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NETWORKING IN THE TRANSPORT SECTOR: INTER-FIRM VS INTRA-FIRM PERSPECTIVE

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Abstract. Changes in the global economic environment have a huge impact on the transport and logistics sector. Experts in the sector emphasize the role of collaboration in order to reach common goals. In theory such phenomena is analyzed through the networking viewpoint. Among the major groups of players in the sector, two types of networks are dominant: inter-firm networking and intra-firm networking. Empirical pilot research is done by comparing two types of networking in global and local companies. Following the results of the pilot research the conclusion was made that inter-firm networking and intra-firm networking in the companies complement each other and require further research.

Keywords: transport, logistics, network, networking, intra-firm networking, inter-firm networking.

Introduction

Transportation is a vital component of any economy. Impact of the added value by the transport business and logistics sector has become even more important after global markets had emerged. Transport and logistics services support production, trade and consumption activities by ensuring efficient movement and timely availability of raw materials and finished goods (Crainic 2000); it eliminates time and space differences, as production and consumption are in different places and processes are not organized at the same time. As a consequence, freight transportation represents a significant part of the cost of a product, as well as of the national expenditures of any country (Crainic, Laporte 1997). This turns into a highly competitive environment for freight transportation firms. Carriers have to rapidly adjust to changing economic and regulatory conditions, offer reliable, high quality, low cost services to their customers and, obviously, make a profit. All the planning levels and operational units of the firms have to work together, smoothly and seamlessly, toward the accomplishment of these goals (Crainic 2000). Recent market trends and processes could be fully illustrated by U.S. market situation as a representative of biggest economy. According to the 20th Annual State of Logistic report-business logistics' costs fell up to 9.4 percent of U.S. Gross Domestic Product (GDP) in 2008, after rising over 50 percent during the previous five years. According to the report and statistics the bottom line should have been reached in 2009. The decrease in carrying costs was cause of both a 2.2 percent decline in inventories and an 11.2 percent decrease in the inventory carrying rate. Warehousing costs, however, rose by 9.5 percent, with warehouse managers reporting that inventory turns were down substantially from earlier years as stock spent more time in warehouses (Burnson 2009). Rosalyn Wilson, author of the 20th Annual State of Logistics, mentions "collaboration of different companies, and importance of relationships leading to common goal" (Wilson 2009) as one of the core and the most important trends in the sector during economical recession. Cooperation for common goals in theory is usually analyzed and interpreted from the perspective of networking theory Therefore, empirical research of networking in the companies of transport sector is a high necessity and could lead to new competitive advantages and stronger sector.

Networking theory

The development of consumer supplier theory since early 1980's (Dwyer *et al.* 1987) gave strong impact for further development of vertical and horizontal networking research. Despite the recent year's researches' attention to the networking theory it has not reached maturity stage and there is no commonly agreed classification and definitions. Some authors (Casson 2001; Moller, Halinen 1999*)* investigate networks as an object; others (Carson *et al.* 2004; Neergaard 2005) approach the networking as a process. Some set of definitions to show different researchers' perspective on networking are as follows:

A network is a set of actors connected by a set of ties. The actors (often called "nodes") can be persons, teams, organizations, concepts, etc. (Borgatti and Foster 2003).

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A network is a set of interconnected nodes. A node is the point where the curve intersects itself (Castells 2000).

Cooperation as a process, which manifests in all fields of business operations, occurs when two or more parties (enterprises) have business objectives which are mutually dependent (Šavriņa *et al.* 2008). In this paper networking is understood as a long term and decentralized cooperation for the common goals inside or outside the company boundaries. It could be seen from the given definitions that networking theory has a wide spectrum and could be analysed from different angles. Therefore, developing networking theory is based on the assumption that there is a necessity to recognize ability of the networks to build and construct the networks on purposed actions (Vilkas, Bučaitė-Vilkė 2009).

One of the commonly used methods is to split networks analysis into horizontal and vertical networks, as the partners of such networks have significant differences.

Vertical networking – the simplest way to describe a vertical network as an inter-connect branch of supply chains where each connection is constructed on the basis of consumer supplier relationships (Fig. 1).

