THE RELATIONSHIP BETWEEN INTER-ORGANIZATIONAL TRUST AND PERFORMANCE

R. Fiala, M. Prokop, I. Živělová

Abstract

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The article deals with an investigation of the relationship between inter-organizational trust and performance. Using data obtained in a questionnaire survey in 373 organizations with more than 20 employees with their seat in the Czech Republic, we found the relationship between inter-organizational trust and supplier performance, mediated by the level of conflict. Also, the statistically significant negative relationship between inter-organizational trust and costs of negotiation and the statistically significant positive relationship between supplier performance and perceived performance were confirmed. The hypothesis on the statistically significant relationship between inter-organizational trust and negotiating costs was not confirmed. The structural equation modelling technique was used in the calculations. The calculated model fit indices (CFI, NFI, NNFI) with values over 0.9 demonstrate a very good quality of the model.

inter-organizational trust, costs of negotiation, level of conflict, performance

According to Zaheer and Zaheer (2006), trust has emerged as a central theme in international strategy research since the middle of 1990s. Researchers from various time periods and a diversity of disciplines seem to agree that trust is highly beneficial to the functioning of organizations (Dirks, Ferrin, 2001). In the past decades there has been a resurgence of interest in understanding the sources and consequences of trust in economic exchanges (Gulati and Sytch, 2008). As Gulati and Sytch (2008) observe, this interest has resulted in new research from a variety of disciplinary perspectives that include social psychology (e.g. Kramer, 1999), organizational theory and strategy (Uzzi, 1997; Zaheer and Venkatraman, 1995), business history (Fukuyama, 1999) and economics (e.g. Güth *et al.*, 1998; Berg *et al.*, 1995).

According to many foreign studies, company performance is affected by inter-organizational trust, thus it is a very important area for research also in the Czech Republic. The aim of this article is to verify the relationship between inter-organizational trust and exchange performance. These results from the Czech Republic will be compared with the research of Zaheer *et al.* (1998) as one of the most quoted studies on the relationship between trust and performance.

Defining trust

There are various conceptualizations of trust (Poppo *et al.*, 2008). Gulati and Sytch (2008) explicitly distinguish between dispositional and relational trust. While dispositional trust mainly reflects expectations about the trustworthiness of others in general (e.g. Rotter, 1971; Gurtman, 1992), relational trust pertains to a specific dyadic partner (e.g. McAlister, 1995). Gulati and Sytch (2008, p. 167) define trust as *the expectation that another organization can be relied on to fulfill its obligations, to behave in a predictable manner, and to act and negotiate fairly even when the possibility of opportunism is present.* Dědina and Odcházel (2007, p. 191) define trust as *belief in integrity, virtue and trustworthiness of an individual or organization based on former experience.*

The majority of earlier studies in the area of trust focused on the interpersonal level; some studies also dealt with trust between organizations (Gulati, 1995; Zaheer *et al.*, 1998). This is also one of the reasons

why this article focuses on inter-organizational trust. The term inter-organizational trust is defined as *the extent of trust placed in the partner organization by the members of a focal organization* (Zaheer *et al.*, 1998, p. 142).

Hypotheses

Negotiating costs include the time and effort required to determine efficient courses of action, and to settle on divisions of costs and benefits (Zaheer *et al.*, 1998; Milgrom and Roberts, 1992). In case that inter-organizational trust is higher, the sharing of information is more open and honest, information asymmetry will be reduced. Trust also reduces the risk of opportunistic behaviour. Without opportunism, the problem of economic organization would be substantially mitigated – for every situation a simple contract could be drawn, covering the most likely contingencies, and containing a "general clause" to deal with unforeseeable circumstances that may develop (Noorderhaven, 1995; Williamson, 1985). On the contrary, if trust is lower, long and difficult (and therefore more costly) negotiations will be more likely (Zaheer *et al.*, 1998; Williamson, 1975).

Hypothesis 1. There is a negative relationship between inter-organizational trust and negotiating costs between the partners in the exchange relationship.

