



COLLABORATION AND COMMUNICATION IN A NETWORKED ECONOMY

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ABSTRACT. Background: The networked economy is a result of the increasing specialization and productivity. The blurring of company boundaries enables potential for new competitive advantages. However, along with the growing networked economy, the complexity also increases.

Methods: With their current study the German logistics association sheds a light on the most important trends of the networked and complex economy and the strategies of logistics and supply chain management (SCM) coping with them.

Results and conclusions: This paper focuses on the collaboration of actors in logistics and supply chain management and the communication required for being successful. Furthermore, going beyond the study, the role of collaboration for innovation in logistics and SCM is considered, that has been neglected in literature so far. Finally, the paper concludes with a discussion reflecting the current state of collaboration in the context of its potential.

Key words: collaboration, communication, network, logistics strategies, innovation.

INTRODUCTION: A NETWORKED ECONOMY: BREAK-UP OF FIRM BOUNDARIES

Basically, economies deal with goods and resources satisfying needs [Picot et al., 2012; Picot/Reichwald/Wigand, 2008]. As a precondition goods and resources are typically rare and require the basic mechanisms of division of labor (specialization) and trade or trade-off, respectively. Thus, nowadays individuals are responsible for a small part of the overall tasks in an economy consisting of jobs, departments, firms, sectors and nations, and increase herewith productivity. Obviously, the productivity coming from the division of labor and the trade/trade-off are inter-dependent on all levels of the economy. Shortcomings in these mechanisms are defined as the problems of organization and are caused by a lack of

information. Therefore, on the one side, the so-called coordination problem is based on missing information, and the so-called motivation-problem, on the other side, results from conflicts of interests and information asymmetries. The most important task for overall productivity in an economy is, thus, finding an adequate form of organization that optimizes productivity by reducing the coordination and motivation problems, and aims at fulfilling as much needs as possible.

Concerning logistics systems collaboration (the words "collaboration" and "cooperation" are used synonymously in this article) is of growing importance due to the increasing specialization [Pfohl, 2015; Pfohl, 2010]. Fig.1 shows that both, on the input-, as well as on the output-side of logistics systems, firm boundaries are blurring. On the side of the input the decision of make or buy defines the degree of the individual firm's specialization.

While in the make-case the own specialization and resources are exploited, in the buy-case the specialization of either vertical or horizontal partners is used. Thus, entering a vertical cooperation, a firm uses the complementary specialization of suppliers and, therefore the specialization of upstream value-chain partners. A horizontal cooperation makes use of the specialization of other firms within the same stage of value creation and is set up e.g. in order to level firm-capacities. Regarding the output-side of the logistics system, customer

service is provided. Herein, competition takes place horizontally between firms at the same stage of value creation, as well as vertically, between whole supply chains focusing the final customer. Due to the increasing importance of cooperation along and between supply chains formations are possible where firms acting as partners and competitors simultaneously. This situation combining cooperation and competition at the same time is termed with the synthetic word "co-opetition" [Brandenburger, 1996].

