Negotiation Concordance and its Modeling With SEM♦

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Abstract

Negotiation is a process that attempts to bring two or more parties to agreement. Based on this concept, a model that includes both partners of a negotiation is proposed. The model incorporates concordance, a concept which describes the degree of accord between the partners and which cannot be measured directly. Using structural equation modeling (SEM), the effects of the concordance on the assessment of the partner's negotiation approach and the evaluation of the negotiation, are estimated from a large set of negotiation experiments. The empirical results indicate that factors which are designed to measure opinions of the negotiators regarding their partners are in fact mostly measuring the concordance factor. The results also show that there is no significant effect of the buyer's own negotiation approach evaluation on the seller's evaluation of the buyer's negotiation approach and vice-versa. There are however, significant positive effects of the concordance factor on the counterpart negotiation approach evaluation. These results point to a certain commonality between the buyer and the seller which influences the measurements.

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1. Introduction

Negotiation is a part of everyday life and business, and an important market mechanism. It is a process that involves persons with differing preferences regarding allocation of resources. The negotiators engage in interdependent decision-making to arrive at an agreed allocation. Negotiation research has been concerned with the various aspects of the individual and joint decision-making activities and their results. Researchers have studied relationships between the negotiators (their psychological traits, culture and education, negotiation modes, approaches and strategies) and the negotiation process and its results (Druckman 1977; Pruitt 1981; Bazerman, Curhan et al. 2000). They have also studied roles of the third parties (Herrman 2006) and more recently, decision and negotiation support tools (Holsapple, Lai et al. 1998; Ströbel 2002).

Social interactions often involve establishing and/or changing relationship among the participants. The quality of relational behavior includes emotional factors which have been found to play an important role in shaping the negotiation process, influencing its outcomes, including the negotiators' assessment of the process and their counterparts (Loewenstein, Thompson et al. 1989; Druckman and Broome 1991; Greenhalagh and Chapman 1995). Affect and other emotional factors may thus be considered as moderating influencing the cognitive rational assessment, including the assessment of facilitators and mediators, and the decision and negotiation support systems (Lai, Doong et al. 2006).

Research on the influence of affect has concentrated on one party and this party's affect regarding the counterpart. Barry and Oliver (1996) propose a model in which affect takes three forms; each for one of the three negotiation phases (pre-negotiation, negotiation and post-negotiation). Lai, Doong et al. (2006) observed that the negotiators' assessment of the system and its ease of use and usefulness are influenced by their perception of their counterpart's behavior.

Pre-negotiation affect which is based on the negotiators' earlier experiences influences their decision to negotiate and the selection of the negotiation approach (Druckman and Broome 1991; Baron 1993). Baron (1984) reports that positive affect contributes to the negotiators' preference for collaboration over avoidance in conflict resolution. Numerous experiments showed that there is a relationship between negotiation approaches selected by the negotiators and the agreements and other results. The dyads that collaborate were found to achieve agreement more often and were more satisfied with the process and the results than the dyads using different approaches. Because affect influences the initial approach selection, there is a relationship between the affect of the parties and the approaches they use in the negotiation.

The inter-relationships between affect and approaches, and their influences on the process and outcomes suggest the possibility of a construct which reflects the degree of the overall relationship between the negotiators. The purpose of this paper is to present results of an exploratory study regarding such a relationship. We call this general relationship the

negotiation concordance; it measures the degree of accord (harmony) between the two negotiators, their interaction and the results of these interactions. The construct concordance is broad in that it includes both the assessment of the other person who participated in the process and the process and its results.

For the purpose of this study we use data obtained from an on-line negotiation experiment with the Inspire system (Kersten and Noronha 1999; Koeszegi, Vetschera et al. 2004; Vetschera, Kersten et al. 2006). Because the experiments have been conducted since 1996, and the questionnaires have not been prepared with the purpose of our study in mind, the possibility to measure negotiation concordance is limited. However, on the positive side, we are able to use a large and rich data set. Its analysis may lead to experiments specifically designed to measure the proposed construct.

