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SUCCESS FOR THE WHOLE FOOD CHAIN: TESTING THE MODEL OF NETWORK SUCCESS IN UKRAINE

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Abstract

Most empirical studies that declare their focus on network success or performance investigate the achievement of goals by an individual firm participating in a network. Goals that are set at the network level are mainly neglected. The aim of this study is to develop and test the model that includes goal achievement at both the firm and network levels. We test our model in the context of strategic supply chain networks in the Ukrainian food industry. The results indicate that network-level goals really exist in strategic networks and are subject to significant effect on the part of cooperation and coordination.

Keywords

Supply Chain Networks, Network Goals, Alignment of Interests, Alignment of Actions

1 Introduction

As suggested by the proponents of the relational view of strategic management, the advantages of an individual firm are often linked to the advantages of the network of relationships in which the firm is embedded (DYER AND SINGH, 1998). Accordingly, there is an ongoing discussion on how to manage a firm's network of relationships successfully, i.e. such that the firm's competitive advantage is sustained (GULATI ET AL., 2000; KALE ET AL., 2002).

It seems, however, that the discussion on network management has not exhaustively addressed the "network management – network success – firm success" cause-and-effect chain. Given that success generally means the achievement of goals, we argue that the "network success" link has been understudied, in particular, because of incomplete interpretation of network goals. In fact, most empirical studies that declare their focus on the network success or performance address the achievement of goals by an *individual firm* participating in a network and analyse the role of network-related "collective constructs" such as inter-firm trust, commitment and relational norms (MEDLIN, 2006: 860) in achieving those goals. Yet, goals that are set at the *network level*, i.e. collectively pursued outcomes are mainly neglected although their presence and relevance in inter-organisational relationships has been widely emphasised (e.g. WINKLER, 2006; PROVAN AND KENIS, 2007).

As shown by MEDLIN (2006), studying collective constructs needs to be undertaken with regard to both collective and self-interest outcomes. Focussing solely on goals of an individual firm in a network will provide biased results with respect to management styles that are actually based around self and collective interests, i.e. around the whole network of relationships. Thus, without simultaneous consideration of goals at the firm and network levels and without understanding of how the network should be managed in this respect, the whole network's success will remain under-defined and the validity of the derived implications will be brought into challenge.

Therefore, the aim of this study is to develop and test the model that includes the relationships between goal achievement at the firm and network levels, the network management's

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goal achievement and the theoretical constructs that are conceptualised as the determinants of goal achievement. We test our model of the whole network's success in the context of supply chain networks in the food industry. In particular, our study examines the relationships 1) between a food manufacturer and its independent (upstream) suppliers and 2) between the food manufacturer and its independent (downstream) customers.

The paper proceeds as follows. First, we delineate the theoretical foundations of supply chain network management. In this part, we build on prior research on management of procurement relationships to generate hypotheses that constitute our conceptual model. Next, we test the model and discuss the results. Finally, we derive some implications.

2 Theory and hypotheses

Among networks in which firms are embedded, there has been a growing interest in networks of procurement relationships. Accordingly, the discussion on network management has taken place in the context of so-called supply chain networks (WATHNE AND HEIDE, 2004; HANF AND DAUTZENBERG, 2006). In this paper, we use the term "supply chain network" as defined by HANF ET AL. (2009: 46): "A supply chain network involves long-term and recurrent, formal and informal relationships of material, resource, financial and information exchange among more than two participants of the supply chain that are strictly coordinated by the focal firm and aim at fulfilment of certain strategic tasks." This definition generally follows the logic of strategic network theorists who posit that a firm is in control of a network of other firms and operates as a hub firm, channel, or network captain, and is concerned with the management of the network (GULATI ET AL., 2000).

The main challenge for the focal actor in managing the supply chain network is adaptation to uncertainty which depends on how the connected relationships are organised (WATHNE AND HEIDE, 2004). In this context, GULATI ET AL. (2005) have posited that adaptation in the procurement relationship involves fulfilment of the coordination and cooperation tasks. The coordination task is the alignment of actions, i.e. enabling a joint action, whereas the cooperation task is the alignment of interests, i.e. motivation of the exchange parties. Furthermore, HANF AND DAUTZENBERG (2006) have shown that individual and collective interests as well as individual and collective actions are entwined in supply chain networks and, therefore, respective collective strategies have to be aimed at the simultaneous alignment of interests and actions at least at two levels – the firm and network levels (HANF AND DAUTZENBERG, 2006: 80).