Conflict is defined as an expressed struggle between at least two inter–dependent parties who perceive incompatible goals, scarce rewards, and interference from the other party in achieving their goals (Hocker and Wilmot, 1985). According to Macneil (1980), cooperation between organizations is based on trust characterized by internal harmony and a number of norms and social processes which are intended to maintain and preserve the relationship between the organizations. The possitive effect of trust on conflict found Koza and Dant (2007).

Cooperating organizations with high inter-organizational trust provide each other with much greater "leeway" during negotiations (Zaheer *et al.*, 1998). This leeway reduces the intensity and frequency of dysfunctional conflicts.

Hypothesis 2. There is a negative relationship between inter-organizational trust and the level of conflict in the exchange relationship.

Negotiating cost can be defined as the time and effort expended by the exchange partners to arrive at agreements about the distribution of costs and benefits (Milgrom and Roberts, 1992; Zaheer *et al.*, 1998). The issue of transaction costs, which include also negotiation costs, was dealt with by Ronald Coase, who came up with the theory known as the Coase theorem (Coase, 1960). If parties can negotiate with each other and indemnify one another, they will come to an effective solution. The Coase theorem holds true only on the assumption that transaction costs are low or zero (Coase, 1960). In other words, the lower the transaction costs, the more effective

the solution. The exchange (supplier) performance is defined as the extent to which the supplier has fulfilled the buyer's requirements in terms of price, timeliness of delivery and high quality supply. The exchange performance is lowered when costs of negotiation are high because bargaining positions carry direct costs that the bargainers may wish they could all avoid. In this regard, the time and energy so often spent haggling, posturing, and delaying agreements in attempts to influence the terms of the deal are related wastes. The less willing the supplier is to cooperate the higher the transaction costs will be for the customer in efforts to reach targets in the area of cooperation with the supplier (Walker, 1994).

Hypothesis 3. There is a negative relationship between supplier performance and costs of negotiation between the partners in the exchange relationship.

Research in conflict management and communication stresses the positive performance benefits from well-managed conflict (Lam and Chin, 2005; Lu, 2006; Duarte and Davies, 2003). Increasing frequency (and pervasiveness) of conflicts may cause higher time demands for a solution, greater participation of other employees and also higher negative side effects of the conflict. In such cases exchange performance tends to fall (Zaheer *et al.*, 1998).

Hypothesis 4. There is a negative relationship between supplier performance and the level of conflict in the exchange relationship.

Delaney and Huselid (1996) measure perceived performance in the area of quality of products and services and customer satisfaction. The quality of products and services and customer satisfaction are very closely connected with supplier (exchange) performance. Supplier performance (as discussed in more detail in the Materials and Methods chapter) is measured with items about the level of achieving targets in the area of competitive price, timeliness of delivery and high quality supply.

Hypothesis 5. There is a positive relationship between supplier performance and perceived performance.

MATERIALS AND METHODS

Data

The aforementioned hypotheses were verified using data from 373 organizations with more than 20 employees with their seat in the Czech Republic. Due to the requirement for random sampling, students were asked to approach organizations that would meet the aforementioned requirements and we then reported the names of those organizations where the purchase manager had given preliminary consent to completing the questionnaire. A list of 515 organizations was thus created and these organizations were sent the questionnaire. A total of 395 respondents filled out the questionnaire and 22 were rejected due to incomplete data. Tab. I shows

I: *The structure of organizations based on the NACE*

	CZ-NACE section	Number of organizations	Percentage
A	Agriculture, forestry and fishing	23	6.2
B	Mining and quarrying	3	0.8
C	Manufacturing	119	31.9
D	Electricity, gas, steam and air conditioning supply	4	1.1
E	Water supply; sewerage, waste management and remediation activities	6	1.6
F	Construction	48	12.9
G	Wholesale and retail trade; repair of motor vehicles and motorcycles	61	16.3
H	Transportation and storage	23	6.2
I	Accommodation and food service activities	19	5.1
J	Information and communication	12	3.2
K	Financial and insurance activities	5	1.3
L	Real estate activities	10	2.7
M	Professional, scientific and technical activities	21	5.6
N	Administrative and support service activities	19	5.1
Total		373	100

Source: own calculation

the structure of organizations based on the statistical classification of economic activities in the European Community (NACE).