Following this introduction, in Section 2 we briefly discuss the Inspire negotiation experiment and present the negotiation concordance model. The dataset which we use to study the model is presented in Section 3, followed by the analysis in Section 4 in which we used the structural equation modeling technique. We present short conclusions and directions for future research in Section 5.

2. Proposed model and research questions

According to current research the negotiator's evaluation of the counterpart's negotiation approach correlates with the evaluation of the system (Lai, Doong et al. 2006). This may suggest that the perception of the system is affected by other aspects than those pertaining to the system, its ease of use and usefulness. Similarly, the negotiators' assessment of their counterparts and their negotiation approach may include more than their perception of the counterparts and their behavior. This assessment may be affected by the negotiators' evaluation of the process and its final results.

It appears that at the center of every negotiation, there is an abstract concept which aggregates individual assessments of behavior, approach and actions undertaken by the partners in one overall concept. This concept describes the degree of similarity (agreement) of the different perceptions shared by both negotiation partners. This concept has a strong relation to the outcome of the negotiation. Following this, the evaluation of the counterpart may not refer directly to measuring the partner's characteristics; it may be more of a measurement reflecting the concept of the overall concordance between negotiators. We anticipate that if there is a general positive concordance during the negotiation, there will be a positive partner evaluation, and if there is general negative concordance during the negotiations there will be a negative partner evaluation. This can be tested by modeling the overall concordance as a second-order factor that explains the relationship among various aspects of a participant's own evaluation and the corresponding partner evaluation by the counterpart. Negotiation behavior and counterpart's behavior evaluation had been examined previously, however, the research only considered each side of the negotiation separately, and did not include any central concordance or cross evaluation accuracy (Lai, Doong et al. 2006).

In order to further investigate the negotiation process and the proposed concordance concept, we consider together measurements of the parties' evaluation of the negotiation process, evaluation of their partners, and of the outcome of negotiation. We hypothesize that:

1. The concordance has a strong positive effect on the negotiation outcome; and

2. The positive value of the negotiation concordance leads to a high probability of the negotiators reaching an agreement; conversely, a negative concordance makes reaching an agreement less likely.

The model which we use to study the negotiation concordance is presented in Figure 1. The model is symmetric because both sides of the negotiation (buyer and seller) are represented in it.

