



**International Joint Conference on Environmental and  
Light Industry Technologies**  
21 – 22 November 2012, Budapest, Hungary  
Óbuda University



## **MANAGERIAL ANALYSIS OF INTER-ORGANIZATIONAL NETWORKS: DELIMITATION OF BOARDERS**

Nadezda A. KOLESNIK<sup>1</sup>, Alla N. STERLIGOVA<sup>1</sup>

<sup>1</sup> National Research University Higher School of Economics

### **Abstract:**

*The research aims elaborate managerial operational approach for inter-organisational network analysis. Delimitation of network as a unit of managerial analysis is based on specified criterions: intensity of interactions, managerial interdependence, propriety independence, length of relationships. In accordance with these criterions, in the project the system of 50 interconnected questions, indicators, and indexes was developed, which allows delimitating network out of all inter-organizational relations. Empirical research was based on the structured in-depth interviews with the companies from b2b market.*

### **Keywords:**

*Interorganizational networks, relationships marketing, operational management, performance.*

## **1 INTRODUCTION**

In terms of the network economy [Kotler, Ahrol, 2000], management of inter-organizational networks is a strategically important aspect for increase of firm competitiveness. Heterogeneity and diverse nature of inter-organizational integration, complexity of business communication process and the variability of network forms make it extremely difficult to identify inter-organisational network for management analysis.

This study was conducted in the frames of the project "Investigation of the effect of inter-firm networks on the efficiency of corporate management at the operational, functional and cross-functional integration of activity levels" at the Laboratory for Network Organizational Forms. The project aims to monitor organized on the basis of performance of companies belonging to different types of inter-firm networks reveal the results of the impact of inter-firm relationships in Russia on the performance of individual companies [Sterligova, 2011]. Interfirm networks development in Russia as economy in transition has got numerous peculiarities which were explored by researchers: Kouchtch, Kolesnik, Rebyzina, Sheresheva, Smirnova, Sterligova, Tretyak and ect.



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



First of all, in the frames of the project it was necessary to delimitate inter-organisational network from the set of inter-firm relations for research purposes. Numerous papers in economics, management, and sociology discuss various aspects of inter-organizational networks: firm relationships and inter-personal communication, dominance and power, performance measurement, formation and development, innovations and management, recourses, distribution of benefits and ect. Commonly authors of articles study dual relationships or groups of partners. But if we need to have a holistic view on the whole network, we should identify its borders. Indeed network boundaries can be extremely imprecise, because they are conditioned by formal and informal linkages. Empirically, networks could not be isolated from the surrounding business world. However, for analytical purposes, identification of network borders is fundamental. The emergence of inter -firm networks has challenged traditional academic positions on management and strategic behaviour [Nohria, Eccles, 1992]. So we should have accurate methodological tool to “cut off” the network borders.

## **2 APPROACH DEVELOPMENT**

The ontological question concerning networks borders is an extension of the debate about the boundaries of the firm initiated by Coase in 1937 and revived by Williamson [1979] - both discuss market and hierarchy as an alternative form of firm governance. Vertical integration processes and extending the firm beyond the natural administrative boundaries has led to development of new theories and managerial approaches.

We recognize that network boundaries are essentially artificial [Ford et al., 2002], since ‘networks are in principle borderless’ [Holmen, Pedersen, 2003]. Firms can network across geographic, social and political boundaries [Messner 1997; Podolny,Page 1997]. Also it is important to mention that, business networks are not static. They constantly evolve. Network structure is the ongoing product of interactions among network actors. Through change comes renewal which helps to keep the competitiveness.

Laumann et al [1983] review boundary specification strategies for complete networks: realist approaches, nominalist approaches, procedural tactics.

Realist approaches are based on the subjective perceptions of actors. In frames of organizational behaviour theory there is an approach that ‘the network is what the managers think it is’ or as it called subjective relativism [Muncy, Fisk, 1987]. Inter organizational network can be viewed differently for individual actors e.g. depending on functional expertise or experiences of persons in the network. For example sales people will have different network pictures from IT people, depending on



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



their focus and experiences [Sharma et al., 1999]. The most objective view the head of a company might have. It is possible for several network pictures to be held in one company, however, certain elements of the network picture will overlap and form a general strategic network picture [Osborne et al., 2001].