Measurement

There are the individual questionnaire items and scales by which the individual variables were measured in appendix 1. According to Zaheer *et al.* (1998) and Subramaniam and Youndt (2005), a seven-point scale was chosen.

Trust

Five items for measuring inter-organizational trust were defined on the basis of studies by Rempel and Holmes (1986) and Zaheer *et al.* (1998). Unlike Zaheer *et al.* (1998), we were interested in the relationship between the respondents and key suppliers to the organization.

Costs of negotiation

Negotiation costs are measured with two items defined on the basis of the study by Zaheer *et al.* (1998). Within this seven-point scale we asked the respondents how easy or difficult and quick or slow negotiations are between the respondent's organization and its key suppliers in case that the supplier's input costs are increasing.

Level of conflict

This variable was measured with two items in the questionnaire. We asked the respondents about the level of conflict between their organization and the key suppliers and between them and the purchase managers of the key suppliers. The items in the questionnaire were created on the basis of studies by Zaheer *et al.* (1998) and Van de Ven and Ferry (1980).

Supplier performance

Supplier (exchange) performance is understood as the degree to which the key suppliers meet requirements for price, timeliness of delivery and quality of products or services (Zaheer *et al.*, 1998; Heide and Stump, 1995; Walker, 1994).

Perceived performance

Perceived performance in the field of quality of products and services and customer satisfaction is measured by two items on the basis of the study by Delaney and Huselid (1996). The quoted authors measure performance in the field of quality of products and services and customer satisfaction with a question asking the respondents how they would compare in the given areas their organization (in recent years) with other organizations engaged in the same business.

Convergent validity

Convergent validity deals with the extent, to which items truly measure its underlying construct (Trail and James, 2001). Convergent validity was assessed by the Cronbach's alpha reliability value and reliability coefficient RHO.

Coefficient alpha was developed by Cronbach (1951) and this coefficient is one of the most important statistics in research involving test construction and use (Cortina, 1993). The Cronbach's alpha reliability value of the all measurement scales are greater than 0.849. Peterson (1994) compared individual recommended values of Cronbach's alpha. According to Peterson (1994) the most quoted are Nunally's recommendations (Nunally 1967; Nunally 1978). Nunally (1967) recommended that the minimally acceptable reliability should be in the range of 0.5 to 0.6,

II: *Reliability coefficients*

Variable	The Cronbach's alpha reliability value	reliability coefficient RHO
Inter-organizational trust	0.909	0.907
Perceived performance	0.937	0.887
Costs of negotiation	0.850	0.875
Level of conflict	0.932	0.935
Supplier performance	0.873	0.877

Source: own calculation

whereas in 1978 (Nunally, 1978) he increased the recommended level to 0.7. Tab. II shows Cronbach's alpha reliability value and reliability coefficient RHO for all variables.

Raykov (2004) describes coefficients that estimate the reliability of construct measurement. This coefficient is the factor RHO coefficient. For multifactor model the RHO coefficient provides a good estimate of internal consistency and RHO is the most appropriate coefficient to use (Byrne, 2006). According to Lawson-Body *et al.* (2010), RHO coefficients greater than 0.82 are considered very satisfactory.

Discriminant validity

Bagozzi (1993, p. 54) defines discriminant validity as *the degree to which measures of different concepts are distinct*. For obtaining discriminant validity, the correlations between variables should be less than 0.9 (Kline, 2011). None of the correlations between variables presented in table III achieved this threshold. Discriminant validity was confirmed.

Nomological vadility

Nomological validity refers to the relationship between measures representing theoretically related constructs (Ruekert and Churchill, 1984). For every link in Figure 1 a regression coefficient was calculated. All coefficients were statistically significant at the 0.05 level, thus nomological validity was confirmed.

