PU5	WNSS helps to resolve disputes quicker than traditional litigation does
	PU6	WNSS helps improve business relationships
Perceived intention of the other party to use WNSS (PIOP)	PIOP1 (Reverse)	My negotiation partner would refuse to conduct negotiations via WNSS
Attitude towards WNSS (ATT)	ATT1 (Reverse)	We are used to current ways of negotiating and do not want to change
	ATT2 (Reverse)	Negotiation must be done face-to-face; not through electronic media
	ATT3 (Reverse)	We do not see clear benefits of using WNSS
Behavioral intention to use WNSS (BI)	BI1	I would be interested in using WNSS

The study used five-point Likert scales, ranging from strongly disagree (1) to strongly agree (5) where 3 is the neutral point. A five-point scale was selected since in exploration of an unfamiliar area it is difficult for respondents to generate better discriminations. The use of this scale as well as multiple questions per construct was expected to yield valid data. Moreover, some reverse-scale items were applied to ensure the reliability of the data. The rationale is that these items serve as cognitive 'speed bumps' that require respondents to engage in more controlled, rather than automatic, cognitive processing (Podsakoff et al. 2003). This allows partialling out of the effect of unidirectional wording (Singh 2004) and potentially reduces common method bias in self-reports (Podsakoff and Organ 1986). In addition to questions pertaining to managers' perceptions, several items pertaining to company information, negotiation experience and Internet uses were solicited. Collected responses were cleansed and then used in a Partial Least Squares (PLS) analysis.

Study results

Descriptive statistics

The sample included 72 respondents from two sectors. Forty respondents were senior managers of manufacturers or service providers and the other 32 were senior managers of labor unions. Table 2 outlines some descriptive statistics on organizations' sizes in terms of number of employees. As a preliminary step, Multi-variate Analysis of Variance (MANOVA) with a full factorial design was conducted. In this model, organization type and size were defined as fixed factors, and the research model's observed variables as dependent variables. All Wilks' Lambdas were not significant ($p < 0.26$, $p < 0.82$ and $p < 0.12$ for organization type, size and their interaction, respectively), indicating that there are no omnibus differences based on size and type. Thus, these factors are used only for descriptive purposes, and excluded from further analysis (i.e., there is no need to control for them). Revenues, amounts in dispute, annual number of negotiations and the average worth of negotiated contracts were not always disclosed, so this data is not reported.

The survey shows that the Internet has become prevalent within businesses in Ontario, Canada. In addition, it demonstrates that commercial contract formation and dispute resolution are vital business processes within the surveyed industries. Ninety percent of the surveyed organizations use the Internet, but mainly for web presence. Similarly, negotiations are common within the surveyed organizations. All of the organizations exercise some form of negotiations or dispute resolution. Dispute resolution, however, is less common than contract negotiations. Only 71% of the surveyed organizations apply this process.

Table 2 Organization size (number of employees)

	Under 25	25–100	101–500	500–1,000	Over 1,000
Manufacturing & services	14	4	17	1	4
Labor unions	26	6	0	0	0
Total	40	10	17	1	4

The surveyed managers use almost all communication media for negotiating contracts or resolving disputes. Table 3 reports on managers use of the various communications mediums:

The low acceptance of video-conferencing could be attributed to the high cost of the infrastructure and the need for both negotiating sides to have it. Webster (1998) demonstrated that beliefs regarding a lack of 'critical mass' of users are an important desktop-conferencing usage impediment. Our results suggest that some barriers to the adoption of video-conferencing for negotiations still exist; and again it can be partially credited to low certainty that other peers, suppliers and clients would use it. Similar logic can be applied to the adoption of WNSS and lessons from the video-conferencing domain can pertain to the NSS domain.

The outer (measurement) model

Approximation of loadings of all items were done by using Partial Least Squares (PLS) version 03.00 (Chin 1998). PLS was chosen since it requires smaller sample sizes than other structural equation modeling methods do, and places less limitations on the data (Gefen et al. 2000a). For example, strict multi-variate normality and large samples are typically not required for reliable estimates. Item and construct statistics for the measurement-model are presented in Table 4. Explanations are provided below.