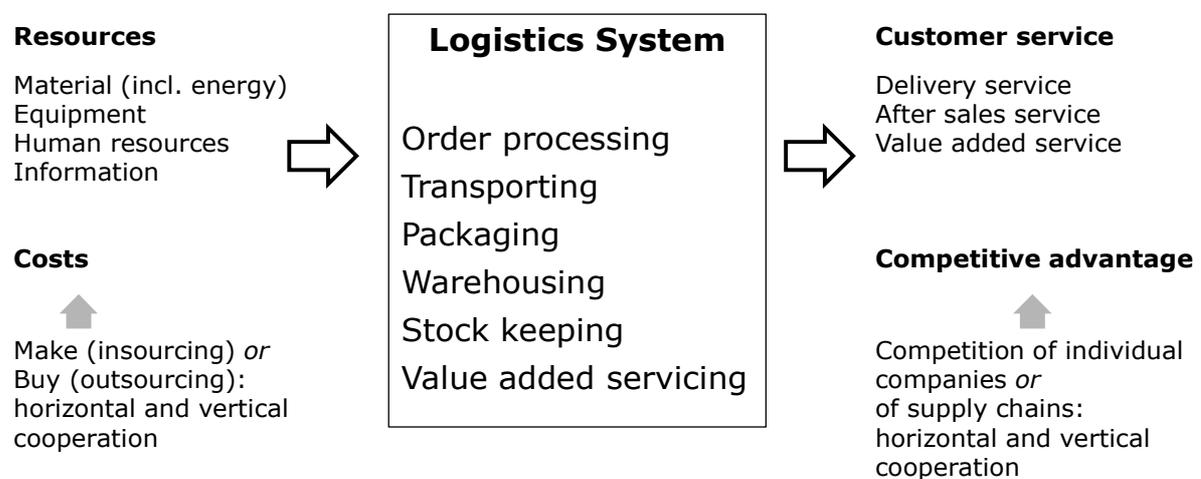


Fig. 1. "Co-opetition" in a networked economy
 Rys. 1. Konkurencja w usieciowionej gospodarce

In the light of the above, the question is raised, which trends can be identified concerning cooperation in the context of logistics and, thus, which strategies are implemented and intended by practitioners. Answering this question firstly, a short introduction in the relational-view [c.f. Dyer/Singh, 1998], explaining competitive advantages through cooperation is given, before the current study of Handfield et al. [2013] is introduced and discussed regarding the management of cooperation in the area of logistics and supply chain management (SCM). The study comprises a comprehensive literature review in the first step and ensures herewith an extensive theoretical foundation. Afterwards experts are interviewed and a broad survey has been set up and analyzed. Based on

this research methodology this article stresses the trends regarding cooperation activities and the role of information and communication technologies used in this context. Furthermore, according to the importance of cooperation for innovation, innovation in logistics and SCM should be considered, having been neglected so far [Pfohl, 2007]. According to Handfield et al. [2013] finding that innovation is one of the most important drivers for collaboration in order to meet increasing customer expectations, this article discusses the role of collaboration for innovation in more detail and gives, finally, an overall conclusion on the importance of collaboration reflecting the current state.

COMPETITIVE ADVANTAGES THROUGH COOPERATION: INTRODUCING THE RELATIONAL VIEW

Explaining the realization of competitive advantages through collaboration in strategic management theoretically, Dyer/Singh [1998] develops the relational view. Coming from a resource-based perspective of strategic management, highlighting tangible and intangible resources a firm is able to exploit, the relational view [c.f. Dyer/Singh, 1998] states four mechanisms for achieving competitive advantages in inter-organizational relationships. Thus, for realizing competitive advantages through cooperation partners have to:

- invest in relation specific assets (e.g. common investments in infrastructure; processes or machinery tailored to partners),
- set up knowledge-sharing routines (e.g. mechanisms for inter-organizational knowledge transfer and patterns for interactions),
- have complementary resources and capabilities (e.g. capabilities that can be combined for offering a new value-creating service, that are available within the specific cooperation solely, and therefore creating incentives for staying within the cooperation) and
- implement effective governance that reduces transaction costs by formal or informal agreements (e.g. creating incentives for cooperation).

These mechanisms make relationships rare and make them difficult to imitate for others. Furthermore, Dyer/Singh [1998] state relation specific aspects functioning as imitation barriers. The inter-organizational asset interconnectedness strengthens the degree of specialization within the relationship and, therefore, the productivity. The partner scarcity refers to the limited number of potential partners that discriminates collaboration late-comers. Furthermore, the resource indivisibility strengthens the relationship because advantages depend on the combination of resources and capabilities and create a path-dependency preventing imitation. And, finally,

the institutional environment enables informal and social complexity (e.g. by cultural characteristics) improving the relationship, and being a barrier for imitation, as well.

The relational view is used in chapter 6 of this article for the interpretation of the current state of cooperation in logistics and supply chain management and shows potential for creating competitive advantage. In the following the current state of cooperation in the field of logistics and supply chain management and implemented and intended strategies are discussed using the study of Handfield et al. [2013]. The study founds on an extensive literature review and broad data collection and analysis, introduced firstly, before being discussed concerning the contents.

STUDY ON TRENDS AND STRATEGIES IN LOGISTICS AND SCM: METHODOLOGY AND SAMPLE CHARACTERISTICS

The German logistics association "Bundesvereinigung Logistik" (BVL) analyzes current trends in logistics regularly, for more than twenty years by now. While the economy is getting more and more internationalized and connected, the study has been aligned and partners from all over the world have been integrated. In the current study "Embracing Global Logistics Complexity to Drive Market Advantage" research partners from the United States, Brazil, Russia, The Netherlands, Belgium and China participated and supported the data collection assuring an international perspective. The overall research methodology of the current study comprises four stages [Handfield et al., 2013].