Nominalist approaches are based on researcher's standpoint. Aldrich and Whetten emphasize that researchers should use precise criteria for determining the boundaries of the network taking into account the organizational context, objectives and methodology of the research. [Aldrich, Whetten, 1981].

Procedural tactics for defining boundaries are based on attributes of units rely on membership criteria and work organizations [Kapferer 1969] or professional communities [Coleman et al 1966]. Social relations may also be used to delimit boundaries, as in snowball sampling procedures [Erickson 1978]. Networks are often delimited by acknowledged patterns of interaction [Westphal et al. 2001] or participation in common activities [Owen-Smith and Powell 2003].

Problem of choosing the elements to be included in the network analysis is crucial. Indeed, it is corresponding to the main methodological problems of studying networks: definition and generalization of results of selections for studies. As noted by Barnes [Barnes, 1979], omission of essential elements or arbitrary delineation of borders can lead to profane or artifactual results.

Currently normative managerial theory would therefore prescribe a 'myopic' view of the network [Wilkinson and Young, 2002] without giving any indication how identify network, and what the specific appropriated characteristics are [Stephan, Stefanson, Naude, 2004].

The research aims to develop the approach for delimitation of inter-organisational network for managerial analysis. That operational approach would be based on combination of realist, nominalist and procedural tactics. In operational approach we involve elements of all traditional approaches, and develop complex organizational view based on inter-organizational performance.

Definition of network, used by researcher, has got crucial impact on the research process and outcomes. The widest definition of inter-organizational network is an optimal hybrid form, which holds an intermediate position between market and hierarchy [Williamson, 1985]. Furthermore, different authors identify various distinguishing features of network, narrowing or expanding an object. Networking can be defined as the process of establishing and preserving interpersonal relationships, which are directed by principles of expectations and obligations [Coleman, 1990]. This view is shared by Williams [2000] who sees networking as a long-term process which is based on genuine trust and reciprocity of relationships. By forming these relationships and being part of a



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



network one has access to information, resources, support and guidance [Knouse, Webb, 2001]. ‘Business network’ is a select, persistent and structured set of autonomous firms (as well as non-profit agencies) engaged in creating goods or services based on implicit and open-ended contracts. [Jones, Hesterly, Borgatti 1997]. More comprehensive definition of inter-organizational network: A complex pattern of formal and informal linkages between individuals, businesses and other organizations such as government and voluntary agencies. [DTI Small Business Service. Business network report, 2002].

Ffowcs-Williams et.al, [2003] have defined a network as a “group of firms using their combined talents and resources to co-operate on joint development projects. Through complementing each other and specializing in order to overcome common problems, participants are able to achieve collective efficiency and conquer markets beyond their individual reach”.

For our research we have chosen definition given by Sheresheva M.Y. [2010], as the most complete and well adapted for the Russian context. Inter-organizational network – is a system of contracts between formally independent economic agents to make optimal use of resources and combining. Integral part of inter-organizational definition is term Quasi-integration as association of economic agents, suggesting the development of sustainable long-term bonds between them and the delegation of control over the management of joint activities in the absence of legally registered transfer of ownership.

Basing on above terms we have pointed out four crucial network criterions 1) intensity of interactions, 2) juridical autonomy , 3) co-management, 4) duration of relationships.

**Intensity of interaction** between partners. Network is viewed as a “market cluster”. Intensity should be significantly higher between network agents than within elements of the environment. Intensity could be measured for different flows between network participants: material, financial, information and etc. In our research we consider informal communication, as significant indicator of intensive interactions between partners. It is important to consider specificity of firm and industry.

**Juridical autonomy** of partners. This criterion implies formal or juridical independence of partner’s propriety and assets. In addition, it we focus on informal causes for dependence such as family relations or significant investments. Numerous researchers called it as semi-dependent, those companies which are juridical dependent, such as alliances or nets of trans-national corporations, we consider as internal networks.

