Sellers’ Objectives in E-procurement Auction and Negotiation Experiments

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Abstract
Participants of economic transactions are assumed to make decisions based on objective directly related to the transactions. This paper shows that, aside from biases and cognitive limitations, they may have also other objectives. Using results of online experiments with reverse auctions and multi-bilateral negotiations we confirm results reported earlier for the case of bilateral negotiations, namely that three and four types of objectives can be identified. Based on the objectives’ importance distinct groups of participants have been identified; they differ in their behavior and the outcomes they achieve. The results indicate that some bidders and negotiators want to achieve other than substantive objectives and are willing to trade off substantive for relational objectives.

1. Introduction
Decision-making has a purpose; it is undertaken so that the implementation of the selected decision may advance one or more objectives of the decision-maker. Rational decisions require that there either be a single objective or, in the case of multiple objectives, they be neatly represented by a single (utility) function. The selected decision is the one that optimizes this function’s value. In reality, people tend to violate rationality principles and consider objectives which are not directly related to the decision problem and the decision itself. They follow rules of reciprocity and fairness, make choices based on altruism, affect, envy, and fear, and are also concerned with the opinion of the others with whom they are directly or indirectly associated [17]. In such situations they may violate a narrowly defined and mechanistic rationality principle but yet be rational in their effort to consider various objectives when making a decision [28, 32].

The various objectives that underlie human decision making also occur in business transactions because a single transaction may have both short- and long-term implications. Negotiation is one of the mechanisms used in business transactions. The overt interdependence and bidirectional and rich communication that characterize this mechanism contribute to the significance of such relational objectives (as trust, fairness, and reputation [12, 41]). For example, negotiations between representatives of two organizations can strengthen their relationship and trust but they can also destroy it [21, 33].

Other mechanisms have been devised to promote competition and reduce the impact of non-economic objectives; these are market-based mechanisms, foremost posted price and auctions.

Auctions, based on rationality principles, are designed to promote and reward rational decision-makers. Economists observe, however, that often auctions do not result in the winning bid that conforms to the theory (Nash equilibrium); the “winner’s curse” is a well-known phenomenon [2, 19]. The main reasons for the winner’s curse are: (1) the uncertainty of the value of the good; (2) inexperience of the bidders; (3) cognitive bias; (4) failure to take into account the rules of the mechanism; and (5) failure to utilize available information.

Experiments show that the winner’s curse may be reduced, but not eliminated, if bidders gain experience [25, 26]. Also one may argue that in experiments participants bid aggressively and often overbid because of their limited liability for losses [22]. This argument was refuted [27] and the discussion on the experiment participants’ motivation is ongoing and remains inconclusive [see, e.g., 3, 14, 18]. The effect of monetary compensation is non-monotonic and contingent on other motivations, including intrinsic [20]. This means that the bidders may have other objectives, than achievement of monetary rewards.

Anonymous bidders in online auctions are unlikely to be interested in relationship with bid-takers. They may assume that the bid-takers are opportunistic because they employ auctions [29]. The inability
of the bidders to interact with the bid-takers makes establishment of any type of rapport with the latter impossible.

In order to look for the possible objectives of bidders and negotiators we note the obvious: they, as well as everyone else, have personality traits that include goal orientation and goal setting. Psychology, education and organizational literature present numerous experimental and field studies about goal orientation and its two dimensions: learning and performance. They find numerous examples of their impact on task and job performance [e.g., 5, 8, 35]. Recent negotiation experiments show that negotiators who are primed to have learning goal orientation achieve different substantive and relational outcomes than those who are primed to have performance goal orientation [4, 38]. Studies also show that for some people one type of goals is predominant and for others both types are strong [1, 40].

The above suggests that negotiators and bidders in experiments and in the field have objectives that go beyond their performance in the task which is assigned and relate to their self-set job performance in student- and employee-capacity. These objectives are likely to occur jointly but depending on the context and psychological traits their strength may differ.

In this paper we discuss the objectives of experiment participants who use exchange mechanisms for e-procurement. The mechanisms are: (1) multi-attribute reverse auction; (2) and multi-attribute multi-bilateral negotiation.

Auction and negotiation mechanisms are often used in business exchanges, including procurement. With the exception of procurement and supply chain management, they have been studied in separation and we know of no studies in which objectives underlying their users were compared. Furthermore, both auctions and negotiations can be used to award a single contract in the same business situation [30, 31].