As an initial analysis step, reverse-scales (Attitude towards WNSS (ATT) and Perceived intention of the negotiating partner to use WNSS (PIOP)) were inverted to enable directional inference in the structural model. Subsequently, construct reliability was assessed with Cronbach's alphas. As all alpha measures were above

Table 3 Communications mediums used in negotiations/dispute resolution[a]

	Face to face	Phone	email	Fax	Mail	Video conference	WNSS
Manufacturing & services	24	20	14	4	5	1	0
Labor unions	26	4	6	1	1	1	0
Total	46	24	20	5	6	2	0

[a] The total in each row is more than 72 since organizations use multiple communication channels

Table 4 Items' and constructs' statistics

Item	Mean	SD	Factor loading	Residual variance	Item-total correlations	Cronbach α	Internal consistency (Convergent validity)
PU1	3.69	1.109	0.6796	0.5381	0.523	0.853	0.8916 (0.5796)
PU2	3.43	1.085	0.8413	0.2922	0.738		
PU3	3.25	0.975	0.7603	0.4220	0.640		
PU4	3.03	0.978	0.7335	0.4620	0.594		
PU5	2.88	1.100	0.8145	0.3365	0.724		
PU6	2.88	1.074	0.7267	0.4718	0.628		
PIOP	2.60	1.070	1.0000	0.0000	1.000	NA	NA
ATT1	2.88	0.992	0.7964	0.3657	0.632	0.808	0.8861(0.7221)
ATT2	2.61	1.056	0.8609	0.2588	0.673		
ATT3	2.79	0.903	0.8893	0.2091	0.673		
BI	3.15	0.974	1.0000	0.0000	1.000	NA	NA

0.8 there is some confidence that the scales present high internal reliability (Nunaly 1978). Fornell and Larcker's (1981) measures of internal consistency and convergent validity of all constructs were greater than 0.7 and 0.5, respectively. Thus, there is some assurance that constructs are consistent and that the items capture a single concept.

The loadings of ten out of 11 items exceeded the desirable threshold of 0.7 and thus, there is more shared variance between the construct and its measures than error variance (Carmines and Zeller 1979). The loading of PU1 (''WNSS helps to reduce the need for traveling'') is slightly below 0.7. A *t*-statistic of 3.8 indicates that the measure is significant at the 0.001 level. Therefore, there is some confidence that PU1 effectively reflects perceived usefulness (Anderson and Gerbing 1988) and as such, is not omitted from the model. In addition, item-to-total correlations of all items were above 0.5 and exceeded the cut-off point of 0.35. Hence, no items were removed as they are meaningful reflective dimensions of the underlying constructs.

Correlation matrix and construct discriminant validities are presented in Table 5. For multiple-item constructs the square root of the average variance extracted (AVE) is reported on the diagonal. A visual inspection of the values indicates that the entries in the diagonal are higher than the correlations with the other constructs. Furthermore, all correlations are not too-high and are significant at the 0.01 level. Therefore, there is some assurance that the multiple-item factors, namely usefulness and attitude, as well as the single-item factors, namely BI and PIOP, are distinct concepts and that the model holds high discriminant validity.

To further examine discriminant validity, a matrix of loadings and cross-loadings was constructed (see Table 6). The loadings of each factor on its associated items were evaluated against its cross-loadings. A visual inspection demonstrated that all items had high loadings on their corresponding factors (in bold) in comparison with the cross-loadings. Thus, it is reasonable to believe in the discriminant validity of the measures and the constructs they relate to.

Some observations regarding the perceived importance of various characteristics of WNSS can be drawn from the obtained loadings. Increased flexibility in arranging negotiations (PU2) and quicker results (PU5) have the highest loadings from perceived usefulness. Hence, flexibility and time-savings are the most important reflections of usefulness in the context of WNSS. Though a somewhat obvious characteristic, reduction of traveling (PU1) does not as strongly reflect usefulness of WNSS. This phenomenon can be attributed to the fact that the responding managers may enjoy business traveling for negotiation purposes and would not fully want to eliminate it. Alternatively, it can be ascribed to a belief that WNSS alone is not enough, and traveling for additional face-to-face meetings is still required.