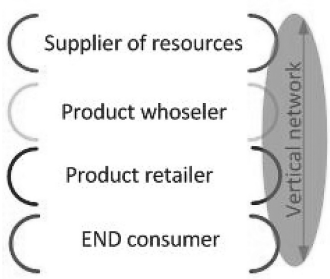

Fig. 1. Structure of the vertical network

In addition, vertical networking could be analysed as an advanced supply chain: as a movement away from a strategy within the firm towards a wider system such as a chain or network (Cooper *et al.* 1997; Klimov, Merkuryev 2008). The rapid development of a retailing sector and the emergence of multiple retailers (also called chain stores or chains of stores) could be one of the good examples of vertical networking (Urbonavičius, Ivanauskas 2006).

Horizontal networking is based on the communication of the same level participants in different institutions, and even competitors are involved in direct relationships with each other (Bengtsson, Kock 2000) to gain competitive advantage, to reach resources and markets (Fig. 2). Vertical and horizontal relationships, although described and discussed separately, are obviously interrelated, forming intricate networks of organizations. (Moller, Halinen 1999). In practice, such networks could be found as virtual organizations with implementating of rational management concepts (Sobotka *et al.* 2005).

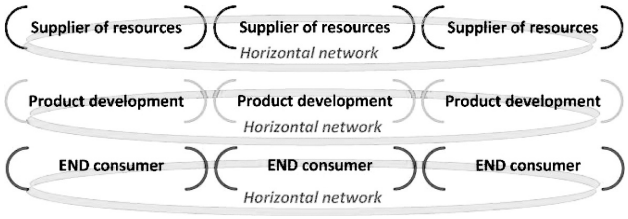

Fig. 2. Structure of the horizontal network

Network analysis could be easily structured and supported by three dimensions by Carson, *et al*. (2004) (Fig. 3). The authors analyse "Usage" dimension in marketing but the same dimension could be replaced by any other usage functions of the company (e. g. transportation functions).

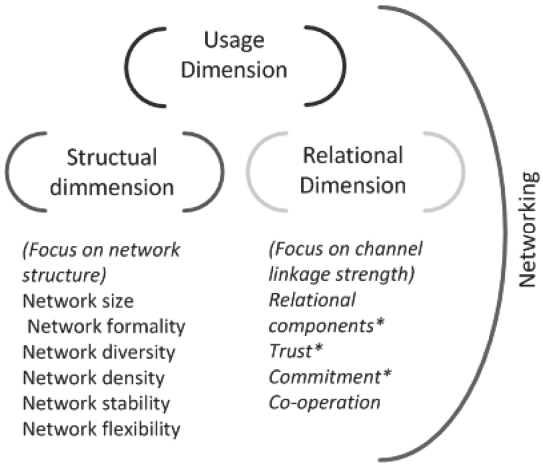

Fig. 3. Networking dimensions

Usually, networks are understood as the interaction between two different firms and it is called *inter-firm networking* – based on cooperation and competition (Bengtsson, Kock 2000) of actors crossing the boundaries of the one firm's interest. Ghoshal and Bartlett (2005) argue that multinational corporations work as an inter-organizational network. The authors show transformation from the centralized headquarters – subsidiary relationship to de-centralized networks in globally working organizations. According to the same author, "internal networks" in MNC have similar structure, attributes, shared values and interactional relations as external ones. These kinds of *intra-firm* networks have significant competitive advantage created by common goal and values of the company, and could use the geographical advantage.

Major groups of players

It is worth distinguishing two types of multi modal transportation and logistics companies: (1) global, multi modal players; (2) local players.

(1) Big world wide players that can afford and manage offices in all regions (e.g. DHL, UPS, Kuehne + Nagel, DSV A/S) use inter-firm and intra-firm networking. However, internal network is dominating assuring communication and coordination between globally spread offices in a decentralized way – enables coordinating and performing global freight movement and logistics operations.

(2) Usually regional and relatively small units working as subcontractors or using ones in order to compete with big companies. As companies have smaller internal network, formalized and informal external (inter-firm) networks are dominating. Such companies on a regular basis cover not all types of transport means or concentrate on one type of transportation. Lithuanian examples of such companies include: Girteka JSC, Adrem JSC, Finėjas JSC, Klasco JSC.

From the first two sections of this paper it could be seen that networking in the transport sector is important and there is a lack of the empirical proof of actual networking in this sector. What is more, it could be worth comparing and exchanging the experience of a dominating networking pattern to not dominating (inter-firm *vs* intra-firm) in both above discussed types of companies. The need to compare and evaluate two different phenomena: inter-firm and intra-firm networking, as well as a lack of empirical insights in this field leads to the necessity of empirical research to be done.