Analysis

Our hypotheses were implemented into the structural equation model. This model (see Fig. 1) was evaluated in EQS software. We used maximum likelihood estimation procedure to estimate model path coefficients. From this method we obtained standardized values of these coefficients (standardized solution), values of significance test
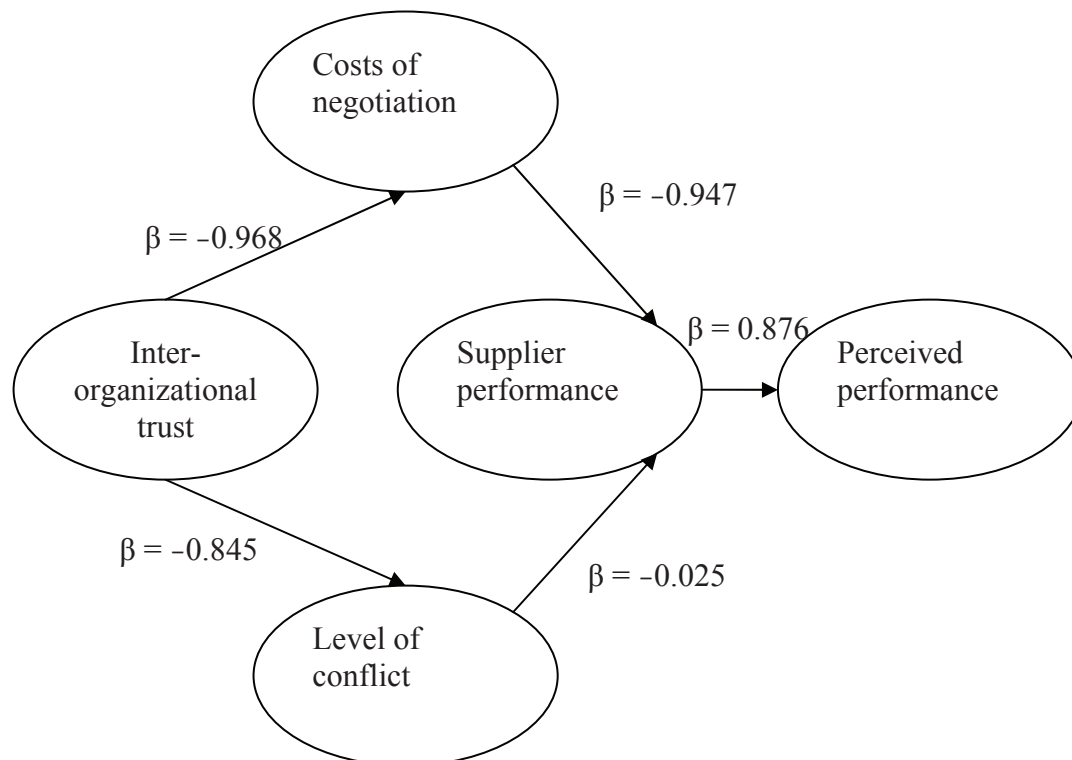
1: *Structural model (Chi-square = 268.7, d.o.f = 72, p = 0.000, N = 373, CFI = 0.96, NFI = 0.94, NNFI = 0.94, RMSEA = 0.086)*
Source: authors

statistics and results of the significance tests at 5% error level. Positive values of the coefficients mean positive influence of the predictor on the predicted latent variable, negative values mean negative influence. Model fit quality is expressed by model fit indices:

- NFI (Bentler-Bonet normed fit index)
- NNFI (Bentler-Bonet non-normed fit index)
- CFI (comparative fit index)
- RMSEA (root mean square error of approximation).

To represent good fit values of NFI, NNFI and CFI should be at least greater than 0.9 (Bentler, 1992), value of RMSEA smaller than 0.1 (Browne and Cudeck, 1993). According to Shah and Goldstein (2006), a model with a lower RMSEA does not indicate better fit than a model with a higher RMSEA.

RESULTS

Tab. III reports correlations for all variables.

This study adopted the structural equation model in Figure 1 to test hypotheses 1 to 5.

Model fit indices exceed the requested value 0.9. Especially the value of CFI index greater than 0.95 means very good model fit. Also RMSEA index is close to the value 0.08, which means the value for acceptable model fit.

This model describes the relationships between inter-organizational trust and performance, mediated by level of conflict and negotiating costs. The results are presented in tab. IV.

