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Johanna Bragge

Pirkko Lahdelma

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# PROCESS SUPPORT FOR THE OPTION GENERATION PHASE IN WIN-WIN NEGOTIATIONS: COMPARISON OF THREE COMMUNICATION MODES

Bragge, Johanna, Aalto University School of Economics, Dept. of Information and Service Economy, Runeberginkatu 22-24, 00100 Helsinki, FINLAND, johanna.bragge@aalto.fi

Lahdelma, Pirkko, Aalto University School of Economics, Aalto Service Factory, Runeberginkatu 14-16, 00100 Helsinki, FINLAND, pirkko.lahdelma@aalto.fi

## Abstract

*Analytically oriented Negotiation Support Systems have been studied and developed for decades, but they have not become widely adopted by negotiation practitioners. Along with the phenomenal growth of e-commerce, a need has arisen for information systems that support the parties' "soft" negotiation processes and communications in addition to the "hard" quest for a mathematically optimal solution. In this study, we report an experiment about applying three different communication modes in integrative win-win negotiations following the principled negotiation tactics. We focus on integrative negotiation's dialoguing phase where the parties share information, brainstorm options together, and establish an appropriate atmosphere. We compare computer-supported same-time same-place negotiations aided by group support systems (GSS) - either anonymously or non-anonymously - with the control treatment group that uses verbal communication backed up with flipcharts and Post-it notes. Due to the recent social media revolution, the role of anonymity might have changed from the GSS research results obtained decades ago. Our goal is to find out possible differences in the negotiation outcomes: meeting satisfaction and productivity. We discovered that all three modes worked well when used together with a carefully structured and facilitated process, although the number of unique ideas generated was significantly higher in the computer-supported groups.*

*Keywords: Integrative negotiations, principled negotiation, computer-mediated communications, group support systems, anonymity, simultaneity, meeting productivity, meeting satisfaction*

# 1 Introduction

Information and communication technologies have proliferated in almost all areas in business life, but there is one area that has been relatively slow in utilizing ICT: negotiations. Despite numerous sophisticated applications - so-called Negotiation Support Systems (NSS) - that researchers have developed for efficient preference elicitation and decision optimization, the adoption of NSS in business has been relatively slow (Turel and Yuan 2010).

Quite recently, however, the ICT usage in negotiations has received increased interest (Johnson and Cooper 2009; Johnson et al. 2008). The growth in e-commerce (EC) and online transactions have raised a need for electronic negotiations between the EC parties on unsettled issues. The traditional NSS aim at *solution support* and improving effectiveness by helping the parties, e.g., in real-time assessment of issues and preferences, and in search for better and optimal solutions (Turel and Yuan 2010). These services are based on mathematical modelling and apply mostly utility and game theories. According to Turel and Yuan (2010), the newer types of e-negotiation services aim to provide *process support* and improve efficiency by facilitating structured processes, multi-channel communication, and automatic documentation. These services rely on communication theories and conflict resolution behaviour to improve the negotiation procedures (Turel and Yuan 2010). Both solution and process support are important. Academic research has, however, concentrated predominantly on NSS providing analytical solution support (see Kersten 2004 ; or Kersten and Lai 2010 for a review of NSS). Consequently, Turel and Yuan (2010) call for more research on user interactions with online process support services to expand the scope and breadth of NSS research.

There is some process support research already done on comparing face-to-face negotiations with online negotiations. For example e-mail as a medium has been studied relatively often in negotiation experiments or simulations (see, e.g., Moore et al. 1999; Thompson and Nadler 2002; Morris et al. 2002; Bülow 2010). However, e-mail is not an optimal medium when there are multiple parties or persons involved. Moreover, other types of electronic communication media, especially among the younger people, have replaced e-mail (Larson 2004). Recently, various social networking platforms, such as Facebook, LinkedIn and Twitter, have made also the older generations and business people familiar with more collaborative types of communication media. Thus, it is relevant to conduct e-negotiation research in such process support settings where many-to-many discussions can be organized more effectively and efficiently than with e-mail.