Research methodology

In the research, as a core to analyze two types of phenomena have been chosen: (1) different types of networking (inter-firm *vs* intra-firm), (2) usage dimension of the transport networks (Carson *et al.* 2004).

A case study as the main method has been chosen for the followed reasons: (a) case studies are tailor-made for exploring new processes or behaviours or ones that are little understood (Hartley 1994); (b) the approach is particularly useful for responding on *how* and *why* questions about a contemporary set of events (Leonard-Barton 1990). In this situation, especially in pilot research, this kind of approach could be very useful; (c) such a study consists of a detailed investigation of one or more organizations, or groups within organizations, with a view to provide the analysis of the context and processes involved in the phenomenon under study (Meyer 2001).

Structural design of the case study was done on the following principles:

(1) selection of cases – companies from the same economical, political and cultural background were chosen as cases. Hence, whereas quantitative sampling concerns itself with representativeness, qualitative sampling seeks information richness and selects the cases purposefully rather than randomly (Crabtree, Miller 1992);

(2) sampling time – same period of data collection;

(3) choosing business areas;

(4) selection of and choices regarding data collection procedures, interviews, documents, and observation – as data collection should be based on the interview with senior managers and investigation of internet data basis.

Research aims:

- To investigate the specificity of the function of the networking;
- To compare intra-firm and inter-firm networking;
- To define structural dimension and specifications to the transport sector;
- To define relational dimension;
- To make empirical assumption for the theoretical usage dimension.

Hypothesis for the pilot research:

1. There are differences in all three dimensions of inter-firm and intra-firm networking;
2. Inter-firm and intra-firm networking has different benefits to the companies.

In order to complete a comparison of two different types of networking and to get general insights in the same research, a semi-structured case study should be done. Two types of questions in the questionnaires are applied: open questions and questions to rank factors (evaluation of the factors according to importance from 1-10). Ranking enables results comparison and open questions investigate peculiarities of functioning.

Empirical research

In order to formulate final research directions and to be sure that research methodology fits the aims and hypothesis, pilot research was done in September – November 2009. Two different companies of transport and logistics sector were chosen: to represent global player and intra-firm networking perspective, DHL office in Lithuania was chosen; also to represent local player's perspective and inter-firm networking "Adrem" JSC was chosen.

Selecting criteria for the *inter-firm* networking analysis:

– Working field: transport and logistics, supply chain management;
– Size of the company: a local company, with no more 1000 workers;
– Belonging to formal international networks;
– Having more than 1 year experience in formal networks.
– Selecting criteria for the *intra-firm* networking analysis:
– Working field: transport and logistics, supply chain management;
– Size of the company: global or multinational with several means of transport;
– Having office in Lithuania.

Research results

Besides, research was based only of samples of two companies, but combined case study and network dimensions methodology allow having some insights on hypothesis, and to have the aims of the pilot research fulfilled.

All findings are structured according 3 networking dimensions.

From Table 1, some general conclusions could be made by the structural dimension of the two networks: network "A" has global coverage and it is 7.5 times bigger than local network "B". Set common goals and semi-formalized structure in (A) has a strong impact on the relevance of the network in the company. In comparison, in the "B", instead of common goals, the common interest between two nods is dominating. The nods in both companies are diverse in functions and size. The interviewed personal in the company "A" put a great emphasis on the role of density: density practice of "A" could increase an efficiency of networking in "B". From the development and structuralized performance it could be seen that "A" is in the maturity stage and is more stable, whereas "B" is still in developing stages and the role and structure of the network is constantly changing. Comparing "A" and "B" flexibility: more structure could increase the performance of the network, otherwise with more flexibility it is easier to innovate.

Both types of networks depend on the trust factor and have a huge impact on network performance. Company "A" has higher results in all relational dimensions, but there is a restriction of free chosen partners. Network success is mostly based on relational and usage dimension. The main reason of "B" lower results in relation dimension is permanent cooperation.

