TURUN KAUPPAKORKEAKOULU
Turku School of Economics

*Harri Lorentz*

# Finnish industrial companies' supply network cooperation and performance in Russia

Electronic Publications of Pan-European Institute 5/2007

ISSN 1795-5076

# Finnish industrial companies' supply network cooperation and performance in Russia

*Harri Lorentz*

**5/2007**
**Electronic Publications of**
**Pan-European Institute**

**http://www.tse.fi/pei/pub**

The author gratefully acknowledges financial support from the Foundation for Economic Education (Liikesivistysrahasto).

# Contents

## 1 Introduction

The international dimension of supply chain management is addressed in most studies on global level, and with a focus on sourcing activities from low cost countries. With the emergence of new markets after the transition of Eastern European countries from command economy to market economy and the rapid economic growth of some Asian and Latin American countries, the customer service and market orientation in international supply chains has become vitally important. Key consideration in these emerging market serving supply chains are the landed costs. How much does it actually cost to serve a market, where risks, institutional void, low level of infrastructure and lack of IT diffusion represent themselves as constraints for management of supply chains for increased visibility?

Russia is the key trading partner of Finland and a very prospective emerging market for many Finnish industries. Trade and investments have been on the rise during the last years, while the market is perceived as challenging in terms of operations management. In this study we set out to investigate the current level of cooperative activities in the Finnish-Russian supply chains, specifically in the cross-border export context, with some considerations on production subsidiary supply chains in Russia.

The common remedy for supply chains' poor functionality is the collaborative planning and measures rigged towards increased visibility. Strategic partnerships are promoted as the best practice in sourcing, and key account management in the demand side. It is interesting to know whether Finnish firms have actually managed to initiate supply network cooperation in operations planning and management (RQ1) and what is the impact of these activities on performance (RQ2). These two research questions are targeted in terms of this study. It is a common complaint that the Russian business culture prevents sharing of information and strategic collaboration with cost and benefit sharing. However, it would seem possible fro Finnish firms to build on common ground and manage supply network relationships for improved performance. Whether the lack of market knowledge and presence due to mere export operations prevent this is a good question indeed, and an exploration that this study only begins to initiate.

The report is structured as follows. We first establish the theoretical foundations of the study by reviewing the literature on network positioning and supply chain/network integration and performance. We then provide a review of recent developments in the Finnish-Russian economic relations, a vital consideration in understanding the supply network in the same context. Further, we proceed to methodological considerations, and provide finally the analysis of survey data with conclusions.

## 2 Theoretical foundations

The theoretical foundations of this report are based on the domain of supply chain management (SCM) in an international setting (Narasimhan & Mahapatra 2004), as well as the one of international business (IB) (Rugman & Brewer 2001). The multinational enterprises (MNE) are constantly changing their location and ownership strategies to better fit the changing characteristics of environments and markets (Buckley & Ghauri 2004). Optimum locations are sought after for each economic activity in the global factory that spans international borders and continents. The geographic as well as geopolitical issues have an effect on the MNE strategy, especially in the design of the global supply chain that provides end users with products and services, and in a varying degree feeds back information.

Thus there is a great need to understand the management of international supply chains as a whole and in specific national settings (Braithwaite & Christopher 1991; Kerr & Colborn 2006). Logistics and the SCM are in fact emerging as the critical success factors for companies operating in the international arena, as increasing complexity rises from wider range of products, shorter product life cycles, market growth, and the number of supply/marketing channels. The rate of change (turbulence) and the present operating conditions in EMEs certainly increases the challenges in supply chain engineering, and requires local attendance for detail in operations and service level maintenance. In the following review of literature, the theories of supply chain integration, uncertainty and performance are reviewed.