Regarding the process *structure*, the “principled negotiation” rules made popular by Fisher et al.’s (1991) best-seller *Getting to Yes*, could be taken as a guiding framework for the negotiations. The tenets of principled negotiation are: separate the people from the problem; focus on interests, not positions; invent several options for mutual gain, and insist on using objective criteria. Lewis and Spich (1996) and Galaczy (1999) show that computer-based group support systems (GSS, see Nunamaker et al. 1991b) include features that make them innately compatible with principled negotiation. For example, Fisher et al. (1991) recommend using various brainstorming techniques when inventing options. Brainstorming is one of the areas GSS support best (Lewis and Spich 1996). Furthermore, the *anonymous communication* that GSS enable helps in separating the people from the problem and directing the focus of discussions from positions to interests.

In prior research on GSS the anonymity of contributions has often been found to be instrumental to the increased productivity and meeting satisfaction of computer-mediated sessions (see, e.g. Pinsonneault and Heppel 1997 for a review of studies on anonymity in GSS). Anonymity is said to reduce the fear of social approval and evaluation, and to lower inhibition and censorship (Pinsonneault and Heppel 1997). On the other hand, as to organizational knowledge network development (who knows what), Dennis and Reinicke (2004) have claimed that anonymity may hinder the adoption of GSS because it inhibits visibility, making it more difficult to identify and sanction those who challenge current power structures. This might in some cases have a negative impact for member development.

Another important GSS feature is *simultaneity*, which means that group members may write and submit their discussion contributions at the same time, seeing and commenting also the others' contributions as soon as they are submitted. Without simultaneity, participants would be blocked from contributing their comments as they occur and might forget or suppress them later in the meeting. Moreover, fewer comments are made because participants concentrate on remembering comments until they can contribute them, or they must constantly listen to others speak and cannot pause to think (Nunamaker et al. 1991b). In large GSS groups with over 15 participants, the productivity improvements from simultaneity have been reported to be quite considerable (Bragge et al. 2007).

Reinig and Shin (2002) and Gallupe et al. (1992) have called for more comparative research on various GSS features (notably anonymity and simultaneity) that would investigate whether the impacts from GSS use on improved productivity and session outcomes are due to the anonymous communication they support, or because they alleviate production blocking by simultaneous communication. In this study our goal is to explore whether GSS, used either anonymously or non-anonymously, can be successfully applied in integrative (win-win) negotiations following the principled negotiation tactics. Adding to the existing research on GSS, we are interested to find out whether anonymity has now lost some of its earlier proved importance as social networking platforms have made electronic many-to-many communication using one's own name and picture the current de-facto standard. Our control treatment group uses verbal communication backed up with flipcharts and Post-it notes. We focus on integrative negotiation's dialoguing phase where the parties share information, brainstorm together, and establish an appropriate atmosphere (Raiffa et al. 2002). We report on an experiment, where we compare the use of these three modes, in order to find out possible differences in the session outcomes. Our results imply that all modes work well when used together with a carefully structured and facilitated process, although the number of unique ideas generated is significantly higher in the electronic groups.

The remainder of the paper is structured as follows. In Section 2 we present a brief review on earlier literature and build our hypotheses. Thereafter, the study method is depicted, followed by the results. The paper ends with a discussion and conclusion.

## **2 Prior research, research questions, and hypotheses**

In this section, we first discuss integrative negotiations and their special characteristics. The communication modes used in negotiations are of our particular interest. Then, we discuss GSS as a discussion and option generation platform. Our interest is especially on the findings about the unique features of GSS, i.e. anonymity and simultaneity, and their impacts on participant satisfaction and productivity. Finally, we formulate our research question and hypotheses based on prior research.

### **2.1 Integrative negotiations**

In integrative negotiations, also characterized as win-win or mutual gains negotiations or principled negotiations, the parties exchange relatively openly information to identify interests, values, and possible solutions for increased mutual gain, and incorporate them into their eventual solution (Raiffa et al. 2002; Fisher et al. 1991). The desirable results of the information exchange phase in integrative negotiations are the participants' satisfaction on both the outcomes and process for achieving the outcomes, and the willingness to continue the negotiations.

Separate sessions to induce creative thinking could be conducted to invent several "not-too-obvious" options for solutions. For instance, brainstorming, value-focused thinking, Post-it-aided or GSS sessions have been suggested as techniques (Bragge 1997). The main idea is that the process of inventing options needs to be separated from the process of judging and selecting among them. Thus, the inventing has to be distinguished explicitly from the actual negotiating session. The participants have to understand that they should not be looking for the one best answer to the problem, but rather to

develop room within which to negotiate by having available a substantial number of markedly different ideas (see Fisher et al. 1991; Lewis and Spich 1996 for more on principled negotiation).