**Co-management** or joint management. The third criterion is interdependence in management. In other words, it is mutual influence of the participants in the decision-making. The important parameters which allow to determine the degree of co-management is an amount of collective decisions, the practice of strategic planning, and flexibility to each other in order to improve



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



cooperation in the future. Co-management is understood as the ability to influence decisions made by a partner. Following indicators are used in the project to assess the co-management: share of collective decisions, the existence of joint strategic goals and planning, the availability of regular meetings and meetings with partners.

The study employs parameters for cross-organizational interaction analysis proposed by Industrial Marketing and Purchasing group [Håkansson, 1982]. There were questions about adaptation, investments and specific accepts.

An important indicator for assessing of co-management is flexibility of companies to each other. Flexibility is understood as an agreement to give your partner with a view to compensate for current losses in the long run. For flexibility measurement have been developed situational questions, such as, "the company's actions in the situation, if a partner n»: stop working with your company, does not fulfil the commitments, will increase the price, and etc. A number of questions were sent to the analysis of trust and informal communication between the partners as an indirect indication of the networking:

**Duration of relationship.** It is important but not the key criterion. For example, it is not crucial for temporary type of networks, such as dynamic or virtual networks. In the research we used relative indicators, based on company age, for example relationships since the establishment of business or more than half of the company age.

In accordance with these four criterions, in the project the system of 50 interconnected questions, indicators, and indexes was developed, which allows delimitating inter-organizational network out of all inter-firm relations [Kolesnik, Malkov, 2012].

### **3 EXPERIMENTAL**

The empirical part of the paper presents the case study method, which provides detailed examination of an example of a class of phenomena [Yin, 2003]. Testing of approach was based on the case study of the companies from b2b market. Empirical research employed structured in-depth interviews with the companies managers.

**Company A.** The first network analysis was carried out at the company which provides services for diagnostics and reengineering logistics systems. The company was established in 2001. The firm specializes in auditing and the development of logistics systems, analysis of storage technologies and customer traffic, development of design solutions for modeling business processes, storage and warehouse facilities.



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



Customers include: investors, realtors, and logistic operators, manufacturers of products, wholesale trade companies, and retail chains. The company has successfully implemented more than 80 projects of varying complexity in logistics.

Interview was conducted with the CEO of the company - the founder of the firm. In his words this business has got project orientation and does not imply regular interaction over the long term. Executive group is formed especially for the project from a pool of constant partners. Business tends to close long-term sustainable networking due to the high level of responsibility for the company implemented by construction projects.

Interpersonal relationships are an important part of the construction business. More than half time of communication is going in informal way. Informal communication allows more clearly understand the partner's interests and find the collaboration point. High level of informal communication is stipulated by numerous challenges and problems, which should be solved in frames of the projects. It is impossible to make written agreements and contracts for all possible cases, so partners have to trust each other. It should be noted that informal relationships allows getting insider information which could be crucial for business.

Long-term relationships are driven by high switching costs and the high complexity of finding a new partner. Moreover, there is a strong dependence among the partners based on common experience of implemented projects, which allows go to the high level of quality. In order to develop long-term cooperation company is willing to neglect some current economic losses.

**Company B.** The second company that provides outsourcing services for the implementation of foreign economic activity. The company is a professional partner, carrying out specific work that involves the creation of a separate division of foreign economic activity in the initial stages of import, in the case of small amounts of imports, etc.

Clients of the company are completely different in terms of industry size, market power and other parameters, from restaurants to research institutions. Companies are concentrated on its core functions, taking on outsourcing imports of goods they need. Customers can be divided into two groups (50/50), those who carry out one-time delivery (custom hardware), and those who make regular orders (goods for sale, production).

The partners of the firm are - carriers, freight forwarders, certification authorities, banks, customs authorities, temporary storage, and consolidation warehouses abroad. The company creates pools of partners and subsequently selects the firm with the necessary competencies to fulfil the order.