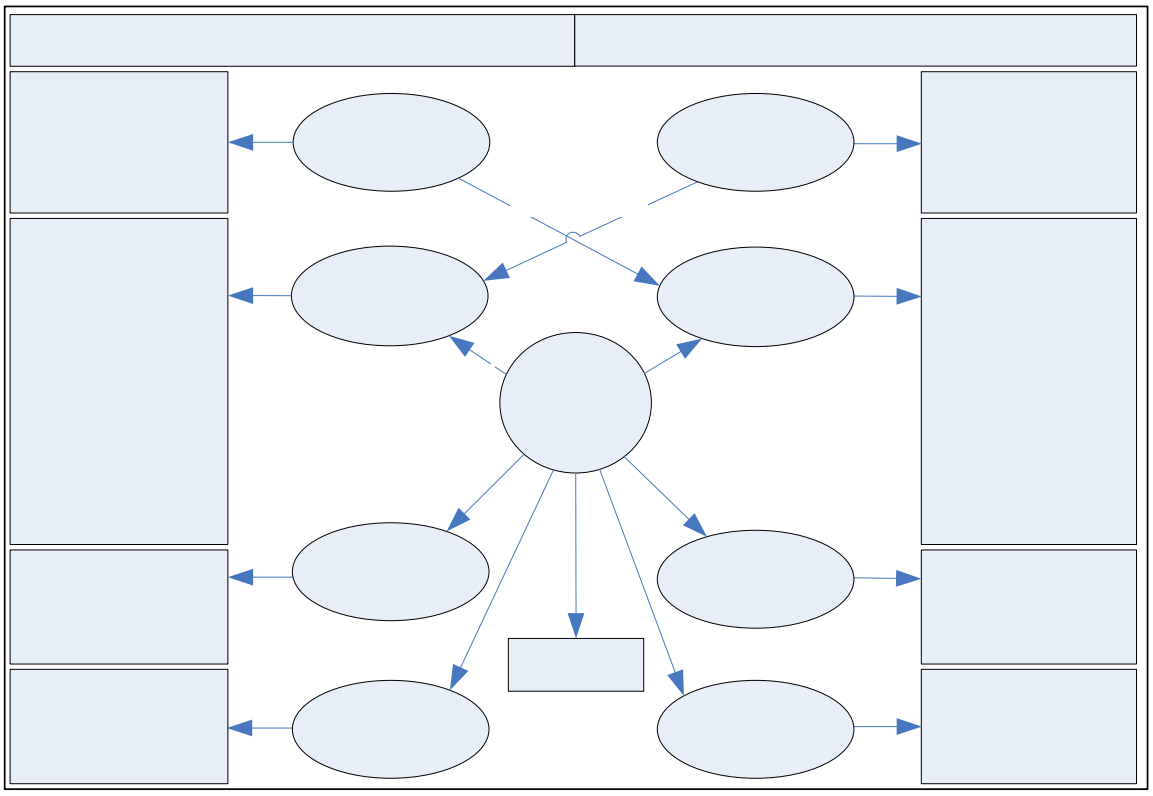

Figure 1. Negotiation concordance model and research questions

The concordance factor is positioned centrally in the model (Figure 1). Concordance influences seven factors: three factors on the buyer's side, three identical factors on the seller's side, and the negotiation outcome.

Additionally, the buyer's own negotiation approach evaluation should be manifested in the seller's evaluation of the buyer's negotiation approach and vice-versa. The measurement of central concordance is measured by both sides of the negotiation and by the final negotiation results. We will test validity of this model through structural equation modeling techniques (SEM). Assuming that the overall fit indices are acceptable, we expect that the concordance factor has a strong effect on all other factors as well as the negotiation outcome.

To summarize, we will examine the following two research questions (Figure 1):

Q1: Does the buyer's evaluation of the seller's negotiation approach reflect (mirror) the seller's own negotiation approach evaluation, and vice-versa?

Q2: Do the buyer's evaluation of the seller's negotiation approach and the seller's evaluation of the buyer's negotiation approach reflect (mirror) the overall negotiation concordance?

3. Data

The data source for evaluating the current model is the Inspire negotiation system-. Inspire is a negotiation support system which permits parties from around the world to negotiate over the internet. Negotiation experiments have been conducted using this system since 1996, therefore they provide a rich source of negotiation data. In order to avoid the complication and heterogeneity that may occur when data from different cases is used, only negotiations for the Itex-Cypress case (which represents over 97.5% of all experiments) have been retained. Additionally, only negotiations in which both sides completed the post negotiation questionnaire (relevant questions are available in Appendix 1) and in which at least two offers were made are considered here. This provides a total of 675 negotiations for analysis.

To simplify interpretation of the results, the response range for some questions was inversed. All, except two questions were on either a 5 or 7 point Likert scale and had a positive sense to them. The encoding resulted in a negative correlation with two binary variables ("Work with Opponent" and "Agreement") which were coded as 0 or 1. To compensate for this, all positively worded questions were inversed to make them have a positive correlation with both the positive binary variables and the outcome variables. Measurements that were already negatively worded, such as "Untrustworthy", were left unchanged. The final list of variables, their reversal status, type and range is presented in Appendix 1 (Table 1). Other than the negotiation outcome variable, this list of variables is used twice: once for each side of the negotiation.

4. Analysis

The proposed model is fitted using LISREL 8 (Jöreskog and Sörbom 2001). Before examining the details of the fitted model, the overall fit of the model must be evaluated. In structural equation modeling there are many components measuring goodness of fit. We use the Root

Mean Square Error of Approximation (RMSE), which was proposed by Steiger (1990) and for which fit is considered close if the RMSE value is between 0.05 and 0.08 for reasonable approximation in the population (Browne and Cudeck 1993).

The value of RMSE is 0.0668 and a 90% confidence interval of 0.0648 to 0.0687 for the current model. Therefore, our model has reasonable fit. Indices such as the Non-normed Fit Index (NNFI = 0.914), Comparative Fit Index (CFI = 0.918) and the Incremental Fit Index (IFI = 0.919) all present a consensus of an acceptable albeit not a very close fit. The Chi-Square is 4249 with 1213 degrees of freedom.