The strategic management literature has mainly addressed collective strategies in the context of their orientation towards reduction of variation in inter-organisational environment (BRESSER AND HARL, 1986). However, in the strategic network context, collective strategies aim not only to shape the network processes and relationships but also to achieve certain network goals (SYDOW AND WINDELER, 1998: 268). In a strategic network in which a focal firm is responsible for the correctness of attributes of the final product (HANF AND DAUTZENBERG, 2006), a collective strategy will be most often goal-oriented. Thus, we suggest that a collective strategy may be perceived as a framework of activities to sustain a network's success because it aims at the achievement of network goals. Beyond that, we posit that network goals may be used to define what the supply chain network's success is. We further describe the dimensions of network success in detail and develop hypotheses on interrelatedness of constructs that compose these dimensions.

2.1 Network goals

To consider network goals, one needs a multiple-constituencies approach (PROVAN AND KENIS, 2007) because there are multiple parties to a network, including each participating firm as an independent organisation, the network's management, and the community, i.e. con-

sumers, non- governmental organisations, and the government (ARIÑO, 2003: 68). Similarly to ARIÑO (2003), in this paper we solely focus on the goals of network members and network management by assuming that they are constrained by the goals of other constituencies and, therefore, reflect them insofar as they are constrained by them.

2.1.1 Network members' goals

The entwinement of self and collective interests implies that the success of individual network members is critical to success of the whole network and, conversely, positive outcomes for the whole network contribute to the firm's success. Thus, success of a supply chain network will involve the achievement of network members' goals which can be addressed in relation to the abovementioned levels of a network. At the firm level, firms are setting their individual goals whereas they are setting the collective goals at the network level.

Under **network-level goals** we understand the predefined set of outcomes that are collectively pursued by all network members and that can be achieved only if all network members work together. Although such shared goals have rarely been addressed in empirical analyses (SYDOW AND WINDELER, 1998), their examples can be found in the food industry, e.g. various aspects of food safety and quality addressing primarily the increasing consumers' demands and the risk of food scandals, i.e. goals such as total chain quality, end consumer satisfaction, etc. Despite we define network-level goals as the collective outcomes, in strategic networks they have to be seen as viable and acceptable primarily by the powerful stakeholders (SYDOW AND WINDELER, 1998: 274). As a type of strategic network, a supply chain network is most often deliberately established by a powerful chain captain, either distributor- or manufacturer-brand owner, who selects appropriate supply chain partners to develop products under its brand (BELAYA AND HANF, 2009). We therefore suggest that the network-level goals are at first hand defined by a powerful focal firm.

Arguing in this manner, we do not aim to contest the importance of **firm-level goals**, i.e. goals which single firms want to achieve for themselves by participating in a network. Instead, we emphasise that goals of the whole supply chain network involve network-level and firm-level goals. The network-level goals are set by the focal actor and are jointly pursued by all the network members. The firm-level goals are set by individual network participants that exert their individual efforts in pursuit of these goals within a given network.

2.1.2 Goals of the network management

The achievement of goals of network members requires members to synchronise their actions as well as to consent on goals and procedures to achieve goals. In this context, the above conceptualised alignment of actions and alignment interests can be seen as goals of the network's management.

The **alignment of actions** is necessary to implement concerted, joint actions needed to capitalise on the specialised but interdependent activities of partners (SCHREINER ET AL., 2009). In the context of strategic networks, the firms need to combine and integrate their resources and knowledge across organisational boundaries to create competitive advantage (GULATI ET AL., 2000). Consequently, there exists high task interdependence between partners that involves managing a complex and overlapping division of labour, linking their specific activities with each other, and making regular mutual adjustments. In such a situation, the greater the joint efforts taken by the partners to manage their activities, and/or the more a partner becomes involved in activities that are traditionally considered the other's responsibility and vice versa, the greater their ability to compete successfully with the marketplace (SCHREINER ET AL., 2009: 1402). The aligned actions will consequently imply that partners provide timely and reliable responses to each other's work-related needs, being responsive

to concerns arising at the firm level of individual partners as well as at the network level. Accordingly, we hypothesise:

H 1: The alignment of actions has a direct positive effect on the achievement of network-level goals.

H 2: The alignment of actions has a direct positive effect on the achievement of firm-level goals.