### *2.1 Supply network integration and development process*

Supply chain management (e.g. Houlihan 1985; Harland 1996; Lambert & Cooper 2000) is undergoing a process of identity development as is evident from the increasing demand for theoretically based conceptual development in contrast to the past focus on empirically based descriptive research (Croom et al. 2000). Burghes et al. (2006) claim the characteristics of SCM research to entail multidisciplinary approach, lack of consensus in terms of definitions, and a focus predominantly on empirical survey and

case methods with positivist paradigmatic stance, and for example rigorous methodological discussion was detected in the discipline related case study research (Hilmola et al. 2005). While this picture may look bleak, currently the phenomena around the discipline demonstrate increasing coherence, quality and impact, explicit discipline theory, and maturing application of existing theory; thus signs for an emerging discipline are becoming visible (Harland et al. 2006; Cousins et al. 2006). While consensus on SCM definition seems to be lacking (Burghess et al. 2006), we take the view of the Council of Supply Chain Management Professionals (CSCMP), in which the role of interfirm relationships and their coordination (activity links and resource ties) is at the forefront.

> *The planning and management of all activities involved in sourcing and procurement, conversion, and all Logistics Management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third-party service providers, and customers. In essence, Supply Chain Management integrates supply and demand management within and across companies.*

Thus the uncertainties in economic exchange relations become relevant, especially when transaction specific investments are made (Williamson 1979); a typical situation in supply chain partnership development (Lambert et al. 1996), and operations integration. Integration has a central role in SCM literature (Mouritsen et al. 2003), starting with for example Stevens' (1989) model of gradualist integration increase. A number of researchers have established the positive relationship of integration and performance, for example Vickery et al. (2003) found supply chain integration to increase customer service levels directly, while indirect positive effects were found in relation to financial performance. Cousins and Menguc (2005) established the favourable effect of socialization to the business relationships and enhancement of supply chain integration strategy. Rosenzweig et al. (2003) provide empirical evidence that supply chain integration in the consumer goods sector leads directly to improved business performance. Frohlich and Westbrook (2001) define the arcs of integration and that the widest approach (supply and demand side, ultimate supply chain) leads to performance improvement.

Empirical evidence on the state of integration has been presented by for example Bagchi and Skjoett-Larsen (2005), and their framework will be utilised in this study as indicated in furyher sections. Power (2005) provides a literature review on supply chain integration and implementation. Implementation is seen to require significant intra and interorganisational change, as process redesign initiatives are usually required. The role of information technology (IT) in SCM related integration process is vital, as it is largely facilitated by high utilization rate of novel technologies, such as IT infrastructure enabling electronic data interchange (EDI), enterprise resource planning (ERP) software, and the Internet (Boubekri 2001; Williamson et al. 2004). Well-managed supply chains essentially require the application of information technologies both internally and across the supply chain (Forman & Lippert 2005).

In attempting to introduce coherence to the emerging field of research, Giannakis and Croom (2004) introduced the “3S” –framework, which directs scholars to three areas in current SCM research, namely the synthesis of business network, inter-actor synergy in the networks, and the synchronization of operational processes. Our current research topic may be positioned into the synthesis area with the level of analysis on networks. As was reasoned earlier, the dynamic network positioning process in terms of supply chain management is relevant indeed (Mills et al. 2004), and the aim of this positioning process is to achieve coordination and collaboration facilitating operations integration across companies in the supply chain or network.

The specific issue of developing network positioning frameworks from the SCM perspective is addressed by Harland, Zheng, Johnsen and Lamming (2004). We see their conceptual model for researching the creation and operation of supply networks as a useful foundation for this research also. Based on cross-disciplinary literature review and a body of empirical data, the model identifies nine networking activities in the creation and operation process of the supply network, namely partner selection (in creation only), resource integration, information processing, knowledge capture, social coordination, risk and benefit sharing, decision-making, conflict resolution, and motivating. The activities are affected by constraints and enablers in the network, and fed by inputs, which by the means of networking activities and the transformation process itself are turned into outputs.

In this report we are particularly interested about the cooperative activities and forms that the Finnish industrial firms use in their Russian business networks. As we also attempt to investigate these activities' effects on supply chain or network performance, a few remarks on the latter subject is relevant.