The two mechanisms differ in the involvement of the buyer during the decision process and information exchanged by both the buyer and the sellers. In negotiations the buyer directly interacts with multiple sellers and both sides may exchange offers as well as arguments, requests and demands. In auctions the buyer sets the parameters while the sellers compete among themselves, they all obtain the same information (e.g., winning bids).

The questions we address here are: (1) Do objectives that are not directly related to the transaction and its outcomes affect sellers’ behavior? (2) What are the differences in terms of sellers’ objectives when they engage in auctions and in multi-bilateral negotiations? (3) Are there groups of sellers who share similar profile of the objectives’ importance?

The paper has 5 more sections. Because we know of no studies which specifically address bidders’ objectives, we discuss in Section 2 negotiators’ objectives as they were presented in literature. Two experiments which we conducted are discussed in Section 3. Because Wu et al’s (2012) analysis was done in different negotiation settings we repeated exploratory factor analysis; the results are presented in Section 4, where the results of confirmatory factor analysis are also given. Section 5 discusses outcomes and participants’ feelings about the different aspects of the experiments and presents results of several relational models. Discussion and the future work are given in Section 6.

2. Objectives, profiles, and outcomes

2.1 Negotiators’ objectives

Negotiation literature recognizes two types of outcomes: substantive and relational [21, 34, 37]. The importance of both types has been confirmed in field studies [9, 23, 36]. Substantive outcomes are the content of the agreement - in business transactions they are the economic results. Relational outcomes describe the change of the relationship between the negotiators (e.g., empathy, trust and dependency). They are the result of the communication process and the agreed substantive outcomes.

The focus on substantive outcomes is behind the often stated concern about agreements being efficient and value not being left on the table [39]. Early on, scholars recognized the significance of relational outcomes, hence objectives describing aspects of a relationship which the negotiators wish to achieve. However, most studies do not consider perceptual and altitudinal measures [7].

Curhan et al. [15, 16] studied the subjective values of concern for negotiators. Based on a validated questionnaire they identified subjective values which are important. These values are associated with the following types of feelings:

1. Feelings about the substantive outcomes;
2. Feelings about the self;
3. Feelings about the process; and
4. Feelings about the relationship.

These four types suggest that negotiators may pursue several objectives some of which are not associated with the achievement of substantive outcomes. Some of the feelings cannot be, however, directly converted to objectives which guide behavior because they are compounded effects. For example, feelings about the self may depend on substantive and relational outcomes and the process.

Feelings about substantive outcomes may depend
on the outcomes achieved as well as the reservation and aspiration levels. Curhan et al. [16, p. 507] note that the biggest limitation of their research is the consideration of what the negotiators say they value rather than what they actually value. For these reasons and also for the possibility of changes in the feelings during the process, they are not suitable in a study of objectives formed prior the process and their impact on behavior.

Based on the distinction between performance and learning goal orientations (Section 1) we view substantive and relational goals as performance oriented because they are associated with task performance.

Learning goal orientation positions the task in a broader context; it is the contribution that the task’s activities and results have to job performance. In our context we identify two types of objectives: study and practice. The study objective is focused on the impact of the task, which is a part of a coursework on the student performance in this course. The practice objective is broader and it describes students’ skills which are learned through their participation in the task and which they find to be important for their future workplace. Both objectives are oriented on job performance through learning but study focuses on the current job while practice on the expected future job requirements.

If the study and practice objectives affect behavior as well as substantive and relational outcomes, then they are likely to be troublesome for the experimenters. They would disturb the role-playing simulation because the results cannot be analyzed without taking broader objectives into account. This, in turn, may undermine one of the primary mechanisms for behavioral auction and negotiation studies. Such a possibility is mentioned [12] but, with one exception [42], we know of no experimental studies that would disconfirm it.

Recently, the four types of objectives were studied in an online negotiation experiment [42]. Participants were asked to play a role of company representatives and achieve outcomes good for their company.

The exploratory factor analysis shows that three identified factors correspond to three types of objectives: substantive, relational and study [42]. The total variance accounted for is 61.2%, indicating an adequate factor structure for self-reported scales. Objectives associated with practice were not identified as a separate factor. One reason may be that these objectives were considered important or very important by almost all participants.