The **alignment of interests** means the establishment of good working relationships among the parties. It addresses factors such as the degree of compatibility of firms' cultures and decision-making styles, a convergence of business views, and other organisational characteristics (ARIÑO ET AL., 2001). The alignment of interests of the network members facilitates higher levels of trustful relationships, commitment and low levels of conflict among members so that confidence in the reliability and integrity of the partners is gained. Furthermore, the alignment of interests enables organisations to gather high-quality information about the others and creates strong disincentives for opportunistic behaviour (ARIÑO ET AL., 2001). Finally, interest alignment can be defined as the degree to which the members of the organisation, e.g. strategic network, are motivated to behave in line with organisational goals (GOTTSCHALG AND ZOLLO, 2007). We therefore hypothesise that:

H 3: The alignment of interests has a direct positive effect on the achievement of network-level goals.

H 4: The alignment of interests has a direct positive effect on the achievement of firm-level goals.

2.2 Determinants of goal achievement

In order to evaluate strategic networks, GULATI ET AL. (2000) have proposed to consider three types of relational characteristics: network structure, network membership, and tie modality. Network structural characteristics describe the overall pattern of relationships in the network. Network member characteristics include the identities, resources, access, and other features of the network actors. Tie modality is the set of institutionalised rules and norms that govern appropriate behaviour in the network (GULATI ET AL. 2000: 205). Based on the ideas of GULATI ET AL. (2000), we analyse respective constructs that reveal how the network structure, network membership, and tie modalities affect the achievement of goals of the network management.

2.2.1 Network Structural Characteristics

Supply chain networks consist of a multitude of participating firms. Therefore, the embedded upstream and downstream flows of resources and information have to cross various stages of the chain while the involved firms differ widely in size. As a result, supply chain networks are highly complex systems and they bear the high risk of failure. Hence, reducing complexity is one of the most important tasks. In particular, the supply chain network's management has to consider comprehensively the levels of transparency and interdependence.

Transparency refers to the extent of coverage from upstream industries to downstream industries within the supply chain and how apparent information is to downstream industries (THEUVSEN, 2004: 125). DYER AND SINGH (1998) have emphasised the role of transparency in transferring knowledge among partners. Because of the complex nature of supply chain networks, their structure is often not made public to all network members, and a feeling of anonymity may appear. Such missing transparency of the network structure increases the probability of free-riding. Transparency is associated with the establishment of strong ties and open communication. Therefore, it will be primarily conducive to enabling the partners'

knowledge of each other's decision-making styles, and certainty in intentions of each other. We accordingly hypothesise that:

H 5: Higher levels of transparency have a direct positive effect on the alignment of interests.

Interdependence is acknowledged by firms when they join forces to achieve mutually beneficial outcomes (MOHR AND SPEKMAN, 1994). Supply chain network's structure is characterised by high numbers of interdependencies among members. In this respect, a firm's performance depends on how it environs itself with other companies (i.e., its suppliers and customers). Because the magnitude of interdependencies is mainly disproportional at the different stages of the supply chain, establishment of a joint action is an extremely difficult task. Furthermore, beyond the firm's set of first-level contacts, there is a limited amount of intentionality possible on the part of the focal firm in terms of coordinating the wider network (GULATI ET AL., 2000). Based on these arguments, we hypothesise:

H 6: Higher levels of interdependence have a direct negative effect on the alignment of actions.

2.2.2 Network Membership Characteristics

Research on networks focuses primarily on the interrelationships of firms but single enterprises can be regarded as initial elements of networks because collaborations do not exist without them. Each partner in a network dedicates its unique resources and capabilities which, when combined with partners' resources and capabilities, can create inimitable and non-substitutable value (DYER AND SINGH, 1998). We therefore express the network membership characteristics by the constructs of firms' complementarities and coordination capabilities.

Network members' complementarities create incentives for firms to collaborate (PARK AND UNGSON, 2001). Noteworthy, collaborations do not inevitably create advantages for the involved firms; instead, especially during their establishment, they absorb resources. Consequently, without the firms' willingness to cooperate, collaboration will not prevail. Thus, firms have to recognise collaboration not as a constraint but as a means to access complementary resources. Furthermore, since supply chain networks are formed to last over a long period, complementarities are not only essential at the beginning of collaboration but throughout the whole period. Thus, complementarities in culture and strategies (PARK AND UNGSON, 2001) combined with resource complementarities (DYER AND SINGH, 1998) will be conducive to action alignment among the network members.

H 7: Network members' complementarities have a direct positive effect on the alignment of actions.

