

NETWORK ORIENTATION IN LOGISTICS SERVICE INDUSTRY: CONCEPTUALIZATION AND OPERATIONALIZATION OF THE THEORETICAL CONSTRUCTS

Arkadiusz Kawa

ŁUKASIEWICZ Research Network - The Institute of Logistics and Warehousing,
Poznan, Poland

E-mail: arkadiusz.kawa@gmail.com

Wojciech Czakon

Jagiellonian University, Cracow, Poland

E-mail: wojciech.czakon@uj.edu.pl

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Abstract

Logistics firms do not have all resources needed to carry out their activities. Resource scarcity is particularly conspicuous in the case of means of transport, and increasingly in warehouses or reloading facilities. The logistics services are therefore delivered by many interdependent firms that co-ordinate their work with sub-contractors in a multi-level complex structure. Logistics service providers collaborate with direct or indirect suppliers, but also customers and in some cases competitors. A complex picture of multiple relationships emerges, forming a network of co-operating firms. Managers can use of network relationships to mobilize other organizations' resources in order to improve performance. Their attitude directed at seizing opportunities embedded in inter-organizational networks is called network orientation.

The purpose of this paper is to develop a conceptual model of network orientation. We synthesize and operationalize theoretical constructs relative to network orientation, and explain how competitive advantage of logistics enterprises can be created through networks.

To our best knowledge this study is first to explain the mechanism of competitive advantage formation in logistics enterprises using network orientation. We propose a structured composition of the network orientation concept and contribute to further develop logistics industry research and practice by providing a reflective analysis, inspiration and guidance.

Key words: network orientation, logistics service industry, competitive advantage

1. INTRODUCTION

Logistics is undoubtedly an important area of activity for a present-day enterprise. Apart from supporting the processes of planning, organizing and monitoring the flow of goods and information about them, it fulfills the function of integrating separate business entities. Growing customers' expectations and associated trends in serving increase the complexity and difficulty of logistics processes. This is particularly noticeable when enterprises produce and sell their products in different places in the world. Most of them do not have all necessary resources and competences to individually carry out comprehensive logistic services for customers. Therefore, more and more frequently, managers use external entities specializing in logistics (Liu et al., 2015). These entities form the logistics services industry.

Years ago the tasks of logistics firms mainly came down to providing simple services consisting in transporting things from one place to another and in storing them (Bardi & Tracey, 1991). With time, the scope of their competences has widened and begun to include additional actions, often beyond the original domain of logistics. Examples include: product assembly at the customer's premises; cash-on-delivery services; refreshing, repairing or even disposing of products; issuing sales documents on behalf of the consignor; handling returned goods. The relationships between logistics service providers (LSP) and the ordering entity have also changed (Gadde & Hulthén, 2009). More and more often the former fulfill an essential function in the management of goods flows not only within one organization, but primarily in supply chains. They plan, carry out and control the logistic processes of various types of goods which are relocated within a region, country, continent or even the whole world.

Logistics firms, however, do not always have resources necessary to carry out all the services offered. This resource scarcity is particularly conspicuous in the case of means of transport, but also, increasingly, warehouses or reloading facilities. The reasons are twofold. Firstly, providing comprehensive logistics services requires a well-developed logistic infrastructure, time-consuming and capital-intensive to gather. Secondly, excessive tangible resources ownership is connected with a risk of overcapacity, especially when demand is volatile. To carry out increasingly extensive logistic tasks, operators often turn to other firms and co-operate with yet others, usually smaller, logistic firms. The logistics services industry is, then, characterized by a multi-level structure. It is based on co-ordination of the work of sub-contractors who participate in creating complex logistics services. The first level mainly includes logistics enterprises which integrate the activity of the second-level companies, specializing in a certain area of activity such as forwarding services, transport of selected goods, services provided in some regions etc. The last ones, in turn, co-operate with the third-level suppliers – smaller companies that perform specific logistic tasks with the use of their own resources. These include, for instance, local carriers, customs agencies and warehouse owners (Schary & Skjott-Larsen, 2002). Collaboration between firms may be both formal that is based on contracts, and informal that is based on social relationships. Moreover, collaboration involves not only direct or indirect suppliers, but also customers and, in some cases, competitors (Raue & Wieland, 2015). In some circumstances it may be long-term and have

mutually complementary goals. This type of relations demonstrates the nature of inter-organizational collaboration, that is durability. A complex picture of multiple relations emerges, then, which set into a network composed of separate and co-operating organizations. These networks are described as inter-organizational networks and take the form of organizational and institutional structures, such as alliances (Gulati et al., 2000), joint ventures (Möller & Törrönen, 2003), clusters (Rivera et al., 2016), but may also have a less formal character (Halinen & Salmi 2001). They often go beyond contracts and embrace the social bonds essential for enterprises (Granovetter, 1985). Networks understood in this way are ubiquitous in the economy, and their importance constantly increases (Panda, 2014).