The three identified objectives had significant effect on the negotiators’ aspirations and reservations, their behavior during the process (i.e., opening offer, number of offers and messages, and the length of messages) and the agreement utility.

Cluster analysis of the objectives’ importance allowed Wu et al. [42] to distinguish five profiles of participants. Significant differences between the five groups in terms of expectations, behavior and outcomes, but not aspiration level and message length, were observed across the five profiles.

The results [42] concern bilateral negotiations of about three-week duration. It is worth noting that during this time the parties may establish closer relationship and become concerned with the non-economic aspects of the process. Because there is no competition, they have to either accommodate each other’s needs or terminate the negotiation.

2.2. Objectives, profiles, and outcomes

Building on the results of bilateral e-negotiation experiments [42], we hypothesize that auction participants have three types of objectives (substantive, practice and study) and negotiation participants have an additional type (relational). The first step of this study is to determine if the participants indeed consider the three (four) types of objectives. Following it, the second step is to determine if the objectives affect the substantive and relational outcomes of the process. In addition to the two outcomes the impact of objectives on feelings is analyzed.

Feelings, as they are defined in [16], are subjective and they include feelings about the relationship. In negotiations, we distinguish between relational outcomes and feelings about the relationship; the former describe the negotiators’ perception of their counterparts’ traits and the latter is a general impression of the counterpart and level of satisfaction with the relationship.

The direct relationship between objectives and outcomes (including feelings) is illustrated in Figure 1. Because fillings may be affected by outcomes and only indirectly by objectives, this possibility is included.

![Figure 1. Graphical summary of the study](image)
Following [42] we hypothesize that participants differ in the importance they attach to the objectives. Based on these differences we can determine the participants’ profiles and analyze their effects on outcomes and feelings (see Figure 1).

3. Auction and negotiation experiments

To study the types of objectives used in auction and negotiations and their impact on the transaction process and its outcomes we conducted an experiment in the Fall of 2011.

3.1. Settings

The experiment was conducted online. It took 10 days for bout auctions and negotiations. Prior to the experiments the participants were given a video demonstrating the system they would be using, followed by a short quiz.

At the beginning of the experiment, the participants read the case, did a short quiz testing their knowledge of the case and filled out a questionnaire.

The experiment was conducted in two treatments for negotiations (no. of alternatives: 216 and 3375), and two treatments for auctions (3375 alternatives and the winning bids vs. all bids displayed).

Within each of these treatments the participants were asked to play a role of sellers or buyers in multi-bilateral negotiations; or a role of sellers in multi-attribute reverse auction. In negotiations the buyers and the sellers were able to exchange messages which could be accompanied by offers (offers were structured and formulated separately from messages).

3.2. A procurement case

Participants in both auction and negotiation experiments were given the same procurement case. The case involved a producer (buyer) who was seeking a transportation and logistics provider. The buyer needed to award a contract in which three clauses were specified and agreed upon. These clauses corresponded to the following three attributes: (1) standard rate of transportation (2) rush rate for unexpected delivery; and (3) penalty for delay in providing customers with the requested goods on time. For each attribute, ranges for possible attribute values were given to every participant.

The sellers were given a rating calculator which allowed them to calculate profit of every alternative (out of 216 in one treatment and out of 3375 in the other). This was the expected profit of the company a participant represented. The profit function was quasi-linear; the participants did not know its form; it was different for every company. In addition, participants were informed about the breakeven values at which profits turn into losses. The breakeven values were different for every company.

3.3. Questionnaire

In this study we used the questionnaire used in [42] with some minor adjustments that reflected the differences in the auction and negotiation case and process.

The sellers who participated in negotiations obtained a questionnaire comprising 12 questions; three for each of the objective type (Su – substantive; R – relational; St – study; and P – practice). The questions are shown in Table 1; the answers were given using the 1-7 Likert scale, from “Not important at all” to “Extremely important”.