In the first stage, the literature review and content analysis-stage, more than 200 reports from consultants and research institutes have been analyzed. Key topics regarding trends and strategies have been identified and used for a broader content analysis in more than thousand research articles in German, English and Chinese databases. In doing so the pre-existing list of keywords had been evaluated and adapted.

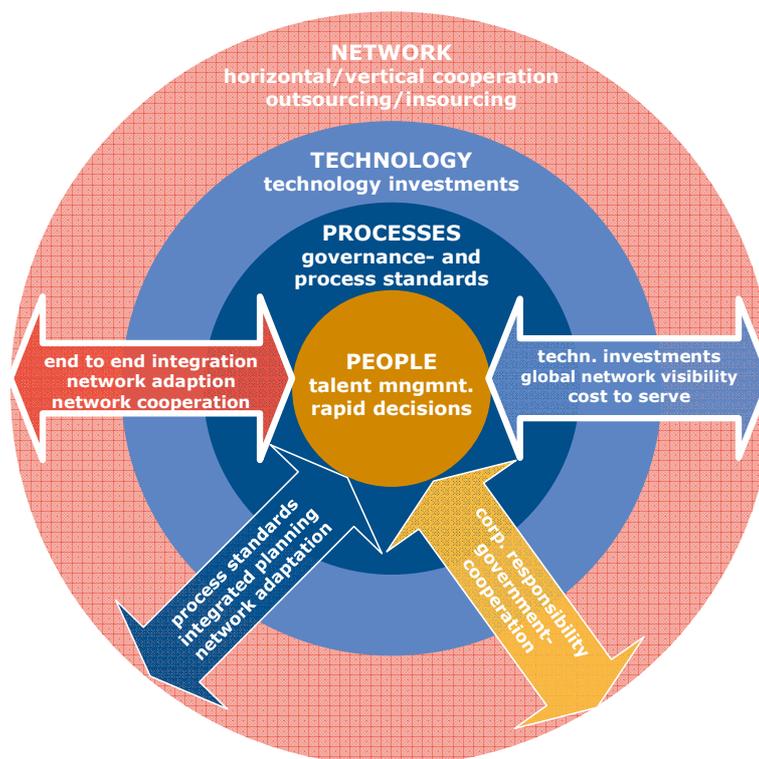
In the second stage, the executive interview-stage, this work has been used preparing structured interviews with 62 logistics and/or supply chain managers from logistics service providers, retail and industry in Germany, the UK, French, the USA, China, Brazil and Russia. The interviews had been documented and coded for extracting the main topics of strategies and trends. These topics were used for developing the final questionnaire.

In the third stage, the survey-stage, the online-questionnaire, available in English, German, Portuguese, Chinese and Russian, had been launched. With the support of the international research partner organizations the questionnaire was spread internationally.

During the final stage, the data analysis and report-stage, 1,757 questionnaires have been analyzed (645 full-answered) for documenting

the main findings. Considering global sales and number of employees, small, middle and large companies are represented in the study. While participants from industry are having the largest proportion (two-thirds), nearly one-third of the participants are logistics service providers and about ten per cent are from retail.

Dealing with the trends like, e.g. increasing customer expectations, networked economies, cost pressure, globalization and a lack of qualified managers and employees the study of Handfield et al. [2013] identified "people", "processes", "technology" and "network" as the four key strategies and integrated them in a model for logistics strategies (see Fig. 2). The networked economy in this model gives a framework for addressing all other logistics strategies. This article first and foremost concentrates on the network and technology strategies.



Source: Handfield et al. [2013] adapted

Fig. 2. A model of logistics strategies
 Rys. 2. Model strategii logistycznych

In the following the study results concerning collaboration activities are discussed using the introduced data-sample considering the key strategies and trends identified.