Coordination capabilities of firms include necessary skills and abilities to establish learning routines, build up unique and network-specific knowledge, use modern information technologies, etc. Despite collaboration is determined by the complementary abilities of the involved firms, only a part of the firm's strategic resources is synergy sensitive (DYER AND SINGH, 1998). Therefore, higher coordination capabilities of the network members have the potential to enhance their concerted action (SCHREINER ET AL., 2009). As a result, we hypothesise:

H 8: Higher levels of coordination capabilities have a direct positive effect on the alignment of actions.

2.2.3 Tie Modalities

Whereas we acknowledge that the ultimate tie modalities will be reflected by the extent of interest alignment, it is important to clarify how inherent distinctions among actors are smoothed to preclude the negative consequences of relationships. To overcome problems

of opportunistic behaviour by the network members, some scholars pose that it is feasible to exert power (PAYAN AND MCFARLAND, 2005), the others recommend to employ trust-based enforcement mechanisms (DYER AND SINGH, 1998). Furthermore, several studies emphasise that the use of non-coercive power (e.g., rewards, recommendations, etc.) has positive impact on the relationships while the use of coercive power (e.g., punishment, threats, etc.) negatively affects the relationships (LEONIDOU ET AL., 2008). We verify these suggestions by analysing the effects of **trustful relationships** and **non-coercive power** on the alignment of interests.

H 9: Trustful relationships have a direct positive effect on the alignment of interests.

H 10: Use of non-coercive power has a direct positive effect on the alignment of interests.

3 Methodology

This section explains the survey design, the operationalisation of variables, and the statistical procedure used to analyse the data.

3.1 Survey design

To test the model, data was collected from branded food manufacturers in Ukraine from September 2009 to November 2009. We assume a branded food manufacturer to be a focal company in a network of firms that work together to bring the branded product to the market. The branded food manufacturer is responsible for the attributes of the branded product and, therefore, is knowledgeable about the network to a large extent. The database of the firms was obtained from the local-based market research company. Totally, 359 firms comprised the database.

A questionnaire was designed based on a review of literature on such variables as strategic partnership, supply chain and strategic alliance performance². Then, the questionnaire was pretested with five food chain specialists. Those specialists included buying and quality managers of the international food retailers, CEO of the international standardisation bodies and a CEO of non-governmental organisation being active in the food business. The respondents were asked to make their comments on the order of questions, wording and format of the questionnaire. Their feedback was considered to modify the questionnaire.

Telephone interviews were used for the data collection. Of the 359 branded food manufacturers, 101 interviews were conducted. This resulted in a 28 % response rate. Each interview lasted about 20 minutes on average.

3.2 Measures

We turn now to operationalise the variables used in the model. Corresponding measures were obtained from the literature on performance of supply chains, strategic alliances, strategic partnerships and inter-organisational relationships.

Network members' goal achievement. These measures assess the degree of fulfilment of goals at the network and firm levels from the perspective of the focal firm. In each case, a four point- scale measuring the informants' assessment from "very dissatisfied" to "very satisfied" was employed. At the network level, the focal company's overall satisfaction with cooperation (ARINO, 2003) as well as its assessment of overall satisfaction by its suppliers and customers were used as the measures of network-level goal achievement. We also employed the focal actor's satisfaction with the total chain quality and sales of the branded product as measures at the network level. At the firm level, we operationalised goal achievement by satisfaction of the focal firm's suppliers and customers with knowledge

² The questionnaire can be provided by authors upon request.

gained within a network, reputation from cooperation as well as with profit generated within a network (SCHREINER ET AL., 2009).

Network management's goal achievement. We operationalised the alignment of interests by the following measures: focal company's satisfaction with communication within a network (MOHR AND SPEKMAN, 1994), confidence in reliability of the partners (SCHREINER ET AL., 2009) and the extent of suppliers' and customers' relation-specific investments (DYER AND SINGH, 1998). The alignment of actions was measured by the responsiveness of suppliers and customers and their willingness to perform necessary tasks (PROVAN AND KENIS, 2007; SCHREINER ET AL., 2009). In each case, a four point-scale measuring the focal firms' assessment from "very dissatisfied" to "very satisfied" was employed.

Network Structural Characteristics. Transparency was measured by the focal company's degree of awareness of suppliers' and customers' decision-making styles and by the degree of openness of the focal firm's decision-making styles to suppliers and customers. The measures of interdependence were drawn from MOHR AND SPEKMAN (1994) and include the extent to which the focal firm is able to easily substitute its suppliers and buyers and vice versa (reverse coded). For both, transparency and interdependence, a four point-scale from "totally disagree" to "totally agree" was employed.