**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



Company regularly monitors the market of service providers looking for potential partners. Switching costs estimates as low due to high competition in the market, the only barrier is the loss of «each other understanding».

All partners of the company are independent. As a rule the company's partners does not make investments into inter-company relationships, except for minor expenses for joint cooperation. The Company applies the practice of setting and coordinating long-term goals with clients to improve supply chain efficiency and value creation. Period of planning can be from three to six months depending on the product. All strategic decisions the company takes on their own, without consulting with partners.

**Company C.** The company is first national distributor of chemical raw materials in Russia and CIS countries. The company was founded in 2000 and from the beginning of deliberately and systematically engaged in trading chemical raw materials (from 25 kg to 20 tons). The company consistently creates and develops regional sales system based on more than 10 sales offices.

The company's customers vary from small producers to the largest plants. Partners have a completely different market positions and forces. All partners of the company are not dependent on ownership and management. Particular attention is placed for cooperation with large firms (suppliers and customers), who tend to impose higher standards for goods and services.

Personal meetings with partners are rare, usually once or twice a year at an industry exhibition. But in general, the level of informal communication is quite high, and averages about 50%. Managers are working to develop interpersonal relationships to ensure a closer relationship with customers, and obtain information from suppliers. Company receives from 40 to 60% of business-critical information from informal sources. Company invests resources for developing of relationships and facilitating mutual adaptation, and to improve the efficiency of cooperation.

Company has got practice of joint planning with suppliers in frames of distribution agreement. In this case, various aspects may be agreed: place, range, volume of supply, price, and payment terms. The most frequent issue of discussion is the price.

The Company regularly monitors the market offers from the potential suppliers of goods and services. It is ready to change partners in order to optimize the price-quality ratio. But the Company is rather flexible with clients. It intends to establish long-term and effective cooperation.

Summarising the results of case studies we can build up the following table for dimensions.



**International Joint Conference on Environmental and  
Light Industry Technologies**  
21 – 22 November 2012, Budapest, Hungary  
Óbuda University



*Table 1: Criteria and variables for delimitation of inter-organizational network*

<b>Criteria/ Variables</b>	<b>Question</b>	<b>A</b>	<b>B</b>	<b>C</b>
<i>1. Intensity of interaction</i>				
Regular meetings	Do you have regular meeting with partner?	✓	✓	
Informal communication	Do you have informal communication with partner?	✓		✓
Important business information about company	Do you share important business information about your company with your partner?	✓		
Important business market information	Do you share important business information about market and business environment changes with your partner?	✓	✓	✓
Important business information about company	Does your partner share important business information about its company with your company?	✓	✓	
Important business market information	Does your partner share important business information about market and business environment changes with your company?	✓		✓
<i>2. Co - management</i>				
Shared tactic goals	Have your company got shared tactic goals with the partner?	✓	✓	✓
Operational goals	Have your company got shared operational goals with partner?	✓	✓	✓
Strategic goals	Have your company got shared strategic goals with partner?	✓		
Collective operational decisions	Do you have practice of joint operational decision making?	✓	✓	✓
Collective strategic decisions	Do you have practice of joint strategic decision making?	✓		
Specific resource	Have your company specific resource or asset (eg, department, officer, software), which was created specifically to work with a partner?	✓		✓
Adaptation by partner	Have any changes been made by your partner to adapt to your company, for example, administrative practice, payment terms, quality control procedure and return, mode of production?	✓		✓
Adaptation by your company	Have your company made changes made by your company to adapt to partner?	✓	✓	✓
Investments	Have you company made investments into development relationships with partner?	✓		
<i>3. Juridical autonomy of partners.</i>	Is your company juridical independent from your partners?	✓	✓	✓





Latent reasons dor dependence (relatives, investments, ect.)	Are there any latent reasons, which allow your partner to have a control over?			✓
4. <i>Duration of relationship.</i>	Do you have partners with whom your company works from the establishment?	✓	✓	✓
Longitude	Do you have partners with whom your company works more than half period of firm existence?	✓	✓	✓

#### 4 DISCUSSION AND CONCLUSIONS

This section presents some conclusions and results of the operational approach testing. Basing on traditional sociologic methods the operational approach was elaborated. Thus, the logic of operational approach lies in step by step development of general approach via complication and enrichment of the results.