<table>
<thead>
<tr>
<th>Table 1. Objectives’ questionnaire</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Achieving the highest possible rating for the agreement. (Su)</td>
</tr>
<tr>
<td>2. Trying to achieve the best possible agreement. (Su)</td>
</tr>
<tr>
<td>3. Obtaining the best results for the company I represent. (Su)</td>
</tr>
<tr>
<td>4. Acquiring knowledge which is necessary for course work.(St)</td>
</tr>
<tr>
<td>5. Learning what I must in order to complete my assignment. (St)</td>
</tr>
<tr>
<td>6. Obtaining information which is useful for my assignment. (St)</td>
</tr>
<tr>
<td>7. Practicing my negotiation skills. (P)</td>
</tr>
<tr>
<td>8. Improving my negotiation skills.(P)</td>
</tr>
<tr>
<td>9. Preparing for real-life negotiations. (P)</td>
</tr>
<tr>
<td>10. Establishing a friendly atmosphere with my partner. (R)</td>
</tr>
<tr>
<td>11. Achieving results that are good for both my negotiation partner and myself. (R)</td>
</tr>
<tr>
<td>12. Building a good relationship with my partner. (R)</td>
</tr>
</tbody>
</table>

In the auction experiment we decided to remove the relational questions (10-12) and ask only questions 1-9. This is because in the negotiation the sellers communicate directly with the buyer exchanging offers and messages. Therefore, they are able to establish a relationship. In an auction, however, they cannot learn anything about the buyer except for the general information that is available to all. They cannot interact with or learn anything about the buyer hence they cannot change any relational variable.

3.4. Descriptive statistics

The experiment involved over six hundred students from Canada, Austria, USA, Poland and Taiwan. The
The majority of negotiation sellers and auction bidders were first-year undergraduate students; graduate students were asked to play the role of negotiation buyers.

There were 208 students participating in negotiations as sellers and 60 as buyers and 383 participating in auctions. After validation of the questionnaire data collected in the experiment, 18 students who played the role of sellers were removed from the negotiation dataset and 110 from auction dataset. Consequently, 463 data points were usable. Table 2 gives a demographic portrait of participants.

### Table 2. Descriptive statistics (%)

<table>
<thead>
<tr>
<th></th>
<th>Negotiation</th>
<th>Auctions</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>No. of students</td>
<td>190</td>
<td>273</td>
<td>463</td>
</tr>
<tr>
<td>Age group (&lt;=25)</td>
<td>91.6</td>
<td>92.3</td>
<td>92.0</td>
</tr>
<tr>
<td>Gender (female)</td>
<td>57.9</td>
<td>48.0</td>
<td>52.1</td>
</tr>
<tr>
<td>English skill (good +)</td>
<td>85.3</td>
<td>81.0</td>
<td>82.7</td>
</tr>
<tr>
<td>Knowledge (low)</td>
<td>35.8</td>
<td>35.5</td>
<td>35.6</td>
</tr>
<tr>
<td>Prior experience</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>- System</td>
<td>75.8</td>
<td>85.7</td>
<td>81.6</td>
</tr>
<tr>
<td>- Task</td>
<td>65.3</td>
<td>80.6</td>
<td>74.3</td>
</tr>
</tbody>
</table>

Some auctions and negotiations did not conclude because no bids or offers were made. After reviewing the experiment’s flow and removing all empty negotiation and auction instances, we obtained data from 56 negotiation and 35 auction instances. In these instances there were 152 negotiation sellers and 86 auction sellers which allowed us to analyze outcomes and their relation to objectives.

### 4. Objective types and profiles

Using the questionnaire presented in Table 1 we confirm that there are four types of objectives which participants of auction and negotiation experiments employ. Then we determine whether it is possible to construct profiles identifying different importance assigned to the objective-types.

#### 4.1 Confirmatory factor analysis

Wu et al. (2012) identified four types of objectives based on exploratory factor analysis. To validate these results conducted confirmatory factor analysis (CFA) with EQS 6.1. In auctions sellers did not communicate with buyers hence relationship could not be established. Therefore, the CFA models were separately conducted for negotiations and auctions with two independent samples.

#### 4.1.1 Auctions

The dataset contains 75 bidders in auctions and it is relatively small given that ten data items are required per each of nine questionnaire items (Table 1). A robust analysis was conducted, which is not limited by the normality and sample size of the dataset. Figure 2, shows the CFA model for factors describing bidders’ objectives in auctions.

The model provides a good fit for the data. Chi-square Yuan-Bentler residual-based test statistics (RBTS) is $\chi^2 = 24.5$ with 24 degrees of freedom and probability value exceeding the cut-off point ($p = 0.45536 > 0.05$). RBTS is used because it is distribution free and it is adequate for smaller samples. RBTS indicates that the model fit is adequate.