Traditional verbal face-to-face communication can be complemented or even replaced by either text-based or video-streamed computer-mediated-communication (Purdy and Nye 2000). In multi-party negotiations computer-mediated communication channels are often indispensable (Bragge et al. 2007; De Vreede and De Bruijn 1999). Group support systems have been regarded as a means to improve the participant satisfaction and increase the productivity of meetings due to its unique features compared to face-to-face communications. Lewis and Spich (1996) have also demonstrated that GSS perfectly support the tenets of principled negotiation: separate the people from the problem; focus on interests, not positions; invent options for mutual gain, and insist on using objective criteria (see discussion also in Nunamaker et al. 1991a; Galaczy 1999).

## 2.2 Participant satisfaction and productivity in GSS

Group support systems were originally designed to alleviate the typical process losses (Steiner 1972) that accrue from group work, such as waiting for one's own turn to speak while listening to others, and the dominance of some person(s) (Nunamaker et al. 1991b). The key structure that GSS technology provides is parallel communication via computers. This *simultaneity* feature allows the meeting participants to submit ideas and comments at the same time, and seeing also the others' contributions on their screens as soon as they are submitted. By recording and storing all electronic comments, GSS provide also *group memory* that aids, e.g., in promoting synergy. Although simultaneity and group memory enable positive process gains, they may also cause information overload if the GSS process is not designed appropriately, taking into account the size of the group. For example, it is sometimes better to employ procedures that do not tabulate all ideas on one electronic sheet as soon as they are submitted, but decompose the electronic discussion into multiple sheets (see, e.g., Bragge and Merisalo-Rantanen 2009 for a comparison of alternative ideation techniques with GSS).

The other major structure enabled by GSS is *anonymity*, the separation of statements from their authors. Anonymity is commonly argued to offer a low-threat environment, to reduce withholding ideas out of concern that others may not approve of them (so-called evaluation apprehension) and to break down social barriers and conformance pressures (Pinsonneault and Heppel 1997). These, in turn, encourage a more open, objective and honest discussion and may lead to increases in both the quantity of ideas generated and the quality of decision. However, these process gains may sometimes be offset by process losses due to anonymous communications: free-riding, and being overly critical or sarcastic. Pinsonneault and Heppel (1997) state that the net effect of anonymity is the combination of process gains and losses inherent to anonymous communications, and, depending on the context, either ones are larger. For example in contexts where there are power and status differences between the participants, anonymity is more important than with equal peer groups (Nunamaker et al. 1991b).

A great number of both experimental and field research on GSS have been presented in the literature. GSS have often been found to increase productivity and participants' meeting satisfaction, but they also have drawbacks that have restrained their wider adoption (Briggs et al. 2003). Moreover, several studies have found traditional face-to-face communication more appropriate in some situations. Thus, the expected benefits from GSS have not always been demonstrated (see the comprehensive meta-analyses of Fjermestad and Hiltz 1999; Fjermestad and Hiltz 2000).

*Meeting satisfaction* may be measured for example with the validated survey instrument by Briggs et al. (2006). They decompose meeting satisfaction into two constructs: satisfaction with meeting process (SP) and satisfaction with meeting outcome (SO). SP is defined as an affective arousal on the part of a participant with respect to the procedures and tools used in a meeting. SO is defined as the affective arousal on the part of a participant with respect to that which was created or achieved in a meeting (ibid.). A meeting process, which results in a satisfactory outcome, is more likely to be satisfying than a process, which results in a dissatisfactory outcome (De Vreede et al. 2010). Reinig (2003) has

proposed a model that frames SP and SO both as positive functions of perceived net goal attainment (PNGA), which he defines as the extent to which one feels that some object of satisfaction either advances or hinders the attainment of one's salient individual goals. An individual holds several goals, and during a meeting, some goals may be advanced while others may be hindered (resulting either in positive or negative value appraisal, respectively).