A post-hoc multiple-comparison using Tukey's Honestly Significantly Different (HSD) test was conducted. The results show that PU1 is significantly different from PU5 and PU6 ($p < 0.000$); and that PU2 is significantly different from PU5 and PU6

Table 5 Correlation matrix and assessment of discriminant validity

	PU	PIOP	ATT	BI
PU	**0.76**			
PIOP	0.35	**N/A**		
ATT	0.52	0.35	**0.85**	
BI	0.57	0.52	0.48	**N/A**

Table 6 Matrix of loadings and cross-loadings

	PU	PIOP	ATT	BI
PU1	**0.6797**	0.1797	0.4884	0.3570
PU2	**0.8413**	0.3090	0.4913	0.4433
PU3	**0.7603**	0.2598	0.3856	0.4933
PU4	**0.7335**	0.3741	0.3334	0.4539
PU5	**0.8146**	0.1601	0.3703	0.4390
PU6	**0.7268**	0.1149	0.2703	0.4091
PIOP	0.3170	**1.0000**	0.3809	0.5194
ATT1	0.2926	0.2836	**0.7964**	0.3408
ATT2	0.4467	0.3830	**0.8610**	0.3738
ATT3	0.5412	0.3055	**0.8893**	0.5173
BI	0.5705	0.5194	0.4946	**1.0000**

as well ($p < 0.021$). These findings support the loading-based inference regarding the relative significance of WNSS attributes. A similar post-hoc test for the differences between items of attitude reveal that there is no significant difference and that all attitude items behave as a single homogeneous subset.

Hypotheses validation

A test of the structural model depicted in Fig. 1 was conducted. *T*-statistics for the causal relationships were derived using bootstrapping with 70 re-samples. Figure portrays the structural research model with the significance levels of the coefficients.

The results demonstrate that all hypotheses were supported (i.e., all path coefficients were positive and statistically significant, see Fig. 2) and facilitate additional observations. First, in line with previous TAM studies that found a weak effect of attitude on behavioral intentions to use the information system under investigation (e.g., Davis et al. 1989) or no significant effect at all (e.g., Taylor and Todd 1995), attitude was found to be a weak mediator (significant only at the 0.05 level) for the effect of perceived usefulness on behavioral intentions to use WNSS. Second, while in most TAM studies, perceived usefulness, attitude, and perceived ease of use explain roughly 40% of the variance in behavioral intention (Legris et al. 2003), the application of WNSS-specific measures, coupled with the addition of perceived

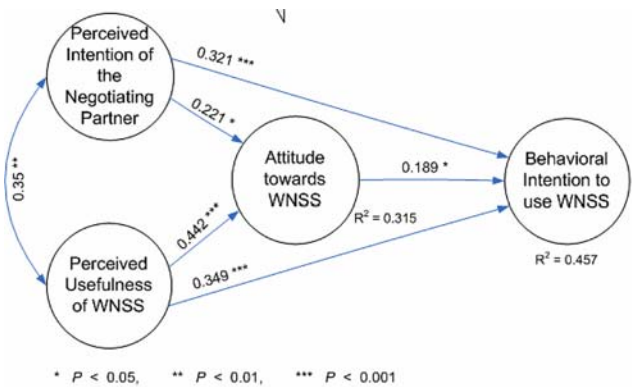

Fig. 2 Hypotheses validation—the structural model

intention of the other negotiating party, has yielded an explanation of almost 46% of the variance in behavioral intentions to use WNSS.

In order to assess the contribution of the perceived intention construct to the model, a table of *R*-squares for a controlled model (with the Perceived Intention of the Negotiating Partner to Use WNSS construct (PIOP)) and an uncontrolled model (without PIOP) was constructed. Table 7 outlines these values and *F*-statistics for the changes in *R*-square.

As Table 7 demonstrates, one's perception regarding the intention of the other party to use WNSS explains additional variance in his or her attitude towards WNSS and behavioral intention to use WNSS. Specifically, the ''perceived intention'' construct increases the variance explained in the endogenous variables, ATT and BI by 4.1% and 8.3%, respectively. The effect of perceived other's intention to use WNSS on behavioral intention to use it, is as strong as the effect of perceived usefulness on behavioral intention. That is, perceptions regarding the intentions of the negotiating partner to use WNSS are strong predictors of one's intention to use WNSS. Beliefs regarding these intentions affect the perceptions of viability of negotiating online, and may be considered as a major hurdle in turning attitudes and perceptions into actual usage behavior.