Detailed results of the fitted model are presented in the Appendix (Figure 1). Figure 2 depicts the simplified factor model which corresponds to the model given in Figure 1. The results indicate that there is no significant effect of the buyer's own negotiation approach evaluation on the seller's evaluation of the buyer negotiation approach and vice-versa. However, there are highly significant positive effects of the central concordance factor on the counterpart's negotiation approach evaluation.

Research question Q1 is not supported because the effect of the buyer's own negotiation approach evaluation on the seller's evaluation of the buyer's negotiation approach has no significant positive effect (p-value = 1.000) and also the effect of the seller's own negotiation approach evaluation on the buyer's evaluation of the seller's negotiation approach has no significant positive effect (p-value = 0.969).

Research question Q2 is supported because the effect of the central concordance factor on the seller's evaluation of the buyer's negotiation approach has a significant positive effect (p-value = 0.000) and the effect of the central concordance factor on the buyer's evaluation of the seller's negotiation approach has a significant positive effect (p-value = 0.000). This appears to be an important result because it demonstrates that the evaluation of the counterpart is mostly measuring the negotiation's overall concordance.

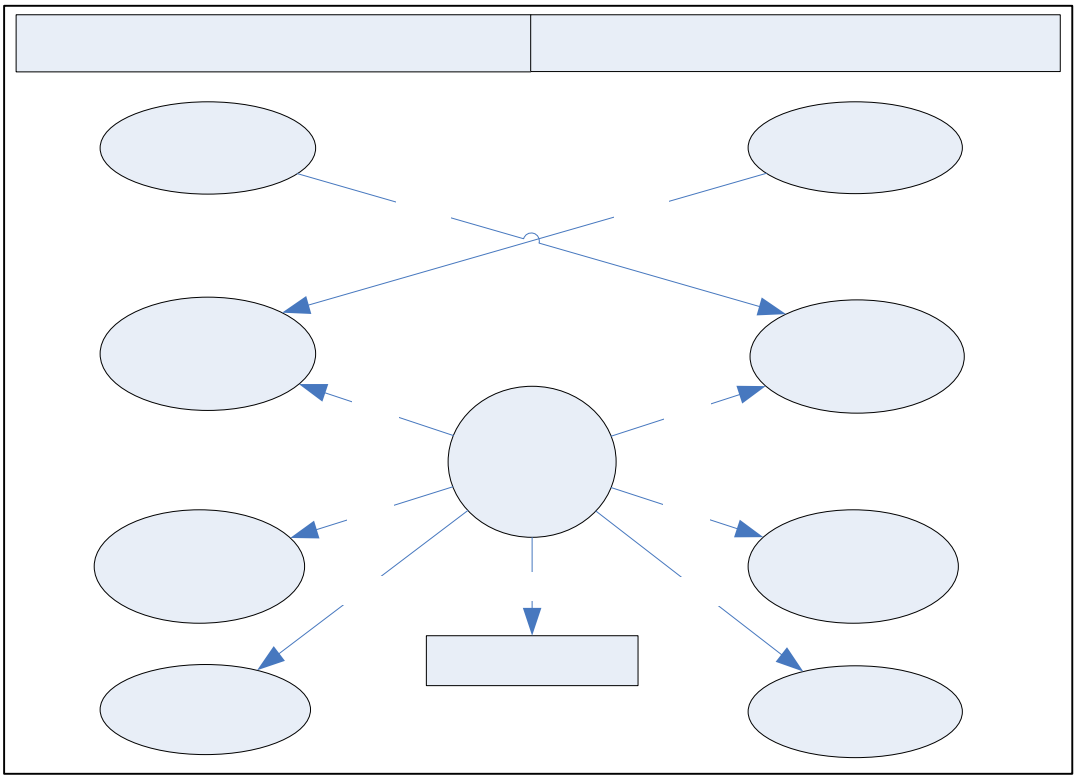

Figure 2. Negotiation concordance model

The objective of the counterpart's negotiation approach evaluation measurement is to measure the perception and initially, we did not intend to use it in the negotiation concordance measurement. We found however, that this construct was strongly influenced by the central concordance factor. Because there does not seem to be a specific reason why only this measurement should be influenced by the central concordance factor, it is likely that other measurements are also affected by this concordance factor or other related common factors such as the negotiation affect (Lai, Doong et al. 2006). It should be noted here that this is an initial exploratory work that uses both sides of the negotiation. Further research may require changes of the negotiation concordance factor. However, it does seem that the results reported here indicate an interesting effect which is related to both sides of a negotiation and is influencing some of the measurements.

As one would expect from negotiation literature the participants' approach influences negotiation (Lax and Sebenius 1986; Loewenstein, Thompson et al. 1989; Lewicki, Saunders et al. 2003). Indeed, adding the path which permits the overall concordance to be influenced by each participant's own bargaining evaluation does have some effects which are significant (BuyerOwn = 0.41, SellerOwn = 0.42, p-value = 0.000 for both). Additionally, there is no change in the answers to the two research questions.

An alternative perspective on this would be that the perceived own negotiation approach of

both buyers and sellers is also influenced by the central concordance factor. That is, own negotiation approach may be considered as additional measures of the overall concordance factor. For example, if the negotiations have high concordance, each negotiator will have a higher self evaluation. This could be controlled in future experiments by obtaining own bargaining evaluations both before and after the negotiation session.