### *2.2 Uncertainty in supply networks*

Most of the literature on supply chain uncertainty acknowledges Davis' (1993) influence on the subject with sources of uncertainty in the supply chain defined as supplier performance, manufacturing process, and customer demand. Wilding (1998) describes the dynamic behaviours in supply chains, of which an example is the bullwhip amplification effect (Forrester 1961; Lee et al. 1997), which underlines the role of forecasting customer demand in uncertainty generation (Prater et al. 2001). Geary et al. (2002) add control uncertainty to the earlier identified supply, demand, and own process uncertainties, emphasising the role of information flow in transforming customer orders to production targets and further into supplier raw-material requests. The complex material flow is argued to be the leading indicator of supply chain uncertainty among other symptoms by Childerhouse and Towill (2004), and applying certain rules for the simplification of the flow (for example: eliminate all uncertainties in all processes), holds key to the integration of the supply chain (Childerhouse & Towill 2003), and the reduction of safety stocks in incumbent companies (Christopher 1998).

The role of the environment and the related uncertainty is considered in number of studies, for example Bhatnagar and Sohal (2005) consider environmental factors as separate from supply chain uncertainty in relation with facility location decisions, while Prater et al. (2001) consider vast geographic expanses, border crossings, and varying polical/regulatory contexts in international supply chains as sources of uncertainty. Van der Vorst and Beulens (2003) consider characteristic features of the chain and exogenous phenomena as sources of imbalance in the system, and provide the most clear-cut definition of supply chain uncertainty:

*Supply chain uncertainty refers to decision making situations in the supply chain in which the decision maker does not know definitely what to decide as he is indistinct about the objectives; lacks information about (or understanding of) the supply chain or its environment; lacks information processing capacities; is unable to predict accurately the possible impact of control actions on supply chain behavior; or, lacks effective control actions (noncontrollability).*

### *2.3 Supply network performance*

Supply chain management implementation has important implications for performance measurement, as control on operations is no longer based on ownership or hierarchy, but on cooperation and operational integration across companies in the supply chain. Traditionally sought after local (functions, companies) optimization, should be replaced by systems wide optimization, with a performance measurement system that supports this goal.

Supply chain performance measures include for example order lead time, inventory levels, time to market, quality, customer service, and flexibility (Bhatnagar & Sohal, 2005; Gunasekaran, 2001). Bagchi and Skojett-Larsen (2005), measured supply chain performance in eight dimensions, namely order fulfilment lead time, order fill rate, production flexibility, total logistics costs, return processing costs, inventory days of supply/inventory turnover rate, on-time delivery, and rate of returns. In more general terms, Beamon (1999), provides a framework for supply chain performance measurements along three dimensions, namely resource, output and responsiveness related performance measure categories.

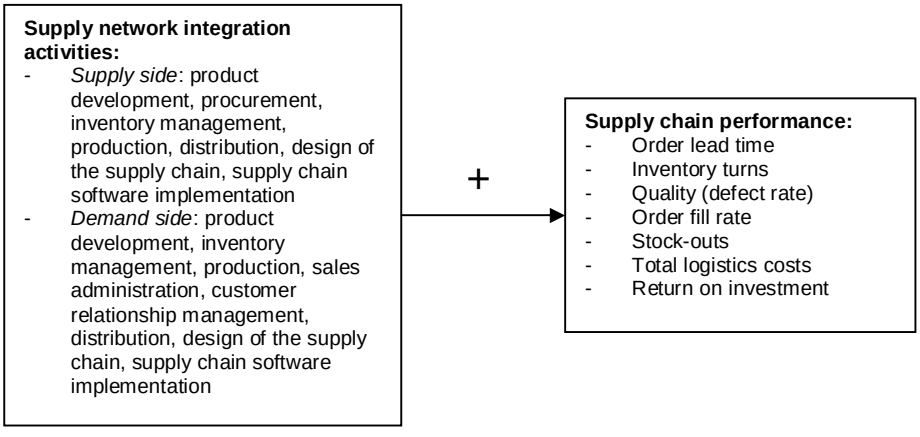
### *2.4 Hypothesis of the study*

Foreign companies entering new markets are forced to plan their supply chain operations and the facilitating supplier-customer relationships in the given market specific framework either through adaptation, or active development and implementation of the globally preferred distribution channel structures, i.e. through standardization