RESULTS OF THE STUDY: MANAGING COLLABORATION USING INFORMATION AND COMMUNICATION TECHNOLOGIES

First and foremost a main finding of the study from Handfield et al. [2013] is, that the

networked economy is, besides customer expectations, cost pressure, globalization/complexity and the shortfall of talents, one of the main trends of logistics and supply chain management today and in the future (see Fig. 3). Considering the growing importance of the main trends identified, the networked economy shows, compared with the other trends, the highest increase in the next five years. Overall, the respondents rate the networked economy as second important in the future, directly following the customer expectations.

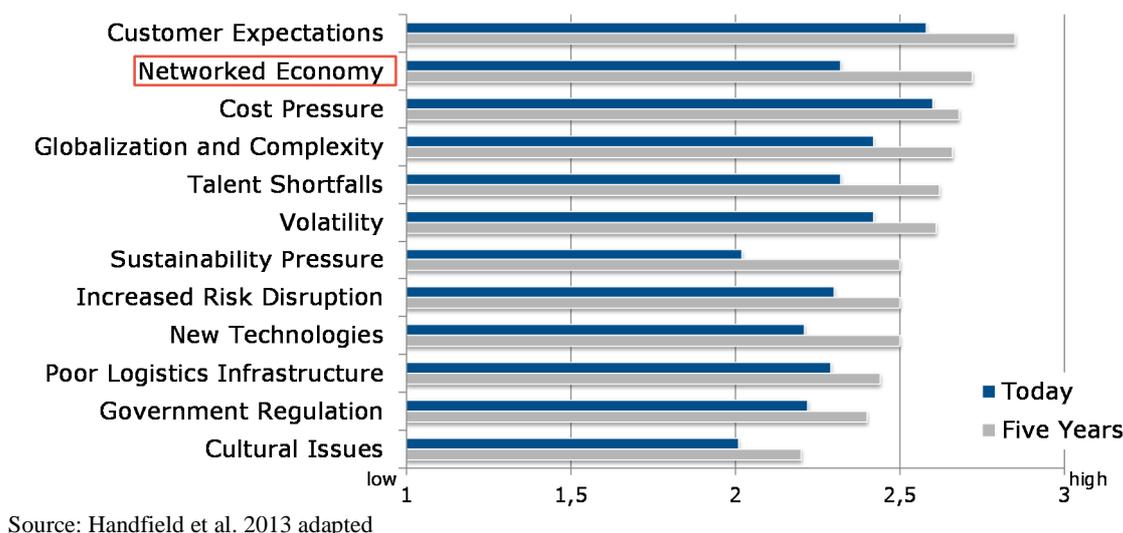
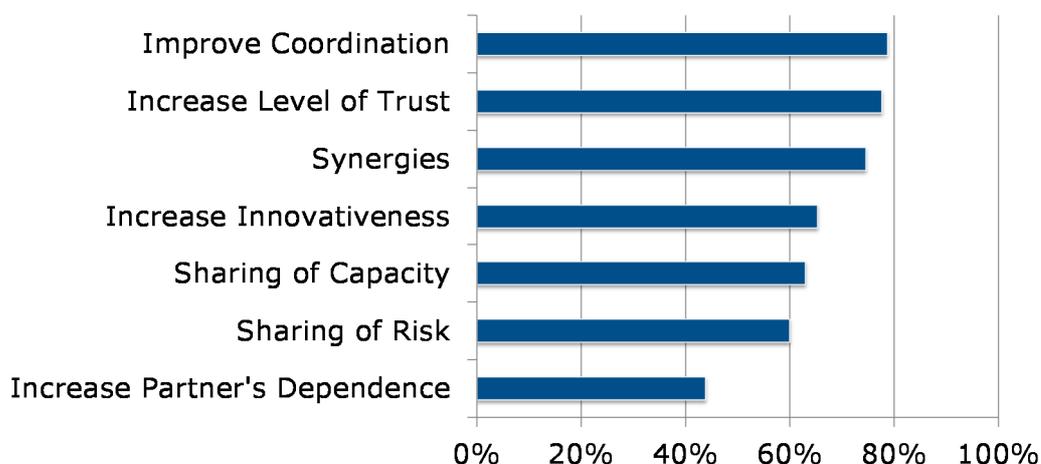


Fig. 3. Importance of logistics trends
 Rys. 3 Istotność trendów logistycznych

Specifically, in the following it will be discussed, what the networked economy means in practical terms and how the current state of implementation can be characterized. Namely, firms tend to build cohesive and integrated sets of network-relationships on identified synergies to create new capabilities and innovative solutions. The most important reasons for collaboration are: improved coordination, increasing trust, synergies and improved innovation (see Fig. 4). For the management of the networked supply chain

there are different approaches integrated depending on the direction of the material flow. Thus, the agreement with the statement "we have power and control the relationship" decreases from the logistics service providers (LSPs), to tier-one suppliers, LSPs' subcontractors, tier-two suppliers, immediate customers, LSPs' customers and indirect customers, finally. Contrarily, the agreement with the statement "we exchange information and cooperate" decreases upstream.