Discussion and implications

Discussion of theoretical merit

The study sought to examine the impact of individuals' perception regarding the intention of their negotiating partner to use WNSS on their acceptance of WNSS. This investigation was initiated to obtain empirical evidence to support the growing body of literature that addresses the challenging diffusion of WNSS. To address this issue, the TAM was adapted to the context of WNSS, and the construct of PIOP to use WNSS was added as a predictor of attitudes and behavioral outcomes. The extended model builds on notions from general attitude formation models (Ajzen 1991), from the 'critical mass' theory (Markus 1987), and from the 'social construction theory' (Fulk 1993; Walsh and Ungson 1991).

The findings suggest that perceived other's intention to use WNSS has a significant positive influence on both attitude towards WNSS and behavioral intention to use WNSS. These findings are congruent with the above-mentioned underlying premises. The findings of this study also echo the qualitative-based conclusions drawn by Webster (1998) regarding similar communication applications (desktop video-conferencing) that require acceptance by the other party as a prerequisite to usage behavior.

Table 7 A comparison of controlled and uncontrolled models: *R*-squares for endogenous constructs

Model	ATT	BI
Uncontrolled model	0.274	0.374
Controlled model	0.315	0.457
Contribution of PIOP to explanatory power	0.041	0.083
F-test for increment in *R*-square	5.139	10.754
p-value	< 0.027	< 0.002

Consistent with previous TAM studies, the effects of perceived usefulness on behavioral intention to use WNSS and on attitude towards WNSS were found to be significant. The effect of attitude on behavioral intention was also found to be significant, but somewhat weaker. As TAM studies are inconclusive regarding the latter causal link, our findings are congruent with the current status-quo. In addition, whereas most TAM studies explain about 40% of the variance in intention to use a system, our context specific model, that includes the perceived other's intention construct, explains 46% of the variance in intention to use WNSS.

A post-hoc analysis of inner-model items revealed that flexibility to arrange negotiations anywhere and anytime, as well as time savings, are major reflections of perceived usefulness of WNSS. Reduction of traveling time, however, does not strongly reflect beliefs regarding WNSS usefulness. This finding may be ascribed to the fact that managers enjoy business traveling or think it is still necessary, regardless of the use of the WNSS. Therefore, the reduction in traveling results in lower contributions to perceptions of usefulness.

An analysis of the contribution of perceived intention to the variance explained of all endogenous constructs reveals that it is meaningful and significant. Weak perceptions regarding the other negotiating party's intention to accept WNSS, reduces potential users' attitudes towards the system and their behavioral intentions of to use WNSS. Altogether, these beliefs serve as a barrier for transforming one's attitudes and perceptions into actual acceptance of WNSS.

Overall, this manuscript introduces the construct of perceived intention of the negotiating partner to use WNSS (PIOP) into e-negotiation research, and forms the foundation for future studies of technology adoption of WNSS. This additional explanatory variable significantly increases the variance explained in intention to use WNSS. In addition, some insight on reflections of WNSS usefulness was gained.

Moreover, this study establishes the foundation for additional IS adoption studies in contexts in which the use of the information system is not under the full volitional control of the user, but rather is also dependent on acceptance of other involved parties (e.g., video-conferencing, collaborative games, etc.). Thus, the concept of beliefs regarding the intentions of other involved parties could be incorporated into these types of studies.

Practical implications

For practitioners, this paper empirically validates that the perceived intention of the negotiating opponent to accept WNSS is a major adoption barrier within an organizational context. Thus, addressing this issue in creative ways is vital to fostering the diffusion of WNSS. Among the actions WNSS providers can take to address this situation one can think of integration to commonly used websites, affiliation with commercial associations, and diffusion of mandatory online-mediation/arbitration clauses to commercial agreements.

The first avenue of action naturally lead to using WNSS to resolve disputes as WNSS is offered as an integral part of a previously used online service. The e-negotiation service is provided by a known website, and can be perceived as a continuum of the service. Both parties that transacted online (B2B, C2C or B2C) are comfortable to some extent with Internet based transactions in general, and particularly with the website used for the transaction. Thus, beliefs regarding the

intention of the other disputant to use WNSS can be enhanced. The affiliation of SquareTrade (http://www.squaretrade.com) with eBay (http://www.ebay.com) is an example for such approach in the C2C domain. The former provides online dispute resolution for the latter auction site. In addition, online marketplaces in the B2B domain may consider providing e-negotiating services to their extant customer base. The users of such marketplaces are already registered with it, and trust it to some extent. Thus, it is natural for such organizations to negotiate new contracts through the marketplace and to resolve disputes through the marketplace.