*Productivity* of GSS meetings is commonly measured by the amount of unique ideas produced (Briggs and Reinig 2010). This is based on the assumption that ideation techniques that generate more ideas will also produce more good ideas, as Osborn (1957) has conjectured when introducing his famed brainstorming rules. However, Reinig et al. (2007) have experimentally compared the unique idea count with three other quality measures (sum-of-quality, average-quality, good-idea count). Based on their results, they recommend the use of the good-idea-count as a measure to evaluate ideation treatments. For rating the quality of the brainstormed ideas they suggest a 4-item holistic scale (see the Appendix), where, for example ideas rated as 3 or 4 could be regarded as good (ibid.).

## 2.3 Research question and hypotheses

Our experimental study addresses the following research question: *Does the communication mode used in the dialoguing phase of integrative negotiations make a difference in the participant satisfaction and productivity?* Specifically, we are interested to study whether the role of *anonymity* has possibly diminished from the time it was initially investigated by GSS researchers (see, e.g., George et al. 1990; Jessup et al. 1990; Pinsonneault and Heppel 1997), as social networking platforms have made electronic many-to-many communication using one's own name and picture the current de-facto standard. Moreover, we are also interested to study the effect of *simultaneity* in option generation in integrative negotiations where relationship building and learning the others' interests also play a large role.

By drawing on the prior research discussed in Section 2.2, we formulate the following research hypotheses:

- H1: *There will be differences in the participant satisfaction – including satisfaction on the outcomes (H1a), satisfaction on the process (H1b), and perceived net goal attained (H1c) – reported by participants depending on whether they use GSS anonymously, GSS non-anonymously, or communicate verbally with flipcharts and Post-it notes in a same-time same-place setting.*
- H2: *There will be differences in the productivity, i.e. in the number of unique ideas (H2a), and quality of the team outcomes, i.e. in the average ratings of the quality of the ideas (H2b) and in the number or percentage of high-quality ideas (H2c, H2d), depending on whether the teams use GSS anonymously, GSS non-anonymously, or communicate verbally with flipcharts and Post-it notes in a same-time same-place setting.*

## 3 Method

In this section, we describe our research design and explain how the experiment was conducted. We depict the session arrangements and the differences in the research setting compared to other studies.

### 3.1 Design

The independent variable was either between subjects or between teams and had three levels in a same-time same-place setting: verbal communication vs. anonymous GSS-mediated communication vs. identified GSS-mediated communication. Twelve teams of six students were built in total, which lead to four teams in each three conditions. Instead of building 18 teams of four students in each, we

wanted to deliberately form a little larger and more realistic groups than are often formed in GSS experiments (Fjermestad and Hiltz 1999; George et al. 1990). The teams used either flipcharts and Post-it notes (in verbal groups) or a web-based GSS (*FacilitatePro*, in computer-mediated groups).

### **3.2 Participants**

A total of 72 students (48 men and 24 women) that were enrolled in a bachelor-level negotiation course in fall 2010 at the Aalto University School of Economics (Finland) participated in this experiment as part of a classroom exercise for partial course credit. Their mean age was 23.9 years in the range of 18-47. Around 82 percent of the students were studying at the Bachelor level, while the others were at the Master level. As the course was held in English, altogether 20 foreign degree students or exchange students participated in the exercise. However, only one of them spoke English as a native language. The students were randomly divided into the experiment groups so that each group contained the same proportion of women and international students. The students found the task to be interesting and motivating as 39% of them reported their interest to be great or very great.

### **3.3 Procedure**

In all treatments, the participants read material in advance and answered a pre-negotiation questionnaire to prepare for the exercise according to the integrative negotiation structure presented by Raiffa et al. (2002) that starts by preparing alone. Instead of having the students to assume the roles and preferences of somebody else, we used a realistic case scenario that had recently raised heated discussions in student politics: *how to shorten the prolonged studying times in European universities*. This topic allows the students to represent themselves and their own preferences in the negotiations, thus generating higher involvement in the student subjects (cf. Connolly et al. 1990). Based on earlier research regarding the difficulty of building rapport in electronically mediated negotiations (e.g. Morris et al. 2002), we designed a team-building exercise that was equivalent for all treatments. In this icebreaker exercise, the team members had first ten minutes time to introduce themselves, and reveal to the others in a normal face-to-face setting the weirdest food they had ever eaten.