The predicted negative relationship between inter-organizational trust and negotiating costs (hypothesis 1) is supported ($\beta = -0.968$, $p < 0.05$). We also find a significant interaction between inter-organizational trust and the level of conflict ($\beta = -0.845$, $p < 0.05$), thereby supporting hypothesis 2.

As expected, there is a negative relationship between supplier performance and costs of negotiation between the partners to the exchange ($\beta = -0.947$, $p < 0.05$), thus, hypothesis 3 is supported.

There is a negative relationship between supplier performance and the level of conflict in the exchange relationship (hypothesis 4), but not statistically significant ($\beta = -0.025$, $p > 0.05$).

As predicted, supplier performance positively affects perceived performance ($\beta = 0.876$, $p < 0.05$), consistent with hypothesis 5.

We obtained good model fit, 93.6% of variability of predicted variable supplier performance was explained by variability of factor predictors (R-squared = 0.936). Similarly 76.7% of variability of predicted variable perceived performance was explained by variability of factor predictors (R-squared = 0.767).

DISCUSSION

In this article we investigated the relationship between inter-organizational trust and performance between which exist mediating variables – level of conflict and costs of negotiation. Our results strongly support the thesis that the mediating variable between inter-organizational trust and supplier performance are costs of negotiation. The situation of the variable level of conflict is that there is a statistically significant negative relationship with inter-organizational trust; however, for the relationship between inter-organizational trust and the level of conflict, the statistically significant negative relation was not confirmed. The following is a comparison of the results of our study with the research of Zaheer *et al.* (1998) as one of the most quoted studies on the relationship between trust and performance:

III: *Correlation matrix of the variables (N = 373)*

	1	2	3	4	5
Inter-organizational trust	1.0000				
Level of conflict	−0.6012	1.0000			
Costs of negotiation	−0.7671	0.6139	1.0000		
Supplier performance	0.8568	−0.6157	−0.7164	1.0000	
Perceived performance	0.7405	−0.5119	−0.6783	0.7686	1.0000

Source: own calculation

IV: *Results of the model (Chi-square = 268.7, d.o.f = 72, p = 0.000, N = 373, CFI = 0.96, NFI = 0.94, NNFI = 0.94, RMSEA = 0.086)*

Outcome	Predictor	Hypothesis	St. estimate	St. error	t-value	p-value
Costs of negotiation	Inter-organizational trust	H1	−0.968	0.053	−12.797	< 0.05
Level of conflict	Inter-organizational trust	H2	−0.845	0.043	−19.234	< 0.05
Supplier performance	Negotiation costs	H3	−0.947	0.106	−9.665	< 0.05
Supplier performance	Level of conflict	H4	−0.025	0.049	−0.402	> 0.05
Perceived performance	Supplier performance	H5	0.876	0.066	16.709	< 0.05

Source: own calculation

- Both studies show the statistically significant negative relationship between variable costs of negotiation and the level of conflict.
- Both studies also show that the statistically significant relationship between level of conflict and exchange (supplier) performance was not confirmed. Zaheer *et al.* (1998) even found this relationship positive; however we found it in accordance with the hypothesis positive but statistically insignificant. An explanation could be in sorting the consequences of conflicts as constructive and destructive, as described by Dwyer *et al.* (1987). According to Dwyer *et al.* (1987), conflict has its advantages, among others more frequent and effective communication between the parties and the establishment of avenues to express grievances, a critical review of past actions, a more equitable distribution of system resources, a more balanced power distribution in the relationship, and the standardization of modes of conflict resolution. The aforementioned authors also highlight the destructive consequences of conflict (hostility, bitterness, strikes, violence, polarization of third parties, and isolationism) that are dealt with by most of the authors. The results of our and Zaheer's (1998) studies indicate that the outlined advantages of the conflict may be very significant.
- The studies differ in the relationship between costs of negotiation and exchange performance. Our study confirms a statistically significant negative relationship, while the study by Zaheer *et al.* (1998) does not.

Some practical implications arise from this article. It is very important for organizations to build relationships based on trust. High inter-organizational trust has positive impact on decreasing costs of negotiation and low negotiation costs are connected with higher supplier performance. Perceived performance is positively influenced by supplier performance.