The elaborated operational approach incorporates advantages of existing traditional methods and consider existing business managerial practices. In general, the operational approach has proved its suitability for the research purposes. At each step of the interview some questions were added or adapted according to the company context and inter-organizational level of performance. Empirical testing helped us to improve the tool as well.

Possible limitation of the developed operational approach concerns its limited managerial implication. Approbation showed that it is not possible to develop a universal approach to the identification of business networks equally suitable for all types of industries and businesses.

During the testing approach some interesting empirical evidence on business in Russia were educed. Further we shortly formulated the most important findings concerning inter-organizational relationship practices and inter-organizational company performance.

1) High proportion of informal arrangements, both at the stage of formation of relations and performance in the future. Business is done outside contract frames; numerous problems are discussed and resolved as the project on the basis of interpersonal agreements.

2) Emphasis on high-value relationships in Russia with old partners (partners from the foundation of the firm). However, it is noted the lack of investment in the development of relations with partners, as well as the low level of mutual adaptation.

3) As the main goals for development of inter-organizational networks managers pointed out the following: increase of production and sales volumes, costs reduction, access to new technologies, attract financial resources, increase of market share, increase of profits, and development of new products and some others.



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



4) The authors have noticed a remarkable correlation between firm manager's mindset and tend for the formation of inter-organizational networks and inter-organizational performance. If the manager believes that people could be trusted, then the company establishes closer relationship with their business partners.

The implication of the research involves the delimitation of the network as autonomous business unit, which will exploit the potential of inter-organisational linkages for the development of company's competitiveness in terms of network economy.

## REFERENCES

1. Barnes J. A. Network analysis: orienting notion, rigorous technique, or substantive field of study? In *Perspectives on Social Network Analysis*, ed. P. W. Holland, S. Leinhardt, pp. 403-23. New York: Academic, 1969.
2. Burt R. S. Network items and the General Social Survey // *Soc. Networks* 6: 293-339, 1984.
3. Coleman J. S. *The adolescent society*. N. Y: Free Press, 1961.
4. Erickson B. Some problems of inference from chain data. In *Sociological Methodology*, ed K.F.Schuessler, pp. 276-302. San Francisco: Jossey-Bass, 1978.
5. Erickson B. The relational basis of attitudes // *Social structures: a network approach* / Ed. by B. Wellman, S. D. Berkowitz, Cambridge : Cambridge Univ. Press, 1988.
6. Ford, D., Gadde, L.-E., Hakansson, H. and Snehota, I. (2002) "Managing Networks", Paper presented at the 18th IMP Conference, December, 2002, Perth.
7. Håkansson H. *Internal Marketing and Purchasing of Industrial Goods — An Interaction Approach*. Wiley: N. Y., 1982.
8. Holmen, E. and Pedersen, A.-C. (2003) "Strategizing Through Analyzing and Influencing the Network Horizon", *Industrial Marketing Management*, Vol. 32, pp. 409-418.
9. Jones, C., Hesterly, W.S., Borgatti, S.P. (1997) 'A general theory of network governance: exchange conditions and social mechanisms.' *Academy of Management Review*, 22, 4, 911-45.
10. Kotler, F., R. Achrol *Marketing in the Network Economy* // *Marketing and marketing the research in Russia*. Number 2 (26), 2000.s2-19.
11. Kouchtch S.P., K. Krotov, M. Smirnova. *Marketing perspective of relationship management in supply chain: the evidence from Russian companies* // *Russian Management Journal*. 2008. Vol. 6, № 2. P. 3–26.
12. Laumann O., Knoke, D. *The Social Organization of National Policy Domains: An Exploration of Some Structural Hypotheses*. In *Social Structure and Network Analysis* Beverly Hills: Sage, 1983.
13. Marsden P. V., Laumann E. O. *Mathematical ideas in social structural analysis*// *J. Math. Sociol*, 1984. Vol. 10. P. 271-294.
14. Marsden P.V. *Network Data and Measurement*// *Annual Review of Sociology*, Vol. 16, 1990, pp. 435-463.
15. McAllister L., Fischer C. S. *A procedure for surveying personal networks*// *Sociol. Methods Res.* 7:131-48, 1978.
16. Muncy J.A., Raymond P.F. *Cognitive Relativism and the Practice of Marketing Science*// *Journal of Marketing*, 51, 20-33, 1987.