Network Membership Characteristics. The cultural and the strategic fit (PARK AND UNGSON, 2001) of suppliers and customers measured the network members' complementarities. Coordination capabilities were operationalised by the suppliers' and customers' agreement on task distribution and by their firm size (SCHREINER ET AL., 2009). For both, complementarities and coordination capabilities, we used a four point-scale from "totally disagree" to "totally agree."

Tie Modalities. We measured trustful relationships by the focal firm's willingness to always inform its suppliers and customers about future steps and by the suppliers' and buyers' perception of favourability of participation in a network (MOHR AND SPEKMAN, 1994). The use of non-coercive power was measured by frequency of placing bonuses and providing recommendations to suppliers and customers (PAYAN AND MCFARLAND, 2005). For trustful relationships, a four point-scale measuring the informants' assessment from "totally disagree" to "totally agree" was employed; the use of non-coercive power was measured by a four point scale from "very rarely" to "very frequently."

3.3 Path analysis

To test the model, we used the Partial Least Squares (PLS) technique for Structural Equation Modeling using the SmartPLS software 2.0.1 (HENSELER ET AL., 2009). Our decision to use PLS was based on its advantages compared to other techniques, i.e., the possibility to analyse small size samples in the absence of distribution assumptions. PLS involves analysis of two forms of variables, i.e., the latent and manifest variables. Manifest variables that make no significant contributions to the respective latent variables are progressively removed and the analysis is repeated until all the manifest variables are significant (GYAU AND SPILLER, 2009).

4 Results

In this section, we test the model and represent the estimated results.

4.1 Testing the measurement model

The fit of the measurement model in PLS is evaluated with regard to the inner and the outer models. Individual item reliabilities and convergent validity of the model provide information about the fit of the outer model. The individual item reliabilities are evaluated via the factor loadings of the items on their constructs. According to HAIR ET AL. (1998), an item is

considered insignificant and removed from the model if its factor loading is less than 0.4³. We also calculated the composite reliability of the measurements to evaluate internal consistency of the measurements. All the composite reliability indices for the constructs exceed the recommended 0.7 homogeneity criterion. The convergent validity was estimated by calculating the Average Variance Extracted (AVE). The recommended threshold of 0.5 (BAGOZZI AND YI, 1988) was exceeded for all the constructs indicating that the chosen indicators are explained by their respective constructs.

The fit of the inner model was evaluated by the discriminant validity criterion which means that every construct is significantly different from the others. The first way to analyse discriminant validity is a comparison of item loadings and cross loadings. If all loadings are higher than cross loadings, then the construct significantly differs from the others. The second way is to compare the square root of the AVE with the correlation between the construct and the other constructs. The square root of the AVE should be higher than the correlation between the constructs (GYAU AND SPILLER, 2009). In both cases, our results support the fit of the inner model.

Table 1: Results of the structural model

Hypotheses	Constructs	Expected sign	Beta coefficients (b)	Correlation coefficient (r)	b*r
H1	Alignment of actions → Network-level goals	+	0.644***	0.667	0.430
H2	Alignment of actions → Firm-level goals	+	0.384***	0.403	0.155
H3	Alignment of interests → Network-level goals	+	0.275*	0.328	0.090
H4	Alignment of interests → Firm-level goals	+	0.226***	0.258	0.058
H5	Transparency → Alignment of interests	+	0.271***	0.358	0.097
H6	Interdependence → Alignment of actions	-	-0.338***	-0.408	0.138
H7	Complementarities → Alignment of actions	+	0.087	0.020	0.002
H8	Coordination capabilities → Alignment of actions	+	0.185*	0.335	0.062
H9	Trustful relationships → Alignment of interests	+	0.379***	0.375	0.142
H10	Non-coercive power → Alignment of interests	+	0.326*	0.312	0.102

4.2 The structural model

The structural model was evaluated based on the R² and the significance of the path coefficients. The variances explained (R²) for each of the endogenous variables were as follows: achievement of network-level goals 0.520, achievement of firm-level goals 0.213, alignment of interests 0.341, and alignment of actions 0.216. Considering the complexity of the research model, the results for the achievement of network-level goals which we brought to the forefront of our argumentation are indicating good fit. In addition, rather moderate R² values for the achievement of firm-level goals and the alignment of actions reflect the complex nature and manifold determinants of these constructs. To determine the significance of the path coefficient we used bootstrap method with 200 re-sampling. Path coefficients and their significance are shown in Table 1. The standardised path coefficients can be used to analyse the