(Canning & Hanmer-Lloyd, 2002; Levitt, 1983; Ryans et al., 2003). Company's distribution structure plays a crucial role in the experienced demand amplification and uncertainty. As evolutionary processes produce distribution structures that allow (1) more direct distribution channels (echelon elimination) and (2) the formation of partnerships (Lambert et al. 1996) for information transparency, control systems implementation and time compression oriented process redesign, then SCM implementation projects take-off more broadly in the emerging market industries, with the condition of sufficient IT diffusion. In many cases operational compromises have to be made that do not facilitate the reduction of demand variability and the experienced bullwhip effect.

Based on the previously reviewed literature, we examine the simple positive relationship of supply network cooperation and partnering (integration) activities to supply network performance in a cross-border context with supply chains extending from Finnish exporting firms to Russian industrial buyers (Figure 1). Operationalisations on these theoretical constructs are also provided in the depiction of hypothesized integration-performance relationship. Some considerations will also be given to Finnish production subsidiaries in Russia. This avenue of inquiry is however limited due to the insufficient cases in data as will be explained later in the methodology section.

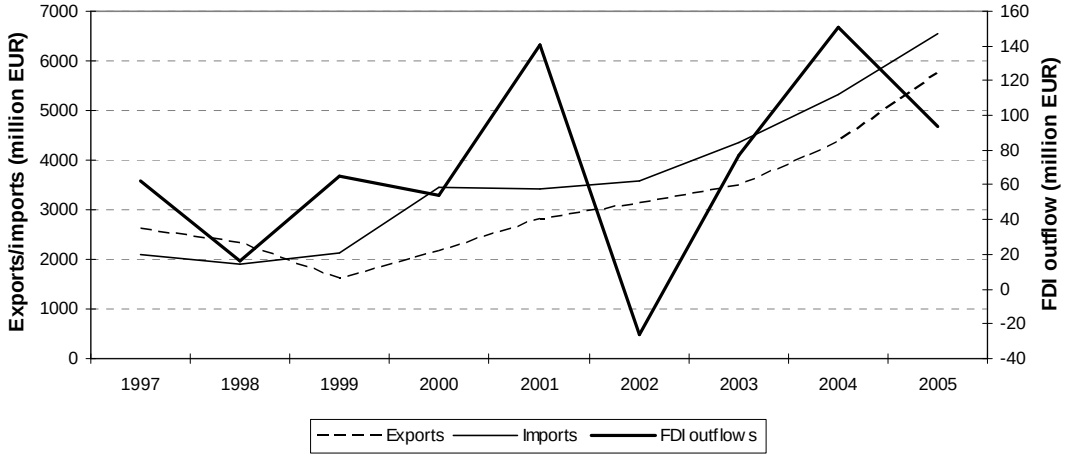
**Figure 1 Hypothesized relationships of the study (adapted from Bagchi & Skjoett-Larsen, 2005)**



## 3 Developments in Finnish-Russian economic relations

The Finnish-Russian trade has been for long on a strong and sustained growth trend. The main source of growth in exports has been from mobile phones and cars, but recently also industrial machinery have provided a source of growth on the export volumes. Imports are dominated by oil and other energy products. The value of exports to Russia was some 5.7 billion EUR in 2005 (see Figure 2 for time series in economic relations).

**Figure 2 Finnish-Russian economic relations: export, import, FDI outflow to Russia (Finnish customs, Bank of Finland**




Russia was the most important export target of Finnish companies with 11% share of the total. Imports were valued for 6.5 billion EUR, making 14% of the total and bringing Russia to the second most important import source for Finland. Table 1 provides a snapshot of Finnish exports to Russia by main industries and product groups.