Table 1. Inter-firm and intra-firm networking comparison: structural dimension

Structural Dimension	Intra-firm networking (A)	Inter-firm networking (B)
Network size:	Number of nods in the network: 650 Country coverage: 220	Number of nods in the network: 153 Country coverage: 86
Network formality	Strict goals and results set by the head office. Structured functions and operations. Highly formalized products. Half formalized relationships.	Common goals and results are not set. Formal head office, informal communication between nods. Structure and formality depends on interaction between two nods.
Network diversity	Diverse in the size of nods, the functions of performers depending to the country.(e.g. China: very small amount functions per worker, Russia: multiple functions per worker).	Diversified size of the nods. Very diversified relationships between nods.
Network density	Very intensive and strong communication, each worker in the nod is communicating with other nods. Strong action of the network is with 150 countries of 220 (density 68%).	Exclusive rights to be a representative in the country. All communication is based on one person – gate keeper. Low interaction, more intensive communication could lead to better results. Several actions with 15 countries from 86 (18% density).
Network stability	Developing 2 new offices per year in new countries. Controlling is done in multi dimensional way to insure strictly defended results. Very stable structure.	Developing in the growth of aprox. 10. new members each year. Constantly changing structure.
Network flexibility	Middle level of flexibility inside the network. More flexibility could increase performance efficiency, but it does not contribute with low risk taking philosophy of general network.	No obligations – complete flexibility. Risk taking factor is solved only in two nods interaction. High flexibility and high risk taking enables easier innovation process.

Table 2. Inter-firm and intra-firm networking comparison: relational dimension

Relational Dimension	Intra-firm networking (A)	Inter-firm networking (B)
Trust	Trust is made in global company philosophy and it is in high level. The partners and linkages are fixed (nod do not have a possibility to choose partners even if they are not trusted).	Trust between nods is made by exclusive gate keepers and their social interaction. Partner choice is made on the basis of the trust and cloud be changed.
Commitment	Very high level of commitment. Corporate communication is organized to support commitment. Quarter management meetings to exchange information and to support commitment.	Low level of commitment. Two semi-annual meetings based on connection creation and development.
Co-operation	Constant cooperation in day by day activities and in developing new products and services. Well developed intranet to support constant flows of information,	Permanent cooperation. There is no common information and communication tool.

The usage dimension of both networks is concentrated on freight forwarding including all logistical operations. In both companies the assurance of the supply chain is the core function (vertical network) and companies are using (semi-horizontal relations) to eliminated location differences and to perform the function. In the company "A", 100 per cent of real freight movement in the air and sea transportation operations are done by subcontractors (external network): the main function of the company's internal network is to coordinate actions. In company "B", the main activity is to do a real movement of the freight (dominating land transport) or to be a subcontractor for such movement and to use inter-firm networking for coordination of performance. From usage analysis it is clearly seen that the predominant benefits from the network to the companies are similar: (1) market access and (2) bigger market share.

The first hypothesis was confirmed because there are differences in all dimensions of the network. The analysis of structural and relational dimensions showed that inter-firm and intra-firm networking were formed on a different basis and the best practice from both sides is complementary to other type of networking. From the usage dimension it is clear that vertical and horizontal networks intersect inside and outside the companies and the further research of a dominating network could help to develop not dominating networks in the company.

Conclusions

1. Transport sector could improve performance by proactive behaviour in the field of internal and external networking.

2. The research results show that transport companies are good examples to illustrate both horizontally and vertically networked companies.

3. The hypotheses of pilot research prove to be true – inter-firm networking and intra-firm networking have differences in all 3 dimensions.

4. Dominating benefits of the networks are the same: market access and bigger market share, but the amount of added value by networking is different.

5. Pilot research shows that suggested research methodology is relevant in finding differences and specificity of the networks and both intra-firm and inter-firm networks have complementary features to be investigated in further research.

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TRANSPORTO SEKTORIAUS TINKLAVEIKA: INTERORGANIZACIJOS IR INTRAORGANIZACIJOS TINKLAVEIKOS PERSPEKTYVA

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Santrauka

Globalios ekonomikos pokyčiai turėjo didelę įtaką transporto ir logistikos sektoriaus plėtrai. Sektoriaus ekspertai pabrėžia išaugusį bendradarbiavimo vaidmenį siekiant bendrų tikslų – toks bendradarbiavimas vadybos teorijoje dažniausiai nagrinėjamas iš tinklaveikos perspektyvos. Pagrindinių veikėjų sektoriuje analizė parodė, kad du tinklaveikos tipai yra vyraujantys: interorganizacinė tinklaveika ir intraorganizacinė tinklaveika. Autorių atliktas empirinis pilotinis tyrimas palygina dviejų tipų tinklaveikas vietinėje ir globalioje transporto įmonėje. Tyrimo rezultatai parodė, kad *inter-firm* ir *intra-firm* tinklaveika papildo viena kitą ir objektą tirti verta toliau.

Reikšminiai žodžiai: transportas, logistika, tinklas, intraorganizacinė tinklaveika, interorganizacinė tinklaveika.