³ Due to space limitations, we do not provide tables with the results of the measurement model testing. The tables can be provided by authors upon request.

degree of accomplishment of the hypotheses. One may multiply the path coefficients by the correlation coefficient between the latent variables to obtain an approximate measure of the variance of the construct explained by the latent predictive variable (GYAU AND SPILLER, 2009). We show the result in Table 1. Using this approach, one might consider values of less than 1.5 % as not making significant contribution to their respective latent variables (GYAU AND SPILLER, 2009: 30). Based on this criterion, we accepted nine out of the ten hypotheses that were formulated.

5 Discussion

This study contributes to research on the food chain and network management by investigating goals that are pursued in supply chain networks. Prior empirical research has been characterised by numerous efforts to analyse supply chain and network performance. However, these efforts have rarely addressed network-level goals, i.e. goals that are jointly pursued by all network members. This is in spite of theoretical studies that have conceptualised the achievement of shared goals as the measure of network effectiveness (PROVAN AND KENIS, 2007). Building on those theoretical elaborations as well as on few empirical contributions, we provide a theoretical account of goals that are set in supply chain networks. We conceptualise goals of a whole supply chain network as those set by members at the firm and network levels. Moreover, we relate the achievement of network-level and firm-level goals of network members to achievement of goals of the network management. The latter include the alignment of interests and the alignment of actions which, if fulfilled simultaneously, pave the way for the achievement of both network- level and firm-level goals of network participants. Furthermore, we hypothesise that the interest and action alignment are contingent upon a number of network characteristics.

Our empirical results support our theoretical suppositions. First of all, the construct of network- level goals demonstrates high reliability and validity of the items. This implies that the network- level goals really exist in the business world and have to be treated as an inherent aspect of strategic networks. Inappropriate communication of network-level goals by chain captains will lead to a lack of understanding by the other network members. As a consequence, collaboration failures may occur, inducing costs for the relationship parties. This strongly correlates with the results by BRINKHOFF AND THONEMANN (2007) who have found that unclear definition of common goals was the major reason of failure in supply chain inter-organisational projects.

Second, the achievement of network-level goals is to a large extent explained by how properly cooperation and coordination problems are solved by the network management. Our results support hypotheses H1 and H3 which state that the alignment of actions and the alignment of interests, respectively, have a positive effect on the achievement of members' goals at the network level. This finding supports the ideas by GULATI ET AL. (2005) and HANF AND DAUTZENBERG (2006) who highlight the strategic value of viewing chain management as a multifaceted construct that consists of cooperation and coordination elements at the different levels. In particular, the alignment of actions has a strong and significant effect on the achievement of network-level goals emphasising the role of a joint action and strong coordination skills by the focal actor in achieving shared outcomes.

Hypotheses H2 and H4 are also supported, i.e. both the alignment of actions and the alignment of interests have a significant positive effect on the achievement of firm-level goals. Thus, as supposed by MEDLIN (2006), the joint action and collective interest constructs are closely linked to individual constructs in business relationships. In our case, this implies that successful chain management has beneficial outcomes also at the firm level of suppliers and customers. Although the respective effects (path coefficients) are weaker at the firm level than at the network level, the effect of interest alignment (t-value) on firm-level

goals is even more significant than on network-level goals. As a result, we suggest that the aligned interests, i.e. good working relationships are important to improve perceptions by single suppliers and customers with regard to achievement of their individual goals.

Interest alignment is, in turn, subject to significant positive effect by higher levels of transparency, trustful relationships, and non-coercive power as proposed in hypotheses H5, H9, and H10, respectively. These results are consistent with the findings of earlier research. For example, DEIMEL ET AL. (2008) have revealed that high levels of transparency are associated with explicitness and clearness of information as well as with partner commitment. HANDFIELD AND BECHTEL (2002) have shown that trustful relationships have a significant effect on partner responsiveness. LEONIDOU ET AL. (2008) have found that the exercise of non-coercive power is negatively related to conflict in inter-firm working relationships.