The negotiations were held in two parts. The first part lasted 2.5 hours, including the icebreaker exercise, and consisted of discussing on reasons for prolonged studies (as a warm-up task for getting acquainted with the GSS or flipcharts & Post-it notes), disclosing fundamental values and interests regarding the topic (for aiding in inventing out-of-the-box solutions in the next task), and finally, brainstorming for solutions. Osborn's (1957) brainstorming rules were applied (do not criticize, go for wild ideas, focus on quantity and build synergy by combining ideas), after which a critical discussion commenting on the brainstormed solution ideas was held. Compared to previous experimental research on GSS, the process was more structured, supporting the principled negotiation tactics. The GSS groups were allowed to discuss also verbally, e.g., regarding procedural matters, but almost all of the discussions were conducted electronically. The sessions were facilitated by the researchers, and each team were given exactly the same time for each sub-task according to a pre-planned schedule. After the session, each student filled out a questionnaire in which they not only assessed the process and outcomes of the session but also prepared for the next session.

The second part (there was one full day in between the sessions) lasted also 2.5 hours and consisted of negotiating and reaching a joint agreement on the previously brainstormed measures to shorten university studies. In the latter part, the teams were given freedom to choose on how to divide the total time given for the tasks, and whether they wanted to apply GSS also in the agreement formation phase (e.g. in voting or in additional discussions on the solutions). Also this time the students responded to a questionnaire on the meeting outcomes and process. In this paper we focus on the initial option generation phase of the negotiation process.

In both sessions, the groups had to choose a chair, who was nominated responsible for keeping the discussions focused and staying on track, and a scribe for the session. In practice, a scribe was more employed in the groups that communicated verbally using Post-it notes and flipcharts.

### 3.4 Measures

We divide the measures used in this study into subjective, which refer to data presenting the research subjects' perceptions and views, and objective, which refer to data gained from somewhere else than the research subjects. The subjective outcome measures used were taken from a validated meeting satisfaction survey (Briggs et al. 2006). The items (listed in the Appendix) were scrambled for the questionnaire. For the objective outcome measures, one independent treatment-blind expert on university politics identified the unique ideas and evaluated the quality of each idea derived from all the sessions. He used a holistic evaluation method (Reinig et al. 2007) where both the feasibility and the effectiveness of the ideas were considered. The rating scale is listed in the Appendix.

## 4 Data analysis and results

We used SAS Enterprise Guide 4.2 for statistical analysis. First, we tested the reliability of the constructs by calculating Cronbach's alpha values. For all the outcome constructs measuring the meeting satisfaction, the Cronbach's alpha values exceeded 0.8 (see Table 1), which can be considered good. We examined the Cronbach's alpha values also at the group-level, as our research question is to find out whether there are differences in the results between anonymous GSS-mediated-communication, identified GSS-mediated-communication, and verbal communication with Post-it notes and flipcharts. Means and standard deviations of the dependent variables are shown by groups in Table 1.

Variable	Cronbach's alpha	Group	Mean	Std Dev	N	F / Chi <sup>2</sup>	p-value
<b>Outcome constructs</b>							
<i>Satisfaction with Meeting Outcome (SO)</i>	0.893	GSS anonymous	5.6771	0.8092	24	Chi <sup>2</sup> : 2.0258	0.3632
		GSS identified	5.8750	0.5851	24		
		Verbal	5.5417	0.8650	24		
<i>Satisfaction with Meeting Process (SP)</i>	0.896	GSS anonymous	5.6146	0.8846	24	F: 0.89	0.4154
		GSS identified	5.8229	0.8892	24		
		Verbal	5.4792	0.9235	24		
<i>Perceived net goal attainment (PNGA)</i>	0.831	GSS anonymous	5.6667	0.7323	24	F: 2.59	0.0827
		GSS identified	5.8333	0.5882	24		
		Verbal	5.3646	0.8307	24		

Table 1. Summary statistics on the dependent variables and the results from ANOVA and Kruskal-Wallis tests

Normality of the dependent variables was tested using Shapiro-Wilk statistics. In the cases where this assumption held, we applied one-way analysis of variance (ANOVA) for exploring our data. For the other cases, we used non-parametric Kruskal-Wallis test. The results are shown in Table 1 as well. Neither of the tests we used (the one-way ANOVA with F-values or the non-parametric Kruskal-Wallis test with Chi<sup>2</sup>-values) yielded statistically significant differences on the subjective outcome constructs between the three groups compared in this study.