The second avenue of action can potentially form an institutional arrangement that builds service providers' credibility and reduces the likelihood that the negotiating partner would refuse to negotiate online. For example, affiliations of a WNSS provider with organizations such as the Better Business Bureau (BBB) can yield stronger beliefs regarding the likelihood of the negotiating partner agreeing to participate in online negotiations. This mode of affiliation may form initial trust in the service provider and in its competence, and consequently, lead to stronger beliefs regarding the intentions of the negotiating partner to agree to use the service.

The third avenue of action eliminates the dependency on the other party's agreement to participate in online negotiations, as it prearranges negotiating through the selected WNSS by contract. It enforces the use of such services on both negotiating parties if a dispute arises. For instance, The Electronic Courthouse (http://www.theelectroniccourthouse.com) offers mandatory mediation and arbitration clauses that can be easily integrated into any commercial agreement.

As for business-to-business online contract formation services, strategic cooperation of WNSS providers with market leaders can encourage participation in computer-mediated contract negotiations. Such cooperation may lead to WNSS acceptance by followers that wish to either transact with the leader and/or compete with it. This line of action is consistent with preceding intra-organizational technology diffusion studies. For example, it was shown that factors such as pressure from trading partners and pressure from competition have significant effects on the adoption of Electronic Data Interchange (EDI) (Soliman and Janz 2004).

Limitations and directions for future research

Despite its contribution, the study has some limitations. First, empirical data were obtained from senior managers of Canadian firms which belong to two industry sectors. Therefore, additional empirical evidence is needed to draw conclusions on the entire potential WNSS user population. Second, data were obtained based on an introduction of a conceptual system. A short trial of real WNSS versus, a longer exposure to WNSS, can change user perceptions. A longitudinal study shows that exposure to an information system has an effect on users' assessment of the system (Karahanna et al. 1999). Therefore, additional assessment is required after WNSS penetrate the market and a large enough sample of experienced users can be obtained.

Moreover, an assessment based on real WNSS enables the measurement of perceived ease of use, which was omitted from this model. Thus, adding this construct into the TAM can potentially increase the variance in behavioral intention to use WNSS explained by the model. Therefore, additional lab-based experiments or real world studies that take the concept of perceived ease of use into account are required for a more accurate depiction of users' behavior with WNSS.

In addition, future studies may longitudinally assess the viability and effectiveness of the proposed avenues of action. Thus, an assessment of the effect of integration to commonly used websites, affiliation with commercial associations, and the use of mandatory online-mediation/arbitration clauses on the perceived intention of the negotiating partner to use WNSS, and in turn on users' acceptance of WNSS is required.

Conclusion

This study builds on the premises of several theories to extend the TAM for the context of WNSS. To this end, the concept of Perceived Intention of one's counterpart to use WNSS was added to TAM. The results of this study demonstrated that such perceptions regarding the intentions of the other party to use WNSS have substantial effects on negotiators' attitudes towards WNSS and on their intention to use WNSS in the future. This should help to better understand WNSS acceptance by users, and provide some practical guidance for e-negotiation service providers. Users' acceptance of e-negotiation services could be enhanced by focusing attention on strengthening potential users' perceptions regarding the intention of their negotiating opponent to use such services.

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Appendix

The WNSS description used in the phone-interviews: Web-based Negotiation Support Systems (WNSS for Short) are interactive, Internet-based tools intended to support negotiating parties in reaching an agreement. These systems assist individual negotiators, teams and other parties involved in negotiations (e.g., mediators or arbitrators) by advising, offering solutions or facilitating the process. As such, these systems enable negotiating contracts and/or resolving disputes online. For example, there are websites that are out there to help you in your negotiation processes by assisting you in making a better case. You can also use online resolution rooms, which are private chat rooms, to virtually meet others (negotiators and/or even online mediators or arbitrators), and discuss your problems with them. Some WNSS websites also provide analytical decision support tools to assist you, the negotiator, to optimize your decisions and reach a better deal.

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