Inter-organizational networks are a source of multiple opportunities for enterprises. Collaboration in networks becomes particularly important for smaller enterprises, which raise their potential by combining forces. Thanks to that, they can compete with larger firms, on global markets and win new customers. Many studies indicate that inter-organizational networks contribute to achieving a competitive advantage (Dyer & Singh 1998; Ritter et al., 2004; Word, 2009). The literature provides examples of industries in which networks are the source of success of enterprises: the clothing industry (Uzzi, 1996), the furniture production (Dyer & Singh, 1998), the software industry (Kulmala & Uusi-Rauva, 2005). However, few studies address inter-organizational networks in the logistics services industry (Selviaridis & Spring, 2007). It is particularly noticeable that there is a lack of scientific studies on the co-operation between logistics enterprises and other entities in the network and its influence on the competitive advantage. Despite a long standing recognition of network relationships importance for the logistics services industry (Pfohl & Buse, 2000), most studies still focus on logistics outsourcing, purchasing and marketing logistics services, growth strategies, and, at most, analyze bilateral relations, i.e. the direct connections of logistics enterprises with the suppliers, customers and competitors.

In order to address this gap we follow network paradigm (Borgatti & Foster, 2003). Its origin can be found in the network approach, developed by the Industrial Marketing and Purchasing Group (IMP). It departs from the fundamental tenet that business entities are not isolated. Their course of action and results depend not only on themselves, but also on the organizations with which they are directly or indirectly related (Håkansson & Snehota, 2006). They become, part of a system in which they are influenced by direct and indirect relations with other entities as well as entire networks. This influence is connected with the embeddedness of economic activities concept in networks of social relationships (Granovetter, 1985).

Managers who are aware of this influence can use network relations, and other organizations' resources in order to achieve, sustain or increase their competitive advantage. We call this attitude directed at taking the opportunities embedded in inter-organizational networks as network orientation. Network orientation is connected with perceptions, choices and behavioral patterns of managers, directed at a specific, objectively existing phenomenon of embeddedness in a network. This concept that has been given in-depth attention in the literature, a conceptual gap that we address in our study.

Management literature claims that network orientation may have a positive effects on firms. For example, Thornton (2011) builds a conceptual model which assumes the existence of a correlation between network orientation and firm performance, but does not offer empirical evidence. Other publications also lack empirical grounds of the relationship between network orientation and competitive advantage, particularly in inter-organizational networks of the logistics service industry. Therefore, in addition to a conceptual gap, and empirical gap emerges regarding the role of network orientation in firm-level outcome variables. This may be connected to a deficit of studies that would operationalize the concept of network orientation, adding a methodological gap to our current understanding of the role of network orientation. As a result, managerial recommendations relative to how to develop, use or modify firms network orientation are missing (Czakon & Kawa, 2018), undermining the relevance of the concept. In this study we aim at filling two gaps the conceptual and methodological. We develop a model of network orientation directed at achieving a competitive advantage by LSPs. We conceptualize and operationalize the theoretical constructs concerning network orientation, and explain how competitive advantage of logistics enterprises can be created through networks.

2. NETWORK ORIENTATION

Orientation is usually associated with an ability to find oneself in a specific location, to be familiar with a situation, or with specific views on a topic. It also means a certain attitude, faith in a given issue, feelings, preferences, belief, understanding and interpretation of the situation (Cambridge Dictionary, 2020). The term “orientation” is very broad.

Management literature is rich in various concepts, tools and theories that researchers and managers can use for different purposes. They often reflect specific beliefs, preferences or habits in using a given instrument of or approach to management. It is said then that managers are oriented towards something. Although orientation relates to the definition of attitudes (most often difficult to observe), it is manifested in behaviours that we see in many areas of economic life (Thornton, 2011).