**Table 1 Finnish exports to Russia in million EUR (Finnish Customs)**

| SITC-product groups | 2005 | %-share | y-o-y %-change |
|---|---|---|---|
| Food products | 175 | 3.1 | 7 |
| Oil products | 116 | 2 | 32 |
| Chemicals and chemical products | 697 | 12.1 | 20 |
| Paper and cardboard | 333 | 5.8 | 11 |
| Metals and metal products | 264 | 4.6 | 10 |
| Heavy machinery | 672 | 11.7 | 45 |
| Electrical equipment and appliances | 2325 | 40.5 | 49 |
| Transportation equipment | 543 | 9.4 | 57 |
| Printing products | 83 | 1.4 | -16 |
| Other | 535 | 9.3 | 2 |
| TOTAL | 5743 | 100 | 32 |

In terms of foreign direct investments from Finland to Russia, the development has not been as smooth as in the case of trade, mainly due to the greater risk involved (see Figure 2). However, with a simple eyeball analysis, one may perceive a positive trend in investment flows to Russia although the development seems to be very cyclical. The past investment flows accumulated as stock by industry can be seen in Table 2, with 2005 data. It seems that the forest industry with 38% (421 million) share of the total capital investments is by far the largest Finnish investor into Russian market. Interestingly the food processing industry comes second, with 17% share and 186 million EUR total. Metal processing and recycling comes third with 120 million EUR worth of investments.

**Table 2 Finnish FDI-stock in Russia in million EUR (Finnish Ministry of Trade and Industry)**

| | 2005 | %-share |
|---|---|---|
| Food processing | 186 | 17 % |
| Forestry, publishing and printing | 421 | 38 % |
| Manufacturing of chemicals and chemical products | 43 | 4 % |
| Manufacturing of rubber and plastic products | 88 | 8 % |
| Manufacturing of non-metal mineral products | 106 | 9 % |
| Metal processing and recycling | 120 | 11 % |
| Manufacturing of machinery and appliances | 78 | 7 % |
| Manufacturing of electronic and electrical products | 77 | 7 % |
| TOTAL | 1119 | 100 % |

The above considerations are important in terms of the following empirical data analysis, as we attempt to establish the representative degree of our sample of Finnish companies

involved in Russian supply network operations. We will refer to the above Tables accordingly in the following section on methodology.

## 4 Methodology

We set out to investigate the supply network cooperation and integration activities of Finnish industrial firms in Russia by the means of a survey method, targeting a list of manufacturing companies in the Finpro's exporter database. The final edited list contained 657 company representatives' e-mail addresses, which we targeted with an e-mail invitation to take part in a web-based survey on the Webropol platform (www.webropol.com). Some 73 of the e-mail addresses proved incorrect or outdated, bringing the sample size down to 584 companies. With a total response time of one month and two reminder invitations, we managed to receive 98 answers in total, with usable amount of correctly filled out questionnaires being 93, implying a response rate of 15.9%. This is a fairly reasonable rate in the age of many low cost surveys clogging up spam riddled inboxes of managers.

In order to evaluate the representativeness of the sample, the distribution of respondent companies along industries is presented in Table 3.

**Table 3 Industrial distribution of respondents along the Finnish industrial classification**

| | *n* | *%* |
|---|---|---|
| Food products, beverages and tobacco | 5 | 5,4 |
| Textiles and textile products | 5 | 5,4 |
| Wood and wood products | 6 | 6,5 |
| Pulp, paper and paper products; printing | 4 | 4,3 |
| Chemicals, chemical products and man-made fibres | 8 | 8,6 |
| Rubber and plastic products | 14 | 15,1 |
| Other non-metallic mineral products | 2 | 2,2 |
| Basic metals and fabricated metal products | 13 | 14,0 |
| Machinery and equipment | 20 | 21,5 |
| Electrical and optical equipment | 7 | 7,5 |
| Transport equipment | 4 | 4,3 |
| Other | 5 | 5,4 |
| **Total** | **93** | **100,0** |