Another question we consider is the difference in the negotiation approach evaluation of females and males. This question arises from the observation that most negotiators incorrectly evaluated their partner or incorrectly evaluated themselves. Previous research on the AMIS model using the Inspire data has identified that the male and female participants provide different model estimates (Etezadi, Kersten et al. 2006). The theory indicates that females should be better at accurately evaluating their negotiation partners than males. To evaluate this, the model is fitted with various subsets of the data in an attempt to isolate the female/male differences in partner evaluation.

Table 1 - Female/male opponent evaluation analysis

Buyers	**Sellers**	**Size**	**RMSEA**	**CFI**	**SellerOwn→ BuyerOpp**	**BuyerOwn→ SellerOpp**
Male	Any	387	0.0620	0.923	-0.05	-0.06
Any	Male	411	0.0662	0.920	-0.01	-0.03
Male	Male	234	0.0682	0.914	0.02	0.00
Female	Any	288	0.0710	0.902	-0.00	-0.21
Any	Female	264	0.0683	0.898	-0.14	-0.32
Female	Female	111*	0.0790	0.857	0.03	-0.36

*Total sample size is smaller than the number of parameters. Parameter estimates are unreliable.

The results are presented in Table 1, where six models are examined. In every model, we arrive at the same conclusion for both research questions (Q1 and Q2); the own evaluation is not reflected in the partner's evaluation and the central concordance factor is reflected in the partner's evaluation.

5. Conclusions

The empirical examination of the proposed model and its effects on various measurements, in particular the partner evaluation, provides new insights into the relationships between the self-assessed and the perceived negotiation approaches, the process assessment, and the agreement achievement.

The measurement of the central concordance factor is particularly interesting because it

accommodates both sides of the negotiation and the negotiation outcome. Contrary to the measurement intent, the evaluation of the counterpart's approach does not really measure this approach but is shown to manifest the central concordance factor.

We need to note that it is possible that the non-significant effect of the buyer's own negotiation approach evaluation on the buyer's assessment of the seller's negotiation approach (and vice-versa) is a result of incorrect self evaluations. These effects, however, cannot be further examined with the current data. We plan to conduct an experiment which would be tailored to study these possible effects.

In this study we have not found a significant effect of the buyer's own negotiation approach evaluation on the seller's negotiation approach evaluation (and vice-versa) for the male and female subsets.

Overall, because this is an initial exploratory work involving both sides of the negotiation, it is likely that the negotiation concordance factor may be modified in future. However, the current results indicate existence of a higher order factor which unites a set of concepts (traits) that both sides of negotiation may exhibit. In summary, we find that:

The buyer's evaluation of the seller's negotiation approach does not reflect the seller's own negotiation approach evaluation, and vice-versa.