The alignment of actions is negatively affected by higher levels of interdependence. This result supports our hypothesis H6 and is consistent with the results of MOHR AND SPEKMAN (1994) who have modelled positive relation between higher level of interdependence and partnership success but found no significant correlation. Although interdependence is usually addressed as enabler of collaboration, we analyse this construct in the context of a whole supply chain network. Accordingly, higher interdependence in relationship with e.g. supplier implies higher contingency upon volatilities in supplier's relationships with its suppliers. As a result, action alignment appears to be complicated. In this regard, we have also taken into account specifics of our research setting. Despite wide scope of vertical coordination practices and the growing use of chain management concepts, business environment in Ukraine is highly volatile with persisting infrastructural problems (GAGALYUK AND HANF, 2009).

The remaining hypotheses (H7 and H8) speculated that network members' complementarities and higher levels of coordination capabilities have a direct positive effect on coordination. Only the latter of these constructs has a significant influence on the alignment of actions indicating that the suppliers' and customers' abilities to identify and build consensus about task requirements in a network contribute to successful resolution of coordination problems and establishment of a joint action. This result coincides with the findings of SCHREINER ET AL. (2009) who have confirmed the positive link between alliance management capability and joint action. At the same time, higher levels of coordination capabilities exhibit rather moderate effect on the alignment of actions (path coefficient = 0.185). Since we measure only the capabilities of suppliers and customers within this construct, a moderate indicator emphasises high requirements towards coordination skills of the focal actor. This supports proposition by PROVAN AND KENIS (2007) who have suggested that networks with lead organisations will demonstrate a moderate need for network-level competencies of members as lead organisation is better suited to address network-level demands and needs.

In general, our results with regard to the effects of network structure, membership and tie modalities on the outcomes of supply chain network management are not surprising as they correspond to the findings of the other authors. The results, however, must be accepted with some caution as we surveyed only focal firms. Accordingly, future research should take a direction similar to what GELLYNCK ET AL. (2008) did in the traditional food sector in the EU, i.e. it should encompass all network participants. Yet, it should also take account of both, shared and individual goals of network members. Another issue for future research would be comparison of goal achievement among different supply chain networks. Hereby, the approach we used, i.e. focus on perceived rather than objective measures seems to be suitable because different supply chain networks have distinctive features and, thus, objective measures will mean little without a benchmark for comparison.

Overall, we contend that the most important finding of our study is that the network-level goals really exist in strategic networks and must be considered along with firm-level goals. As such, the topic of network goals has to be of particular interest for firms which are respon-

sible for introduction and implementation of the network's strategy (often referred to as a collective strategy). Those focal firms or chain captains have to be particularly concerned that the network participants agree upon network-level goals and work together to achieve them. Thus, shared goals have to be clearly formulated and explicitly addressed, and a certain degree of compatibility between network-level and firm-level goals has to be reached. Therefore, the interests and the actions of the involved parties have to be aligned with consideration of the parties' social and organisational characteristics. Especial attention should be paid to the development of network management capabilities that would enable capturing of goals of the whole network.