We explored the quantity and quality of ideas as an indicator of productivity. As these measures do not represent individuals but teams, the analysis was carried out at the team level. In every group, we had four teams. We describe the team level data with mean values and standard deviations in Table 2. The



size of team-level data was small, and therefore, we use non-parametric tests instead of ANOVA. The results of Kruskal-Wallis tests are also shown in Table 2.

The number of unique ideas brainstormed was clearly lower in the teams communicating verbally with Post-it notes and flipcharts, which supports our hypothesis H2a. However, there were no statistically significant differences ( $p < 0.05$ ) regarding the quality of the ideas, and hence, no support for the rest of the hypotheses was found.

Variable		Mean	Std Dev	N	Chi <sup>2</sup>	p-value
<i>Number of unique ideas</i>	GSS anonymous	29.75	3.862	4	7.6518	0.0218 *
	GSS identified	32.75	6.021	4		
	Verbal	20.50	5.447	4		
<i>Average of idea ratings</i>	GSS anonymous	2.567	0.142	4	1.8846	0.3897
	GSS identified	2.336	0.256	4		
	Verbal	2.353	0.268	4		
<i>Number of ideas rated as 3 and 4</i>	GSS anonymous	15.50	2.646	4	5.1879	0.0747
	GSS identified	15.00	6.683	4		
	Verbal	8.50	3.873	4		
<i>Percentage of ideas rated as 3 and 4</i>	GSS anonymous	51.973	3.717	4	2.0000	0.3679
	GSS identified	45.038	14.857	4		
	Verbal	40.484	12.188	4		

Table 2. Results from team-level Kruskal-Wallis tests

## 5 Discussion and conclusions

In this section, we first discuss our findings and consider explanations for them. We also take the limitations of this study into account. Finally, we provide suggestions for both practice as practical implications and academy as further research avenues.

### 5.1 Findings

We found statistically significant differences between the groups only in the number of unique ideas. Thus, the simultaneous communication enabled by GSS appeared to alleviate production blocking. The satisfaction on the outcome and the process – as well as the objectively assessed quality of the outcome – did not produce any statistically significant differences. This implies towards the diminished role of anonymity. The communication mode used appears to have an effect only on the quantity, which was not the pursued end result as such.

Next, we examine our results by analyzing how our experiment differed from the previous studies. First of all, we invested in creating a good atmosphere with a face-to-face icebreaker exercise in all the groups. The importance of the rapport creation has been earlier recognized (Carnevale 2008; Morris et al. 2002). In the light of our findings, it is worth to be investigated more. It appears that building a positive atmosphere has more effect on the outcomes than the communication mode used.

Another difference compared to previous studies is that the process for all the groups was carefully structured and facilitated according to the principled negotiation tactics. Moreover, unlike most other experimental GSS studies (see Fjermestad and Hiltz 1999), the verbally communicating group in our study had tools (flipcharts and Post-it notes) in addition to the external facilitation to assist them in structuring the process and generating the options. This might explain why the verbal group performed surprisingly well compared to earlier findings.

The interest on the topic among the respondents was considerable, which implied high motivation towards the task. In addition, the respondents were very goal-oriented in the sense that they wanted to

achieve good outcomes as this was a part of the negotiation course. The high motivation and goal-orientation are probably not that typical to student subjects in experiments. Thus, it pays off to design a negotiation scenario that is relevant and realistic for the participants.

The size of the teams was constant among the groups: every team had six members. Our results imply that in groups of this size and with these experimental arrangements, the communication mode does not produce any significant differences, except for the quantity of unique ideas produced. We presume that doubling the size of the groups would result in more differences in favour of the electronic mode.

We have identified limitations for our research. Some of the limitations relate to the reliability of the results. We asked the respondents to identify themselves in the questionnaires, which might create a social bias and produce more positive responses than they really are. In order to increase the reliability and to induce honest responses, we told in advance that the ratings they give in the questionnaires do not have an effect on their grading, but being as honest as possible helps them to learn more from this exercise.