Some auctions and negotiations did not conclude because no bids or offers were made. After reviewing the experiment’s flow and removing all empty negotiation and auction instances, we obtained data from 56 negotiation and 35 auction instances. In these instances there were 152 negotiation sellers and 86 auction sellers which allowed us to analyze outcomes and their relation to objectives.

The overall goodness of fit is acceptable, $\text{CFI} = 0.99$; $\text{NNFI} = 0.98$; and $\text{RMSEA} = 0.03$ because both $\text{CFI}$ and $\text{NNFI}$ are in the 0.90 range and $\text{RMSEA}$ approaches zero.

These results allow us to tentatively assume that the three factors are appropriate to study objectives of sellers participating in multi-attribute reverse auctions.

The loading of each factor on the variables describing the specific objectives (see Figure 2) is greater than .70 except Substantive on Agreement (0.69) and Study on Information (0.67) and Practice on Real-life (0.54).

The low loading by the Real-life variable compared to Improve-skill and Practice-skill may mean that while students do not consider this type of auction mechanism as one that they will be using in real life, the experience gained from their participation has practical value.

The low loading of the Study factor by Information variable and high by the Course-work and Must variables, which describe the obligatory aspects
of the assignment, may mean that this factor is related more to completing the assignment than to learning.

The results show correlation between the Substantive outcome and Study factor (0.68) and Substantive and Practice (0.67). This may imply that participants view contribution of auctions, which are a highly competitive mechanism, to their study and practice in terms of their ability to achieve high substantive outcomes. In other words, the better the substantive outcomes the higher the achievement of study and practice goals and vice versa.

Note that correlation between Study and Practice is much lower (0.47) indicating that these two constructs measure two different and independent types of objectives.

4.1.2. Negotiations. The dataset contains 117 sellers in the negotiations and the sample size is relatively small as the STV ratio is slightly below 10:1 for the 12 variables. A Robust analysis was conducted - it is not limited by the normality and sample size of the dataset.

The CFA model for four factors describing objectives of sellers participating in negotiations is depicted in Figure 3.

![Figure 3. CFA of sellers' objectives in negotiations](image)

The model provides a good fit for the data, Chi-square Yuan-Bentler RBTS is \( \chi^2 = 64.7 \) with 48 degrees of freedom and probability value exceeding the cut-off point (\( p = 0.0547 > 0.05 \)). RBTS indicates that the model fit is adequate.

The overall goodness of fit is acceptable because both CFI and NNFI are in the 0.90 range and RMSEA is located between zero and one (CFI = 0.92; NNFI = 0.89; RMSEA = 0.08). These results allow us to tentatively assume that the four factors are appropriate to study objectives of sellers participating in multi-bilateral negotiations.

The loading of each factor on the variables describing the specific objectives (see Figure 3) is greater than 0.70 except Substantive on Rating (0.68) and Study on Course-work (0.58).

The results show a strong correlation between the Substantive outcome and Study factor (0.83). If we suggest that a student’s goal is to complete the assignment, this correlation means that in order to do that well he or she has a goal to reach high substantive outcomes in negotiations. This result is important because knowing that students are interested in high substantive outcomes the same way as representatives of real-world companies supports the usage of the data collected in the experiment with students aiming to study for real-world negotiations.

High correlation between Study and Practice factors (0.68) may mean that students consider the practice obtained in the experiment to be important for their studies as well as for preparation for their future work.

The correlations between Relational and Study (0.52), Relational and Practice (0.53) and Relational and Substantive (0.45) are lower. The possible interpretation could be that relational objectives are standing apart from objectives represented by the remaining factors. The reason may be that the negotiations are anonymous and the participants have a very small chance of meeting each other in future. Therefore, the relationship is likely to be limited to the interaction period.

4.2. Bidders and negotiators’ profiles

The high correlations between the three (four) factors may indicate the participants’ effort to achieve all of them at high levels. There may be, however, differences between individual participants.

Based on the results of factor analysis we can reduce the number of variables describing objectives from 9 (for auctions) and 12 (for negotiations) to, respectively 3 and 4. This, in turn, allows us to employ cluster analysis with the relatively small datasets. For each construct we rounded the averages of the item values so that the scale remained 1-7.