Network orientation is explained most generally by Andersson and Mattsson (2010), as an approach concerning the perception and understanding of the market environment by the actors of a network. The IMP Group combines the concept of network orientation with the network horizon and the network theory. The network horizon determines the extent of a participant's perception of the network. It depends on their experience and the structural characteristics of the network (Anderson et al., 1994). The network theory, in turn, points to regular persuasion about company dependence on networks and the endogenous and exogenous effects of networks. In a different take, Thornton (2011) proposes to consider network orientation as a set of strategic actions used by a company to react in a network of direct and indirect links in order to effectively and efficiently mobilize and use internal and external resources. In this study network orientation is understood as an approach aimed at exploiting the opportunities offered by the embeddedness of a company in an inter-organizational network in order to achieve superior performance (Czakon et al., 2019).

Network orientation is a construct that cannot be directly observed. It may, however, be decomposed into distinctive dimensions. Based on a literature analysis we posit that network orientation is composed of: structural network embeddedness, interaction of indirect relations, interdependence of the enterprise and the network, resources sharing, exchange within the network. We build on prior work to link a measurement scale (Czakov et al., 2019) to mediating and outcome variables in a rigorous conceptual model.

3. RESEARCH HYPOTHESES AND CONCEPTUAL MODEL

We follow an abductive approach, and start with literature-driven hypotheses (Queiroz & Merrell, 2005): (h1) the network orientation has a positive influence on the resource advantage of LSPs; in turn, (h2) the resource advantage positively influences the performance firms. Given the dimensions developed for the network orientation construct we develop six hypotheses, as an extension of prior work on network orientation measurement scale (Czakov et al., 2019).

The resource advantage concept is core in the resource-based view (RBV) of the firm (Barney, 1991). Resources are tangible and intangible items owned, or controlled by a firm, that can be converted into final products or services (Okpara, 2015). Some resources lead to a sustainable competitive advantage, provided that they meet following conditions: (1) they are strategically valuable due to their ability to add financial value to firms; (2) they are characterized by rareness because only some enterprises have them; (3) they are inimitable by other firms; and (4) substitutability by other resources is ruled out, or limited (Barney, 1991). Examples of such strategic resources include: knowledge, relationships, capabilities, organizational processes, the firm's attributes, information, technology, experience, etc.

3.1. Structural network embeddedness

Network relationships form a structure through which exchange of products, services, or knowledge among enterprises takes place. Structure can be described by such characteristics as strength (Granovetter, 1973), reciprocity (Ring & Van de Ven, 1994) and proximity (Boschma, 2005). Commitment and trust may emerge from interactions among network members, and are connected with the strength of the relationship. Cooperation in a project, common planning, supply chain management, adaptation to customer needs require reciprocity. According to Ring and Van de Ven (1994), reciprocity is a key element in the assessment of relationships, which, in turn, is a mechanism for building, verifying, modifying or dissolving relationships. Furthermore, the strength of relations is connected with proximity. The concept of proximity has many meanings (Boschma, 2005). It is usually associated with short physical distance, relatedness or certain common features. In management, proximity refers most often to interaction and is related to the similarity of characteristics and ownership of an organization. The more proximate are firms to each other, the greater the likelihood of successful inter-organizational cooperation. Another structural feature of networks is density. It is defined by the number of direct relations to all

possible direct relationships between the network entities. A dense network provides many benefits. One of them is rapid diffusion of information. It contributes to more efficient learning in networks through more distribution channels. As a result, with higher network density, knowledge and adaptation of innovation can emerge more quickly (Delbufalo, 2015). All in all, relationships in networks characterized by proximity, reciprocity and a large number of relationships are expected to have a positive impact on the firm's competitive advantage (Hashai, 2014; Dyer, 1997; Uzzi, 1997). Therefore, a research hypothesis has been put forward which is as follows:

H1. The structural network embeddedness has a positive influence on LSPs resource advantage.

3.2. Interaction of indirect relations

Network actors can be connected directly to each other, or indirectly through several intermediate relationships (Blankenburg, 1995). Direct relationships connect firms with actors located in the immediate vicinity, and indirect relationships occur between the closest partners of a given firm and other market participants, thus requiring some intermediaries. An example of such relationships may be the cooperation with a supplier's supplier or a customer's customer. Therefore, a significant part of the relationships is indirect for the company (Axelsson & Håkansson, 2016).

Direct and indirect relations have a strong impact on logistics firms, as no enterprise can operate without other market players. Each organization is more or less related to others in its environment (Håkansson & Snehota, 2006). Walter, Ritter and Gemunden (2001) point out that firms can indirectly influence others. Similarly, indirect relationships have an impact on direct relationships and consequently on any firm (Czakon & Kawa, 2018).