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References

- ARIÑO, A., J. DE LA TORRE and P. SMITH RING (2001): Relational Quality: Managing Trust in Corporate Alliances. In: *California Management Review* 44: 109-131.
- ARIÑO, A. (2003): Measures of Strategic Alliance Performance: An Analysis of Construct Validity. In: *Journal of International Business Studies* 34: 66-79.
- BAGOZZI, R. and Y. YI (1988): On the Evaluation of Structural Equation Models. In: *Journal of the Academy of Marketing Science* 13: 989-1006.
- BELAYA, V. and J.H. HANF (2009): The Two Sides of Power in Business-to-Business Relationships: Implications for Supply Chain Management. In: *Marketing Review* 9: 361-381.
- BRESSER, R.K.F. and J.E. HARL (1986): Collective Strategy: Vice or Virtue? In: *Academy of Management Review* 11: 408-427.
- BRINKHOFF, A. and U.W. THONEMANN (2007): Perfekte Projekte in der Lieferkette. In: *Harvard Business Manager* 7: 6-9.
- DEIMEL, M., M. FRENTRUP and L. THEUVSEN (2008): Transparency in Food Supply Chains: Empirical Results from German Pig and Dairy Production. In: *Journal on Chain and Network Science* 8: 21-32.
- DYER, J.H. and H. SINGH (1998): The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage. In: *Academy of Management Review* 23: 660-679.
- GAGALYUK, T. and J.H. HANF (2009): Impact of Retail Internationalization on Agribusiness: The Case of Ukraine. In: *Journal of East-West Business* 15: 96-118.
- GELLYNCK, X., A. MOLNÁR and L. ARAMYAN (2008): Supply Chain Performance Measurement: The Case of the Traditional Food Sector in the EU. In: *Journal on Chain and Network Science* 8: 47-58.
- GOTTSCHALG, O. and M. ZOLLO (2007): Interest Alignment and Competitive Advantage. In: *Academy of Management Review* 32: 418-433.
- GYAU, A. and A. SPILLER (2009): An Integrated Model of Buyer-Seller Relationship Performance in Agribusiness: The Partial Least Squares Approach. *Journal on Chain and Network Science* 9: 25-41.
- GULATI, R., P.R. LAWRENCE and P. PURANAM (2005): Adaptation in Vertical Relationships: Beyond Incentive Conflicts. In: *Strategic Management Journal* 26: 415-440.
- GULATI, R., NOHRIA, N. and A. ZAHEER (2000): Strategic Networks. In: *Strategic Management Journal* 21: 203-216.
- HAIR, J., R. ANDERSON and W. BLACK (1998): *Multivariate Data Analysis*. Prentice Hall, Upper Saddle River, NJ, USA.
- HANFIELD, R.B. and C. BECHTEL (2002): The Role of Trust and Relationship Structure in Improving Supply Chain Responsiveness. In: *Industrial Marketing Management* 31: 367-382.
- HANF, J.H. and K. DAUTZENBERG (2006): A Theoretical Framework of Chain Management. In: *Journal on Chain and Network Science* 6: 79-94.

- HANF, J.H., K. DAUTZENBERG, T. GAGALYUK and V. BELAYA (2009): Network Approach to Supply Chain Management: Terms, Scope of Issues and Lines of Development. In: *Russian Management Journal* 7: 43-68.
- HENSELER, J., C.M. RINGLE and R.R. SINKOVICS (2009): The Use of Partial Least Squares Path Modeling in International Marketing. In: *Advances in International Marketing* 20: 277-319.
- LEONIDOU, L.C., M.A. TALIAS and C.N. LEONIDOU (2008): Exercised Power as a Driver of Trust and Commitment in Cross-Border Industrial Buyer-Seller Relationships. In: *Industrial Marketing Management* 37: 92-103.
- MEDLIN, C.J. 2006. Self and Collective Interest in Business Relationships. In: *Journal of Business Research* 59: 858-865.
- MOHR, J. and R. SPEKMAN (1994): Characteristics of Partnership Success: Partnership Attributes, Communication Behavior, and Conflict Resolution Techniques. In: *Strategic Management Journal* 15: 135-152.
- PARK, S.H. and G.R. UNGSON (2001): Interfirm Rivalry and Managerial Complexity: A Conceptual Framework of Alliance Failure. In: *Organization Science* 12: 37-53.
- PAYAN, J.M. and R.G. MCFARLAND (2005): Decomposing Influence Strategies: Argument Structure and Dependence as Determinants of the Effectiveness of Influence Strategies in Gaining Channel Member Compliance. In: *Journal of Marketing* 69: 66-79.
- PROVAN, K.G. and P. KENIS (2007): Modes of Network Governance: Structure, Management, and Effectiveness. In: *Journal of Public Administration, Research and Theory* 18: 229-252.
- RITTER, T., I.F. WILKINSON and W.J. JOHNSTON (2004): Managing in Complex Business Networks. In: *Industrial Marketing Management* 33: 175-183.
- SCHREINER, M., P. KALE and D. CORSTEN (2009): What Really Is Alliance Management Capability and How Does It Impact Alliance Outcomes and Success? In: *Strategic Management Journal* 30: 1395-1419.
- SYDOW, J. and A. WINDELER (1998): Organizing and Evaluating Interfirm Networks: A Structuralist Perspective on Network Processes and Effectiveness. In: *Organization Science* 9: 265-284.
- THEUVSEN, L. (2004): Transparency in Netchains as an Organizational Phenomenon: Exploring the Role of Interdependencies. In: *Journal on Chain and Network Science* 4: 125-138.
- WATHNE, K.H. and J.B. HEIDE (2004): Relationship Governance in a Supply Chain Network. In: *Journal of Marketing* 68: 73-89.
- WINKLER, I. (2006): Network Governance Between Individual and Collective Goals: Qualitative Evidence from Six Networks. In: *Journal of Leadership and Organization Studies* 12: 119-134.