Another limitation is that we were not able to videotape the meetings, and the discourse in verbally communicating teams could not be caught. In verbally communicating teams videotaping would have assisted in measuring the productivity more rigorously, as the number of ideas discussed is possibly not exactly equal to the number of unique ideas documented in writing. In teams using GSS-mediated-communication those numbers are the same. As a consequence of this, we could not examine all the outcome measures we might have examined otherwise.

Regarding generalizability, the sample in the present study is relatively homogeneous, as it is composed of business school student groups. Thus, it is not a real-life-working sample, which limits the generalizability of the findings to business settings (cf. Nunamaker et al. 1991a). Even though we used a realistic case in which students are stakeholders and have strong opinions, and thus the experiment simulated negotiations within a student political working group, the power structures and true political tensions were mostly missing in our experiment.

## **5.2 Implications for practitioners and academics**

Although ICT has not been widely adopted to support negotiation processes, we believe that the situation is going to change rapidly along with younger generations entering the work life. The digital natives have learned a myriad of textual nonverbal clues such as emoticons, and they are comfortable making even intimate disclosures online (Larson 2004). Hence, it is evident that meeting culture and work processes, including negotiations, are about to change. Organizations should be proactive in adopting structured negotiation processes that have been proven to work equally well or better with ICT than without it. Especially with geographically distributed participants, the added efficiency and cost benefits of web-based GSS are evident. However, the role of well-structured and facilitated processes with appropriate team building or rapport creation activities cannot be underestimated.

This study reports only the first results of our recent experiment. We will continue our data analysis by focusing on the whole process, including the second part of the integrative negotiations. Moreover, we will ask two more treatment-blind raters from the university administration and the Ministry of Education to evaluate the quality of the ideas brainstormed. Our preliminary discussions with the university executives indicate that the contents of the teams' brainstorming reports are highly interesting and relevant for the university when preparing for the next steps in shortening the study times. Besides quantitative data, we have also gathered rich qualitative data from this experiment via open-ended survey questions and individual debriefing reports. This data enables the investigation of numerous behavioural research issues, such as group cohesion.

Research on this stream should be continued, for example using groups with unbalanced power structures. The benefits of anonymous communication could manifest in that case, unlike in our experiment, where the identified GSS-teams produced equal results with the anonymous teams.

Moreover, the GSS-mediation could be implemented fully virtually, either in the different-place same-time mode, or in the different-place different-time mode.

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## **Appendix: Questionnaire items, and rating scale for the quality of ideas**

All questionnaire items use the 7-point Likert- type scale, where 1 stands for "strongly disagree" and 7 stands for "strongly agree". The items on the questionnaire were scrambled.

### ***Satisfaction with Meeting Outcome SO:***

1. I liked the outcome of today's meeting.
2. I feel satisfied with the things we achieved in today's meeting.
3. When the meeting was finally over, I felt satisfied with the results.
4. I am happy with the results of today's meeting.

### ***Satisfaction with Meeting Process SP:***

1. I feel satisfied with the way in which today's meeting was conducted.
2. I feel satisfied about the way we carried out the activities in today's meeting.
3. I feel good about today's meeting process.
4. I feel satisfied with the procedures used in today's meeting.

### ***Perceived net goal attainment PNGA:***

1. Today's meeting was worth the effort that I put into it.
2. The things that were accomplished in today's meeting warranted my effort.
3. The value I received from today's meeting justifies my efforts.
4. The results of this meeting were worth the time I invested.

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### **Rating scale for the quality of ideas**

The independent rater used a holistic evaluation method ranging from 1 to 4 as follows (adopted from Reinig et al. 2007):

- An idea receives a score of 4 if it is easily implemented and if it solves the problems (eliminates unacceptable symptoms) completely without creating new unacceptable symptoms.
- An idea receives a score of 3 if it is easily implemented and would ease most symptoms considerably, but would not completely eliminate them or if it would be difficult to implement, but would completely solve the problems.
- An idea receives a score of 2 if it would be very difficult to implement and would solve some of the problems considerably but would not completely eliminate them, or if it is easily implemented, but would only have minor, marginal improvement in terms of solving the problems.
- An idea receives a score of 1 if it would be impossible to implement or if it does not solve any of the problems to any degree.