Cluster analysis gave four profiles of 81 bidders based on their perception of the objectives’ importance (see Table 3). ANOVA showed that the difference of the mean values used to define clusters is
significant ($p < 0.0001$).

Table 3. Profiles in auctions

<table>
<thead>
<tr>
<th></th>
<th>Med-high</th>
<th>Med.</th>
<th>Low. practice</th>
<th>High</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substantive</td>
<td>5.9</td>
<td>4.9</td>
<td>5.7</td>
<td>6.8</td>
</tr>
<tr>
<td>Study</td>
<td>6.1</td>
<td>4.4</td>
<td>6.3</td>
<td>6.6</td>
</tr>
<tr>
<td>Practice</td>
<td>5.5</td>
<td>4.9</td>
<td>3.7</td>
<td>6.3</td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>11</td>
<td>11</td>
<td>29</td>
</tr>
</tbody>
</table>

For the negotiation process, we obtained from cluster analysis five profiles of 152 negotiators (sellers) (see Table 4). ANOVA showed that the difference in the mean values used to define clusters is significant ($p < 0.0001$).

Table 4. Profiles in negotiations

<table>
<thead>
<tr>
<th></th>
<th>Low relation</th>
<th>High relation</th>
<th>High subst.</th>
<th>Medium all</th>
<th>High all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Substant.</td>
<td>6.2</td>
<td>5.7</td>
<td>6.0</td>
<td>4.7</td>
<td>6.7</td>
</tr>
<tr>
<td>Relational</td>
<td>3.0</td>
<td>6.1</td>
<td>4.8</td>
<td>4.0</td>
<td>6.4</td>
</tr>
<tr>
<td>Study</td>
<td>6.4</td>
<td>5.9</td>
<td>5.5</td>
<td>4.5</td>
<td>6.6</td>
</tr>
<tr>
<td>Practice</td>
<td>5.8</td>
<td>5.9</td>
<td>5.7</td>
<td>4.2</td>
<td>6.6</td>
</tr>
<tr>
<td>No.</td>
<td>10</td>
<td>43</td>
<td>41</td>
<td>17</td>
<td>41</td>
</tr>
</tbody>
</table>

We need to note that, due to a small sample size, the specification of profiles is tentative. We present it here because it is similar to the profiles reported for participants of bilateral negotiation experiments [42].

One may expect that participants with similar profiles achieve similar outcomes providing that their counterparts have either similar or not strong impact. We do not have sufficient data to study the relationship between profiles and outcomes and the mediating effect of counterparts’ behavior. We expect to do this analysis in the future.

5. Objectives and outcomes

Objectives are used to focus and direct effort and to be able to assess the results. Some results may be a direct effect of objectives, others may be based on the degree the objectives are realized. Substantive outcomes and relationship belong to the first type of results considered here. Feelings belong to the second type of outcomes; they describe satisfaction with substantive outcome, self, process and relationship.

5.1. Relational and substantive outcomes

To determine relational outcomes we could use 99 responses to the following three contrasting questions describing the seller’s perception of the buyer (seller’s counterpart): (1) likable-unlikable; (2) trustworthy-untrustworthy; and (3) fair-unfair. These questions loaded on the single factor extracted variance of 0.71, which is considered satisfactory.

To determine substantive outcomes we use profit values. In auctions the average profit was between 7.5 and 32 rating value and in negotiations it was between 19 and 23 (rating value). Between 10 and 46% of bidders secured a loss-bringing contract. These ranges are due to the different treatments (see Section 3.1).

5.2 Feelings

Following the subjective value inventory [16] we designed a 13-question instrument for auctions and negotiations in the settings in which they took place. In Table 5 questions regarding feelings about the process (P); substantive outcomes (O); relationship (R); and about self (S) are shown. The answers were given using the 1-7 Likert scale.