The buyer's evaluation of the seller's negotiation approach and the seller's evaluation of the buyer's negotiation approach reflect an overall negotiation concordance.

These results may provide new insights but they need to be verified in future negotiation research. They indicate that a double-sided concordance factor can be modeled and that its impact on various measurements should be taken into account.

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Appendix

Table 1. Measurement variable overview

Name	Reversed	New meaning for model interpretation	Range: Disagree/Agree (N/Y)	ID
Own negotiation approach				F1
Informative	Y	Informative	1-5	V1
Persuasive	Y	Persuasive	1-5	V2
Honest	Y	Honest	1-5	V3
Exploitative	N	Not exploitative	1-5	V4
Cooperative	Y	Cooperative	1-5	V5
Negotiation process evaluation				F2
Expectations	Y	Expectations	1-7	V6
Control	Y	Control	1-7	V7
Friendly	Y	Friendly	1-7	V8
Performance	Y	Performance	1-7	V9
Counterpart's approach evaluation				F3
Informative	Y	Informative	1-5	V10
Persuasive	Y	Persuasive	1-5	V11
Honest	Y	Honest	1-5	V12
Exploitative	N	Exploitative	1-5	V13
Cooperative	Y	Cooperative	1-5	V14
Unreliable	N	Reliable	1-5	V15
Likeable	Y	Likeable	1-5	V16
Irrational	N	Rational	1-5	V17
Untrustworthy	N	Trustworthy	1-5	V18
Kind	Y	Kind	1-5	V19
Fair	Y	Fair	1-5	V20
Flexible	Y	Flexible	1-5	V21
Counterpart evaluation				F4
Work with opponent	N	Work with opponent	0-1	V22
Seeing opponent	Y	Seeing opponent	1-5	V23
Predict opponent	Y	Predict opponent	1-5	V24
Underst. opp. priorities	Y	Underst. opp. prior.	1-5	V25
Agreement	N	Agreement	0-1	V26

5.1 Measurement Instrument

Rate your own bargaining strategies:

Informative	○ ○ ○ ○ ○	Uninformative
Persuasive	○ ○ ○ ○ ○	Push-over
Honest	○ ○ ○ ○ ○	Deceptive
Exploitative	○ ○ ○ ○ ○	Accommodating
Cooperative	○ ○ ○ ○ ○	Self-interested

Did the outcome of the negotiation match what you thought it would be before you began exchanging offers?

Yes, completely ○ ○ ○ ○ ○ ○ ○ No, not at all

How much control did you have over the negotiation process?

Very much in control ○ ○ ○ ○ ○ ○ ○ Not at all in control

Would you call your negotiations:

Very friendly ○ ○ ○ ○ ○ ○ ○ Very hostile

How satisfied are you with your performance as a negotiator in this exercise?

Extremely satisfied ○ ○ ○ ○ ○ ○ ○ Extremely unsatisfied

What can you say about your partner in the negotiations?

Informative	○ ○ ○ ○ ○	Uninformative
Persuasive	○ ○ ○ ○ ○	Push-over
Honest	○ ○ ○ ○ ○	Deceptive
Exploitative	○ ○ ○ ○ ○	Accommodating
Cooperative	○ ○ ○ ○ ○	Self-interested
Unreliable	○ ○ ○ ○ ○	Reliable

Likable	○ ○ ○ ○ ○	Unlikable
Irrational	○ ○ ○ ○ ○	Rational
Untrustworthy	○ ○ ○ ○ ○	Trustworthy
Kind	○ ○ ○ ○ ○	Unkind
Fair	○ ○ ○ ○ ○	Unfair
Flexible	○ ○ ○ ○ ○	Rigid

Would you like to work with your negotiation partner on some other project?

○ Yes ○ No

How interested would you be in seeing the partner with whom you negotiated?

Extremely interested ○ ○ ○ ○ ○Not at all interested

Were you able to learn enough about your partner to be able to predict her/his next offer?