Network researchers emphasize that both direct and indirect network relationships can be a source of competitive advantage (Lei & Huang 2014). It has particular importance in network strategies in which logistics companies take part (Skjoett-Larsen, 2000). Burt's (2009) finds that filling structural gaps by intermediaries can be source of a competitive advantage. The above observations are the basis for another research hypothesis:

H2. The interaction of the indirect relations has a positive influence on LSPs resource advantage.

3.3. Interdependence of the enterprise and the network

No firm can be fully independent. The results of its activities depend on others. This dependence implies that firms need to maintain a network relationship in order to achieve their goals. Referring to the game theory, that models choices in interdependent settings, logistics involve a positive and changeable sum game and can bring mutual benefits to the participants, although they may not always be equally distributed.

Anderson, Narus and Narayandas discuss balanced interdependence among partners (2009), i.e. no dominance by any side. The essence of network cooperation

is not a lack of dependence, but mutual interdependence which is relatively symmetrical. LSPs may balance their dependence on one another, and their commitment, depending on the degree of uncertainty in the environment. Research shows that balanced interdependence contributes to the development of the company's relations with other network actors, and provides new skills and a source for value creation. It is also often referred to as a mechanism generating higher, superior revenues (Cova & Salle, 2008). Therefore, the following hypothesis has been advanced:

H3. The interdependence of the firm and its network has a positive influence on LSPs resource advantage.

3.4. Resources sharing

Pfeffer and Salancik (1978) established long ago that in order to acquire necessary resources a firm has to interact with its environment. In inter-organizational network creation firms look for the right combination of resources, i.e. most effective and beneficial. It is significant to use the resources skillfully, not just possess them. Network resources are involve resource sharing. It has recently gained in importance, mainly due to the development of the Internet. The assumption behind it is that access is better than ownership.

Firms that purposefully act in inter-organizational networks can configure and exploit their resources more efficiently, which results in gaining a competitive advantage (Liu et al., 2015). Thanks to external resources, firms achieve their goals such as technology development, market research and new product development. As a result, firms make better use of limited own resources, reduce their capital expenditure, and thus strengthen their competitive position. This is emphasized by Chapman, Soosay and Kandampully (2002), who argue that network logistics companies continue to outperform other organizational forms because they own fewer assets and use the resources of partner companies, thus requiring less capital and achieving higher profitability. The brings the next hypothesis in our model:

H4. Resources sharing has a positive influence on LSPs resource advantage.

3.5. Exchange within the network

According to the exchange theory participants involved in relationship expect reciprocity, by which one is morally obliged to give something in return for something received (Ring & Van de Ven, 1992). Some researchers even claim that managers engage their organization in the exchange process only when they predict that if they do so, their own expectations will be fulfilled (Blois, 2001).

The basic components of exchange processes include (Axelsson & Wynstra, 2000): information, material items, and energy. In the logistics services industry, material exchange mainly concerns exchange of labour force, means of transport and other equipment. Information exchange has recently become increasingly important. Logistics firms invest in information technologies that improve collecting, processing, analyzing and transferring information about resources and the processes within the supply chain. In turn, energy exchange is specific drive for the other two types of

exchange. The “chemistry” between managers representing different companies, common understanding and mutual exchange of visions and attitudes combined with experience from previous relationships play an important role in developing cooperation in logistics and thus contribute to achieving a competitive advantage (Skjoett-Larsen, 2000). The above conclusions became the basis for the formulation of the next research hypothesis:

H5. Exchange within the network has a positive influence on LSPs resource advantage.