Source: Handfield et al. 2013 adapted

Fig. 4. Percentage of respondents rating reasons for "collaboration" as important
Rys. 4. Udział procentowy respondentów akceptujących daną przyczynę współpracy jako ważną

The study shows that, already today, the firms exchange different kinds of information with their partners. Transportation schedules and demand forecasts are most important and will increase within five years, as well. The exchange of inventory data, production data and data about planned promotions are also expected as important and will also increase in the next five years. The study also shows, picking out the top-performing companies (companies within the uppermost quarter considering reliability, number of complaints and cost savings) that these firms are more willing to exchange R&D-data with a small number of strategic partners because founding on trust.

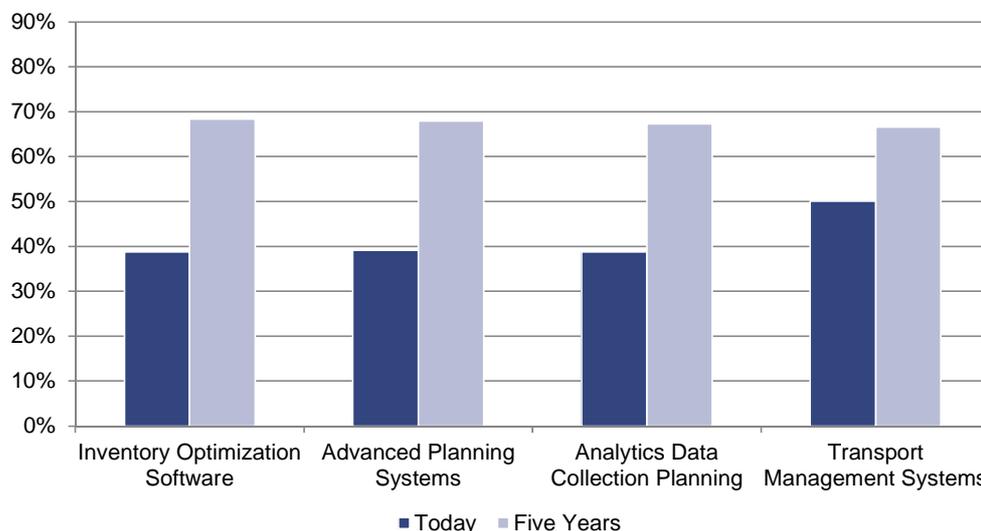
Realizing an end-to-end integration increasing transparency by an improved demand sensing is also shown to be important. An improved demand sensing allows an increased timeframe and thus, the mapping of volatility and the reduction of the forecast error ratio, as well. Risk reduction strategies are, apart from close inter- and intra-organizational coordination and business continuity plans, multiple sourcing and buffer inventory strategies and, also, the reduction of transport distances by local sourcing.

One of the strategies companies pursuing for many years by now is globally outsourcing of activities. However, along with the increasing complexity a growing number of companies are questioning these outsourcing strategies in comparison with near-shoring. Considering the outsourcing of activities, reverse logistics and transportation are most relevant: about 60 per cent of the respondents agree with transportation completely outsourced and approximately the same proportion agrees with partially or completely outsourced reverse logistics. Contrarily respondents disagree with outsourced inventory management and assembly. Thus, organizations are seeking to retain control of these activities. Respondents indicate that most of the outsourcing activities will stay constant in five years.

Another aspect regarded with the study is the growing importance of government collaboration. Respondents state that government collaboration focuses on the development of industry standards, education, infrastructure and trade policy. The importance considering these aspects will even increase in the next five years, following the answers of the respondents.