Learned a lot ○ ○ ○ ○ ○ Learned nothing

Did you feel that you understood the priorities of your partner in the negotiation?

Always ○ ○ ○ ○ ○ Never

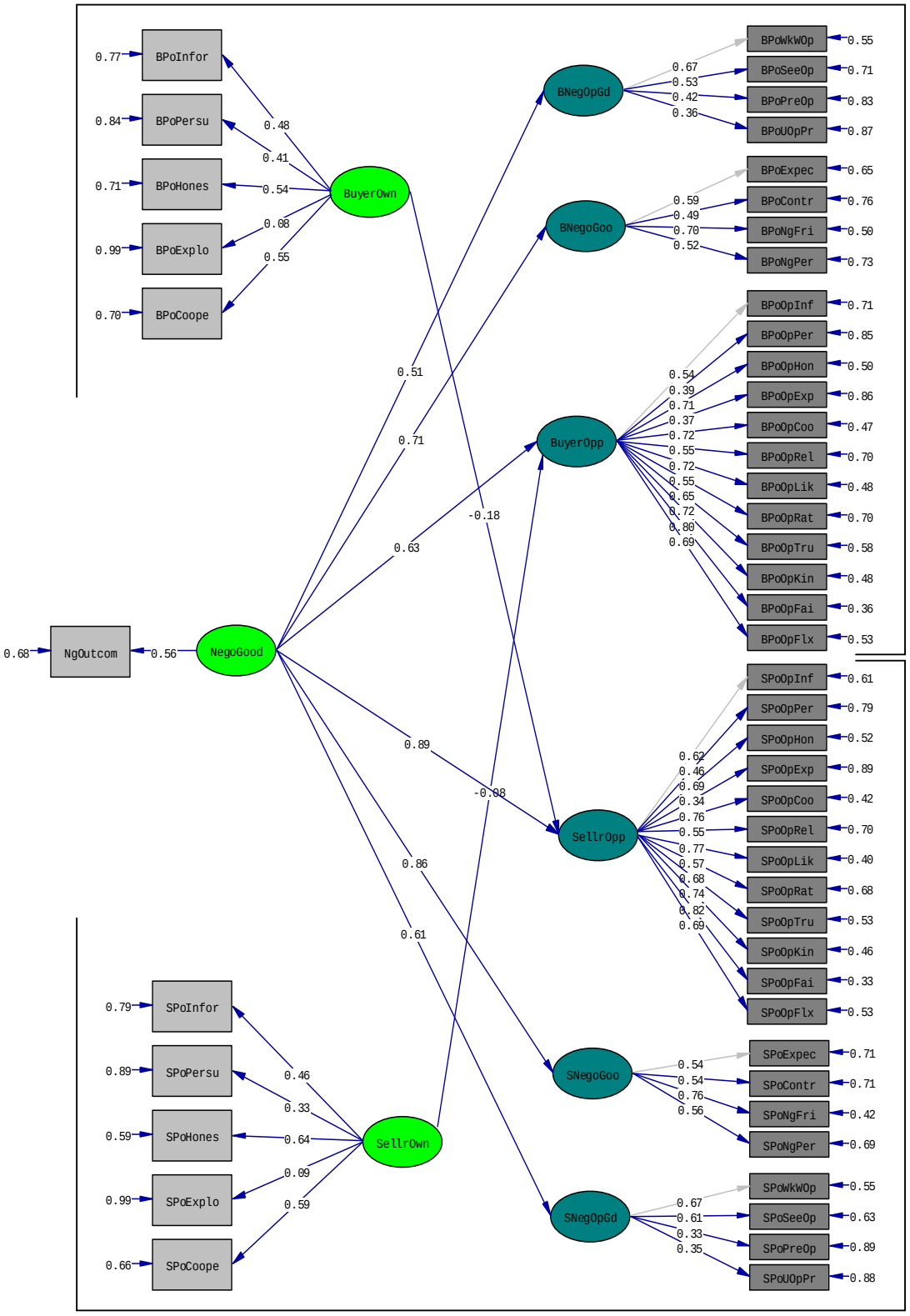

Figure 1. Fitted buyer/seller negotiation structural equation model