Table 5. Feelings’ questionnaire

1. The organization of the process in phases and steps was useful. (P)
2. This process was stimulating. (P)
3. I enjoyed the bidding. (P; auction only)
4. I am satisfied with the results that I achieved. (O)
5. I am satisfied with the results as compared to my expectations. (O)
6. I think I obtained the best results for the company that I represent. (O)
7. I had a good relationship with my counterpart. (R)
8. I enjoyed working with my counterpart. (R)
9. I am satisfied with the working relationship with my counterpart. (R)
10. I am satisfied with the experience gained from this process. (S)
11. I am satisfied because I learnt a lot. (S)
12. I was confident engaging in my tasks. (S)
13. I was competent to perform my tasks. (S)

The results of the exploratory factor analysis (maximum likelihood with oblimin rotation and Kaiser Normalization) are given in Table 6 for auctions, and in Table 7 for negotiations. Note that the analysis did not result in the extraction of factor Self for auctions and factor Process for negotiations. This discrepancy between earlier results for bilateral negotiations [15] and those reported here requires further investigation.

There were 86 auction bidders who filled in the questionnaire. They obtained questions about their feelings of the process, outcome and self, but not relationship.
After analyzing several models, we observed the following:

1. The direct effect of objectives on feelings is weak—the contribution is about 1% of explained variance. This indicates that objectives are not assessed directly.

2. Objectives have strong effect on feelings through both outcomes (relational and substantive), i.e., outcomes have a mediating role between objectives and feelings.

3. Substantive objectives are positively associated with substantive outcomes but negatively with relational outcomes, the opposite is true for Relational objectives;

4. Study objectives are positively associated with relational outcomes but negatively with substantive outcomes;

5. Practice objectives show reversed pattern to Study; they are negatively associated with relational and positively with substantive—the reason may be that relationship in our experiments is ephemeral and of little practical importance.

The above may imply that the participants were engaged in this task and developed a temporary relationship, whereas they considered the practice goals to be indicated by substantive outcomes.

6. Conclusions

This study builds on and extends research on objectives of negotiators who participate in bilateral negotiations [42]. It confirms that sellers in multi-bilateral negotiations have the same four types of objectives as bilateral negotiation participants. It also determines that Substantive, Study and Practice objectives are important for the participants of multi-attribute reverse auctions.

This finding confirms Clyman’s [11] thesis that experiment participants may try meeting objectives that have little relationship with the task they are asked to perform. In effect, the theories formulated and verified through such experiments may be considering only some interests and motivations and ignore others that impact behavior and outcomes.

One implication is that experiment participants as well as bidders and negotiators engaged in real-life processes need to be properly motivated. Numerous motivational studies show that proper motivation is very difficult to determine. This research shows that motivation in experiments should be customized so that it may weaken the importance of some objectives and strengthen importance of others. The fact that participants have different profiles shows that they remain interested in their jobs (studies) and in gaining skills (practice). This suggests that experiments...
may have more in common with real-life processes than we often think [24], but it also makes isolation of objectives that participants actually employ in experiments more difficult.

In negotiations, strong interest in achieving substantive outcomes is often associated with a consideration of relational outcomes being less important. This study confirms this finding; it also shows that interest in the counterpart’s wellbeing is negatively associated with the achievement of substantive outcomes for self.

This study also indicates that the participants in making posterior assessments may “ignore” objectives they had considered prior to engaging in the process. This result highlights the importance of debriefing in negotiation training and “postmortem analysis” of the concluded decisions.

An interesting result is about the impact of Study and Practice objectives. Studying and achieving a good grade on the assignment does not depend on the task, therefore participants for whom this objective type was very important were likely to do the task in an easy and enjoyable way. The lack of relationship between task performance and assignment grade is a limitation which has been addressed through formulae that reward effort to achieve a contract but do not discriminate between those who won it and those who did not.

The impact of Practice objectives, in contrast to the Study’s impact, is directed to substantive rather than relational outcomes. The likely reason is that having an ability to test one’s skills and win in bidding or negotiation with others is seen as both skill building and performing better than one’s peers. Because of the nature of the interactions (anonymous, online) the relationship was relevant during but not after the process.

There are several limitations of this study, in particular those related to the sample size, including inability to analyze the relationship between profiles and outcomes, the impact of the counterparts’ behavior on outcomes and feelings, and the participants’ cultural background. We also did not consider participants’ expectations regarding both substantive and relational outcomes.

In this study students rather than sales managers participated in the experiments. This required that we have types of objectives Study and Practice, which professional sales managers are not likely to have. They may, however, have objectives that are associated with the broader implications of their particular sale activity (similar to Study was for students). The likely objectives would be associated with their profession and also with the enrichment of their skillset.

7. Acknowledgements

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8. References