The study also sheds a light on the current and planned technology investments. Due to the fact, that companies have recognized the importance of real time data regarding events, customer demands and capacities, investments in technologies increase that are able to collect

and analyze data (see Fig. 5). Regarding the networked economy, these technologies will play major roles within logistics and supply chain collaboration. In this context the study also highlights the potential of big data analysis, regard as relevant in the near future.



Source: Handfield et al., 2013

Fig. 5. Technology Investments
 Rys. 5. Inwestycje technologiczne

THE ROLE OF COLLABORATION FOR INNOVATION

As already shown, Handfield et al [2013] point out innovation as one of the most important drivers for innovation. Fig. 6 shows, that the importance of innovation as a logistics objective increases. Accordingly, the modularization of logistics and reduction of logistics costs are not the only buying criteria, and focus is shifting to the development of services that are able to fulfill customer needs and create new ones by innovation [European Logistics Association/Arthur D. Little, 2007]. Therefore, collaboration is gaining importance for innovative logistics and supply chain management strategies.

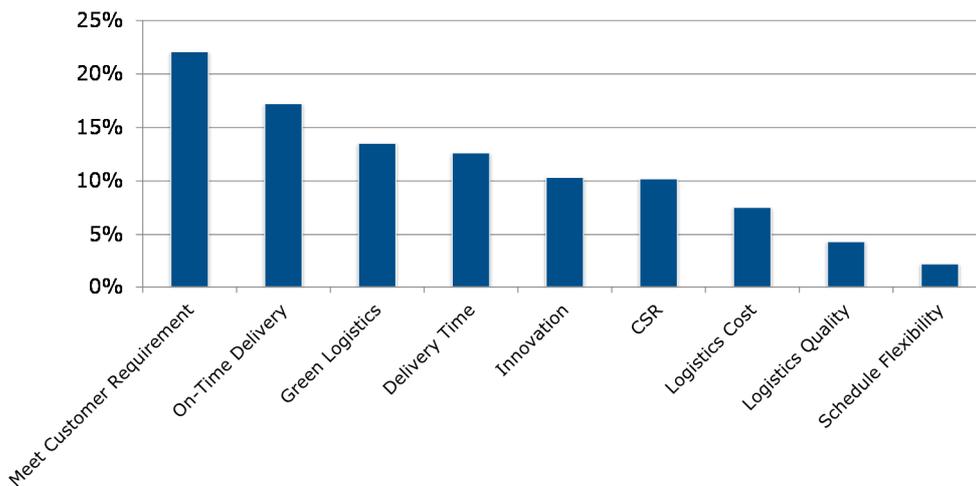
Langley/Capgemini [2013] consider with the Logistics Outsourcing Study 2013 the aspect of supply chain innovation. Herein they show that shippers and 3PLs are relatively

aligned on the top drivers for innovation. Trusting relationships, operational excellence and talented people are rated as most important for driving innovation. Going further, both shippers and 3PLs agree on gainsharing investments as the top funding source for innovation. A perceptual gap is identified asking for the largest source of innovation. Both think of themselves as the main source of innovation, followed by the other party as second important source of innovation, respectively [see Fig.7; see also European Logistics Association/Arthur D. Little, 2007; Pfohl, 2007].

Langley/Capgemini [2013] conclude that fundamental changes in the relationships are necessary for innovation. Furthermore, these relationships are facilitated by leveraging organizational drivers like structure, relationship governance, advanced IT and data analysis. With the 2014 study the authors are able to show that relationships have improved and collaboration has increased