3.6. Resource advantage and performance

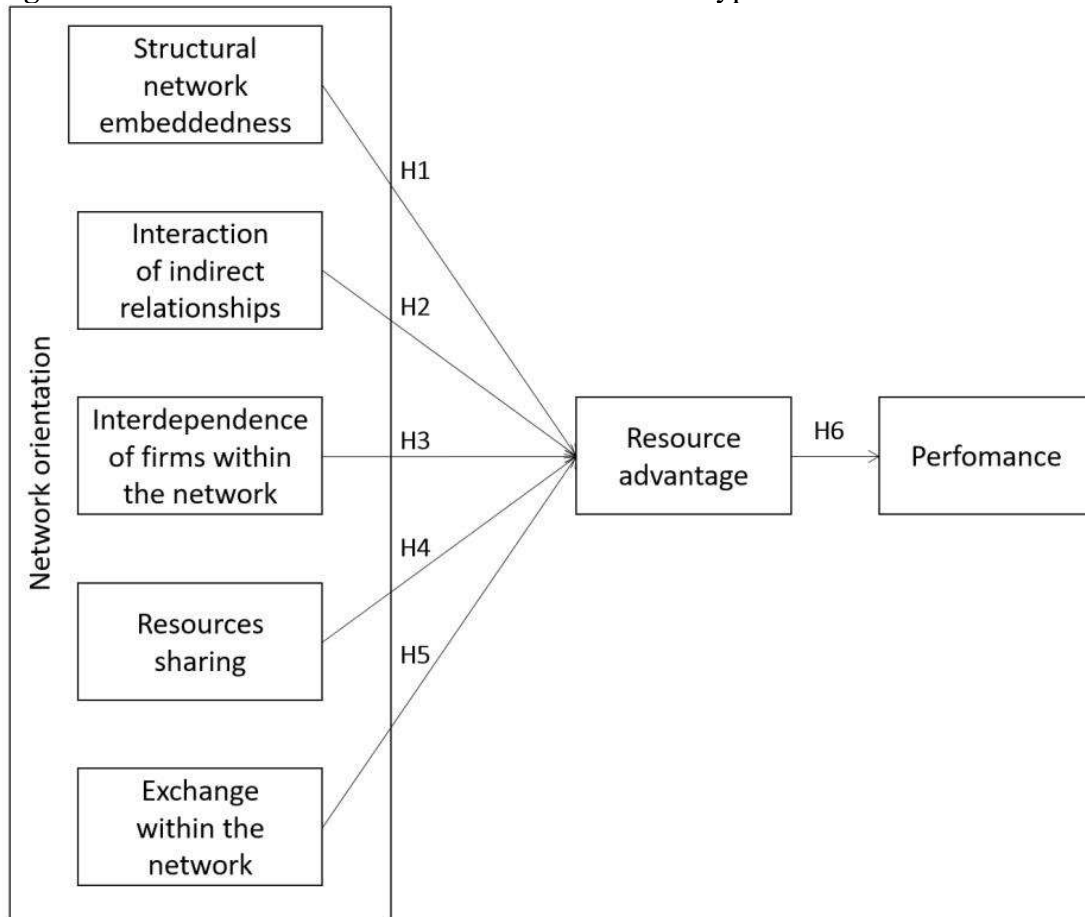
Managers look for the right combination of resources, by efficiency and benefit criteria. It is important to use resources skillfully, not just to own them. Inter-organizational networks enable firms to acquire resources, including organizational knowledge, and to respond flexibly to changing circumstances. Any given firm’s resources are different from those of competitors outside the network, which may constitute a source of competitive advantage (Barney, 1991). It can be assessed whether the development, maintenance and growth of the firm’s resources contribute to the competitive advantage and, ultimately, to the firm’s performance (Human and Naudé 2009). According to several studies a strong link between strategic resources and the LSP’s performance exists (Selviaridis & Spring, 2007; Klaas-Wissing & Albers, 2010; Raue & Wieland, 2015). Firm’s performance is influenced by many factors. The most frequently cited are: sales volume, profit, number of customers, market share, return on investment, productivity (Fynes & Voss, 2002; Homburg et al., 2004).

Competitive advantage can be treated as a mediator between resources and the performance achieved by firms. This mediation has been recognized in literature. Thanks to its resources and skills, a company can gain a competitive advantage, which in turn leads to a stable, above-average income (Newbert, 2007). Therefore our last hypothesis is:

H6. The resource advantage has a positive influence on the performance achieved by LSPs embedded in inter-organizational networks.

The hypothesized relationships are depicted in our model which presumes co-existence of the constructs and their joint influence in the form of the “network orientation” variable on the competitive advantage of the enterprise (fig. 1).

Figure 1. Model of network orientation and research hypotheses



Source: own elaboration

4. OPERATIONALIZATION OF NETWORK ORIENTATION VARIABLES

The network orientation – performance model shown in Figure 1 consists of seven constructs, reflected by latent variables. Due to a deficit in empirical studies both in the field of network orientation of firms and network relations in the logistics service industry, the indicators of these variables have yet to be developed. Observable indicators, which can be included in survey questionnaires in the form of statements, were developed for each of the latent variables. These statements can be evaluated by the respondents with the use of a five-point Likert scale (Czakoń & Kawa, 2018).