CONCLUSIONS AND SUGGESTIONS FOR FURTHER RESEARCH

The authors of this article created a structural model which records the relationship between inter-organizational trust and performance. The calculated model fit indices (Bentler-Bonet normed fit index, Bentler-Bonet non-normed fit index and comparative fit index) which amount to values higher than 0.9 show the very good quality of the model. Four out of five study hypotheses were confirmed. Negotiation costs were confirmed as the mediating variable between inter-organizational trust and exchange (supplier) performance; however, the variable level of conflict was not confirmed as a mediating variable.

In the article we did not deal with the variable of interpersonal trust, and it would be interesting to investigate the relationship between interpersonal trust and supplier performance and compare the results with the results published in this article. It will also be interesting to verify the quality of the model in which both types of trust (inter-organizational and interpersonal trust) are represented. Another subject of a future investigation could be the use of other performance indicators suggested, for example, by Šiška (2011) and Šiška and Lízalová (2011).

SUMMARY

The authors aimed to create a structural model showing the relationship between inter-organizational trust and performance and verify hypotheses following from this model. The model variables include inter-organizational trust, level of conflict, costs of negotiation, supplier performance and perceived performance. All variables were measured on the basis of a questionnaire survey in which 373 organizations with more than 20 employees with their seat in the Czech Republic participated. The questionnaire was answered by the purchase managers of these organizations. The Cronbach's alpha reliability value was higher than 0.849 for all variables. This model was verified in the EQS software. The calculated model fit indices amounting to values higher than 0.9 (CFI = 0.96, NFI = 0.94, NNFI = 0.94) show the very good quality of the model. The RMSEA value is also below the defined limit. The calculations confirmed the statistically significant negative relationship between inter-organizational trust and costs of negotiation, inter-organizational trust and the level of conflict, negotiation costs and supplier performance. We also found a statistically significant positive relationship between supplier performance and perceived performance. Verification of the existence of the mediating variable between inter-organizational trust and supplier performance is an important finding. The research did not confirm the hypothesis on the statistically significant negative relationship between the level of conflict and the costs of negotiation.

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Appendix 1

V: *Measurement instruments*

Variable, source, scale	Measures and items
Inter-organizational trust (Zaheer *et al.*, 1998; Rempel and Holmes,1986), 1 = strongly disagree; 7 = strongly agree	1. Our key suppliers have always been even-handed in its negotiations with our organization. 2. Our key suppliers may use opportunities that arise to profit at our expense. (reverse coded) 3. We can rely on key suppliers to keep promises made to us. 4. We are hesitant to transact with our key suppliers when the specifications are vague. reverse coded) 5. Our key suppliers are trustworthy.
Perceived performance (Delaney and Huselid, 1996), 1 = much worse; 7 = much better	How would you compare the organization's performance over the past 3 years to that of other organizations that do the same kind of work? 1. Quality of product or services? 2. Satisfaction of costumers or clients?
Costs of negotiation (Zaheer *et al.*, 1998), 1 = very easy (quick); very difficult (slow)	How smooth or difficult are price negotiations between your company and your key suppliers in the case that the supplier's input costs are increasing? How quick or slow are price negotiations between your company and your key suppliers in the case that the supplier's input costs are increasing?
Level of conflict (Van de Ven and Ferry, 1980; Zaheer *et al.*, 1998); 1 = never; 7 = very often	How often were there disagreements between: a) Your organization and key suppliers? b) You and your contact persons (purchasing managers) of key suppliers?
Supplier performance (Zaheer *et al.*, 1998); 1 = very poor; 7 = excellent	Please rate key suppliers' performance on fulfilling each of the following goals: a) competitive price b) timeliness of delivery c) high quality supply

Address

Ing. Roman Fiala, prof. Ing. Iva Živělová, CSc. Ústav regionální a podnikové ekonomiky, Mendelova univerzita v Brně, Zemědělská 1, 613 00 Brno, Česká republika, Mgr. Martin Prokop, Katedra matematiky, Vysoká škola polytechnická Jihlava, Tolstého 16, 586 01 Jihlava, Česká republika, e-mail: fialaroman@post.cz, zivelova@mendelu.cz, prokopm@vspj.cz