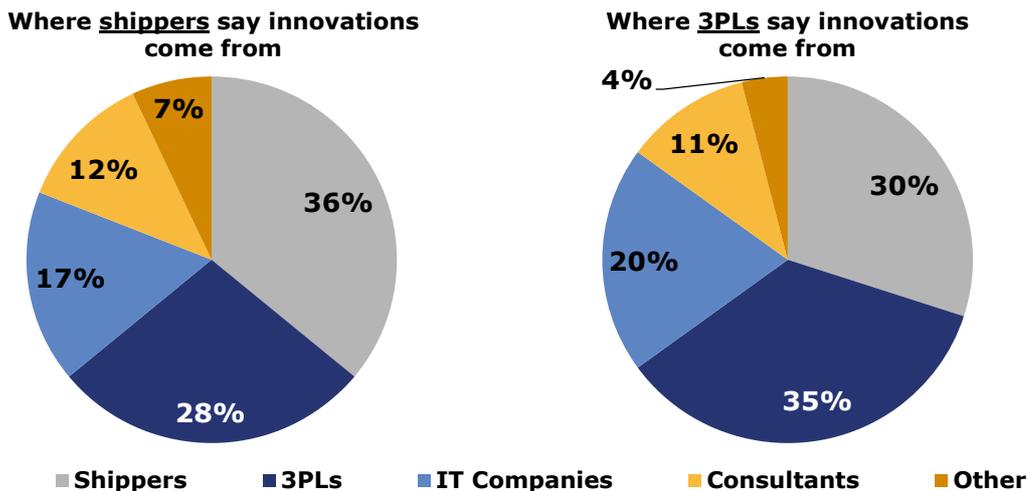
[Langley/Capgemini, 2014]. They find that shippers and shippers and 3PLs both increased interest in collaboration - even with competitors - in order to achieve logistics costs and service improvements. Accordingly, the study of European Logistics Association/Arthur D. Little [2007] shows that top innovators amongst shippers involve their suppliers when looking for innovation ideas

(see Fig. 8). Furthermore, this study also shows that top innovators at logistics service providers pursue innovation in cooperation with their shippers to get good results. Shippers estimated that EBIT margins could increase by 4,4% if innovation management is optimized. Top innovators amongst the logistics service providers even estimated an increase of 8,5%.



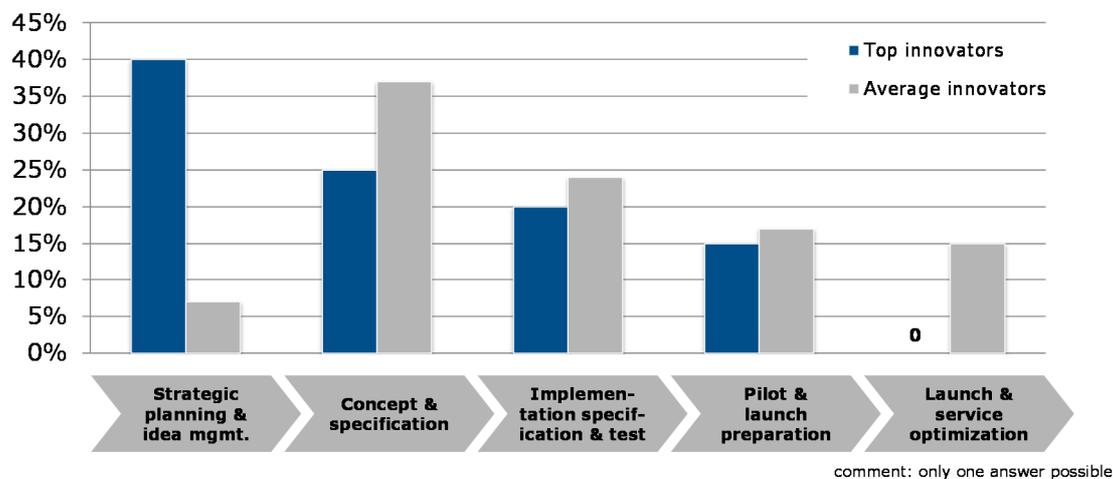
Source: Handfield et al., 2013

Fig. 6. Percentage of logistics objectives ranked number one
 Rys. 6. Udział procentowy celów logistycznych uznawanych za najważniejsze



Source: Langley/Capgemini 2013

Fig. 7. Perceptual gap: largest source for innovation
 Rys. 7. Różnice w odbiorze źródła innowacji



Source: European Logistics Association/Arthur D. Little, 2007

Fig. 8. Start of Involvement of Logistics Service Providers in the Innovation Process of Shippers
 Rys. 8. Fazy włączenia usługodawców logistycznych w innowacyjny proces nadawców

DISCUSSION

The study of Handfield et al. [2013] shows, that companies have already recognized the increasing importance of collaboration. In the following the results of the study considering the mechanisms for creating competitive advantages (Dyer/Singh, 1998) are discussed in order to determine the potential already exploited by companies, today.