Understanding inter-organizational networks and the processes influencing its changes is closely related to understanding the nature of relationships. Relationships are the basic element that links actors, resources and activities in the network. That is why for the "structural network embeddedness" construct, four indicators were proposed, addressing respectively: reciprocity of relations, their strength, proximity and number (Delbufalo, 2015; Gnyawali & Madhavan, 2001; Mitreęa and Zolkiewski, 2012; Oerlemans & Meeus, 2005; Ring & Van de Ven, 1994; Wang et al., 2013).

Next, we selected six indicators for "interaction of indirect relations" indicators. They are related to the strength of the influence of the firms with which the customers or suppliers or competitors cooperate in the long term. These activities are, respectively: corporate strategy, product quality, product margin, image, innovativeness, and costs (Aspara et al., 2013; Burt, 2009; Hatch & Dyer, 2004; Skjoett-Larsen, 2000; Walter et al., 2001).

In line with Håkansson and Snehota (2006) no company is isolated. Therefore the next construct in our model is "interdependence of the enterprise and the network". Its operation and performance depend on others. The interdependence of the enterprise and the network includes: the ability to achieve superior revenues through mutual exchange, the use of the network's potential, the influence of the network strategy on the company's operations and the influence of the company's strategy on the network (Anderson et al, 2009; Ford & Håkansson, 2002).

Resources are at the central point of not only the network and network approach, but also of the logistics services industry. Access to resources is one of the main motives for creating or participating in networks. Through networks, companies can acquire unavailable resources and reduce the risks associated with investing in their development. They can also share their resources with others. Therefore the next relevant construct in our model is "resources sharing". It consists of four indicators which relate to using or giving access to tangible or intangible resources in inter-organizational networks (Borgatti & Halgin, 2011; Chapman et al., 2002; Gnyawali & Madhavan, 2001; Gulati, 1999; Pfeffer & Salancik, 1978; Ramayah & Omar, 2010).

The next construct is "exchange within the network", a basic attribute of inter-organizational relationships. Exchange is particularly important in logistics, where there is at least a two-way exchange of information, resources needed for logistics processes (e.g. pallet exchange) and products (e.g. return logistics). The selected indicators were adopted from studies by Axelsson and Wynstra (2000); Borgatti and Halgin (2011); Ramayah, and Omar (2010); Skjoett-Larsen (2000). They refer to information, matter and energy exchange, respectively.

In our network orientation model five exogenous constructs have an impact on two endogenous constructs: resource advantage and performance related to the competitive advantage of the firm. In the case of "the resource advantage", the most suitable indicators were selected (Barney, 1991; Gulati, 1999; Pfeffer & Salancik, 1978). Intangible resources were taken into account, which can be a source of competitive advantage due to their strategic importance, rarity, difficulty in imitation and substitutability (Barney, 1991). Therefore, the structure adopted in the measurement model includes: knowledge, business organization, management methods, experience, brand, relationships. In the measurement scale, the respondents can be asked to compare their resources with those of their direct competitors. Although such a comparative approach is increasingly being applied in research (Fynes & Voss 2002; Homburg et al., 2004).

The last construct included in the model is "performance" of the firm, as measured by: market share, sales revenues, profit, ROI. As in the case of the "resource advantage" variable, the respondents should be asked to compare their performance with those of their direct competitors in the last financial year, as perceptual indicators are found to be useful (Fynes & Voss, 2002; Homburg et al., 2004).

5. CONCLUSIONS

Although research into inter-organisational networks and into network relationships is well established in the general management literature, it has been adopted in logistics only recently. Therefore, we referred the existing research works and practices of strategic management to the field of logistics, in particular to the logistics service industry. Our study integrates research on inter-organizational networks from strategic management with the logistics.

This study aimed at developing a model of network orientation. We have identified, conceptualized and operationalized five theoretical constructs concerning network orientation (structural network embeddedness, interaction of indirect relations, interdependence of the enterprise and the network, resources sharing, exchange within the network) and explained how competitive advantage of logistics enterprises can be created through networks.

We suggest that firms should develop competences of networking and management in networks. The contribution of our study resides in providing new insights into network relationships in the logistics services industry, helping managers to perform better in networked environments. Making managers aware of the importance of network orientation may contribute to boosting the network's advantage and thus their performance. This is particularly important for smaller companies, which would compete more effectively in foreign markets by joining forces with other players.

The limitation of this study refers to simplified modelling, which reduces the complexity of various interdependencies within networks. In our model we single out relevant components. The relationships between these elements have been presented in the form of hypotheses. We give a clear picture to explain the mechanisms and structure of the network orientation. However, variables are not directly observable. Indicators and measurement scales need to be developed. We encourage further research on the development of the variable measurement reflecting the network orientation.

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