**International Joint Conference on Environmental and  
Light Industry Technologies**  
**21 – 22 November 2012, Budapest, Hungary**  
**Óbuda University**



17. Nohria, N. & Eccles, R. G. (1992). *Networks and Organizations*. Harvard Business School Press, Harvard.
18. Osborne, J. D.; Stubbart, C. I. and Ramaprasad, A. (2001) "Strategic Groups and Competitive Enactment: A Study of Dynamic Relationships Between Mental Models and Performance", *Strategic Management Journal*, Vol. 22, pp. 435-454.
19. Owen-Smith, J. and W. W. Powell (2003): The expanding role of university patenting in the life sciences: assessing the importance of experience and connectivity. *Research Policy* 32(9): 1695-1711.
20. Pfeffer J., Salancik, G. R. *The external control of organizations: A resource dependence perspective*. New York: Harper and Row, 1978.
21. Rebyazina V.A., Krasnikov A.V., Kouchtch S.P., Smirnova M.M. (2011). *Measuring Innovation Activities of Russian Firms: Insights from the Innovation Radar Framework* // Summer Marketing Educators' Conference CD Proceedings, American Marketing Association, San Francisco, USA.
22. Sharma, A.; Tzokas, N.; Saren, M. and Kyziridis, P. (1999) "Antecedents and Consequences of Relationship Marketing", *Industrial Marketing Management*, Vol. 28, pp. 601-611.
23. Sheresheva M.Y., Kolesnik N.A. *Stochastic Perspective of Industrial Distribution Network Processes* // *Industrial Marketing Management*, 2011. T. Volume 40. № Issue 6., p. 979-987.
24. Sheresheva, M. (2010). *Formy setevogo vzaimodeistvija kompanii (Forms of inter-firm networking)*. SU-HSE: Moscow.
25. Sterligova A.N. *Teoretico-metodologicheskie osnovy urovnevoi interracii deyatel'nosti kompanii v usloviyah setevoi konkurencii*. – M.: MGOU, 2008.
26. Sterligova A.N., Vladimirova N.M., *Interorganizational co-operation in company management* // *Reading Book Thirteenth Annual International Conference: Fulfilling the Worldwide Sustainability Challenge: Strategies, Innovations, and Perspectives for Forward Momentum in Turbulent Times*, USA: GBATA, 2011.
27. Tretyak O. A., Popov N. I. (2009). "Explaining scientific networking with b2b network theories: the cases from the EU and Russia". *Journal of Business & Industrial Marketing* 24(5/6):408-420.
28. Westphal, J. D., M. D. L. Seidel, et al. (2001): Second-order imitation: Uncovering latent effects of board network ties. *Administrative Science Quarterly* Vol. 46, No 4, pp. 717-747.
29. Wilkinson, I. and Young, L. (2002) "On Cooperating – Firms, Relations and Networks", *Journal of Business Research*, Vol. 55, pp. 123-132.
30. Williamson O.E. *The Economic Institutions of Capitalism*. New York: Free Press, 1985.
31. Yin R. *Case Study Research: Design and Methods*, Third Edition 2003.

**Corresponding author:**

Nadezda KOLESNIK  
*Laboratory for Network Organizational Forms*  
*Management Faculty*  
National Research University Higher School of Economics  
20 Myasnitskaya Ulitsa,  
Moscow 101000, Russia  
Phone: + 7 (495) 621 1397  
[www.hse.ru](http://www.hse.ru)