First, the study highlights that firms tend to build cohesive and integrated relationships focusing on synergies and improved supply chain coordination. Thus, firms are beginning to leverage complementary resources and capabilities and therefore, one of the mechanisms for competitive advantages. Second, another point that has been shown with the study is the governance of collaboration. Dyer/Singh [1998] claim for an effective governance of the collaboration. Even if the effectiveness is not evaluated with the analysis of the current state, it can be seen that there is a clear direction of the power to control the collaboration. Probably further research has to show which directions or form of power is able to realize effective governance in terms of the relational view. Third, the

increasing willingness to exchange information can be seen as a precondition for the development of knowledge sharing routines aiming at exchanging, combining and further developing the knowledge of partners. Here can also be, fourth, found approaches for relation specific assets, when looking at the IT-infrastructure. To sum up, the study shows linkages to the four mechanisms for value creation stated by Dyer/Singh [1998] with the relational view. For realizing competitive advantages through collaboration in a connected economy is important to organize these mechanisms specifically. Thus, for sustainable competitive advantages companies should consider the barriers for imitation and make the relationship mechanisms difficult to imitate for others. In doing so, it can be assumed, that competitive advantages can be realized and protected both on a firm level and on a supply chain level, as well.

Furthermore, this article shows the importance of collaboration for innovation. Due to the fact, that besides cost reduction and modularization, the development of new services regarding customer's needs and creating new ones is gaining importance, collaboration in logistics and SCM for innovation reasons increases. It is shown that top-performers integrate their partners at early

stages of innovation processes and are therefore able to develop and realize mechanisms of relational advantages.

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WSPÓŁPRACA I KOMUNIKACJA W USIECIOWIONEJ GOSPODARCE

STRESZCZENIE. Wstęp: Usieciowiona gospodarka jest wynikiem wzrastającej specjalizacji oraz produktywności. Zacieranie się granic przedsiębiorstw umożliwia uzyskiwanie nowych form przewagi konkurencyjnej. Jednak, wraz ze wzrostem usieciowanej gospodarki, wzrasta również jej złożoność.

Metody: Prezentowana praca przybliży najważniejsze trendy usieciowanej i kompleksowej gospodarki, jak również odpowiadające na nie strategie logistyki i zarządzania łańcuchami dostaw.

Wyniki i wnioski: Praca skupia się na współpracy aktorów w obrębie zarządzania logistyką i łańcuchem dostaw oraz komunikacją niezbędną do osiągnięcia sukcesu. Wychodząc dalej, została omówiona rola współpracy w zakresie innowacji w logistyce oraz zarządzaniu łańcuchem dostaw, która - jak dotąd - jest stosunkowo słabo opisana w literaturze fachowej. Zaprezentowano również wnioski wraz z dyskusją na temat obecnego stanu współpracy w kontekście jej potencjalnych możliwości.

Słowa kluczowe: współpraca, komunikacja, strategie logistyczne, innowacja

KOOPERATION UND KOMMUNIKATION IN EINER VERNETZTEN WIRTSCHAFT

ZUSAMMENFASSUNG. Einleitung: Die vernetzte Wirtschaft ist ein Ergebnis zunehmender Spezialisierung und Produktivität. Das Verwischen von Unternehmensgrenzen ermöglicht dabei Potenzial zur Erzielung von Wettbewerbsvorteilen. Allerdings geht mit der zunehmenden Verflechtung der Wirtschaft auch eine Zunahme der Komplexität einher.

Methoden: Mit ihrer aktuellen Studie betrachtet die Bundesvereinigung Logistik die wichtigsten Trends der vernetzten und komplexen Wirtschaft und die Strategien im Bereich der Logistik und des Supply Chain Managements (SCM), mit diesen Trends umzugehen.

Ergebnisse und Fazit: Der vorliegende Beitrag fokussiert die Kooperation von Akteuren in der Logistik und im SCM und die für den Erfolg dringend notwendige Kommunikation. Weiterhin geht der Beitrag über diese Studie hinaus und zeigt die Rolle der Zusammenarbeit für Innovationen in der Logistik und im SCM auf, einem in der Literatur bisher vernachlässigten Bereich. In einer abschließenden Diskussion wird der aktuelle Stand der überbetrieblichen Zusammenarbeit im Zusammenhang mit dessen Potenzial reflektiert.

Codewörter: Kooperation, Kommunikation, Logistik-Strategien, Innovation

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