The main branches of the Finnish economy are well represented, with good participation from the strong export sectors and FDI contributors in the Finnish-Russian economic

relations (see Tables 1 and 2). For example the food industry, forestry and paper, chemicals, metal products, and machinery are all well represented. We may cautiously conclude on the representativeness of the sample as adequate. However cross-industry comparison would hardly be adequate due to the low number of respondents per industry. Other descriptives of the respondents is presented in Tables 4 and 5, from which we may observe the dominance of exporters among the respondents, and the somewhat balanced shares of different manufacturing strategies, while make-to-order companies dominate. The latter is most probably due to the dominance of respondents from industrial goods manufacturing sectors.

**Table 4 Distribution of respondents in terms of operations mode**

| | *n* | *%* |
|---|---|---|
| Imports | 1 | 1,1 |
| Exports | 81 | 87,1 |
| Production (no sourcing, no sales) | 2 | 2,2 |
| Production (no sourcing, sales) | 4 | 4,3 |
| Production (sourcing, sales) | 5 | 5,4 |
| **Total** | **93** | **100,0** |

**Table 5 Distribution of respondents in terms of manufacturing / supply chain strategy**

| | | *n* | *%* |
|---|---|---|---|
| Valid | make-to-stock | 22 | 23,9 |
| | make-to-order | 47 | 51,1 |
| | engineer-to-order | 23 | 25,0 |
| | Total | 92 | 100,0 |
| Missing | System | 1 | |
| Total | | 93 | |

Due to the low response rate in some of the firm categories (e.g. companies with subsidiaries in Russia), and nonresponse in some items, the analysis is somewhat limited in comparison to the original plan. Using the software package SPSS, the statistical method of multiple regression analysis is applied only to the industrial firms with export supply chains to Russia, with an attempt to explain supply network performance variables (dependent) through supply chain integration variables (independent). We mainly utilized scales from a previous study of Bagchi and Skjoett-

Larsen (2005), in order to allow a degree of comparison. The 5-point Likert-scale measurements in terms of supply chain integration can be observed in Figure 3.

**Figure 3 Scales for supply chain integration measurement (Bagchi & Skjoett-Larsen, 2005)**

**16) Please estimate the relative degree of involvement of KEY SUPPLIERS with your Russian manufacturing unit in deciding upon the following issues:**

| | Without consulting | Some consulting | Seek advice | Close involvement | Joint decisions |
|---|---|---|---|---|---|
| Product development | ○ | ○ | ○ | ○ | ○ |
| Procurement | ○ | ○ | ○ | ○ | ○ |
| Inventory management | ○ | ○ | ○ | ○ | ○ |
| Production | ○ | ○ | ○ | ○ | ○ |
| Distribution | ○ | ○ | ○ | ○ | ○ |
| Design of the supply chain | ○ | ○ | ○ | ○ | ○ |
| Supply chain software implementation | ○ | ○ | ○ | ○ | ○ |

**17) Please estimate the relative degree of involvement of KEY CUSTOMERS/ACCOUNTS with your Russian manufacturing unit in deciding upon the following issues:**

| | Without consulting | Some consulting | Seek advice | Close involvement | Joint decision |
|---|---|---|---|---|---|
| Product development | ○ | ○ | ○ | ○ | ○ |
| Inventory management | ○ | ○ | ○ | ○ | ○ |
| Production | ○ | ○ | ○ | ○ | ○ |
| Sales administration | ○ | ○ | ○ | ○ | ○ |
| Customer relationship management | ○ | ○ | ○ | ○ | ○ |
| Distribution | ○ | ○ | ○ | ○ | ○ |
| Design of the supply chain | ○ | ○ | ○ | ○ | ○ |
| Supply chain software implementation | ○ | ○ | ○ | ○ | ○ |

The supply network performance measurement scales may be observed in Figure 4.

**Figure 4 Scales for supply chain performance measurement (Bagchi & Skjoett-Larsen, 2005)**

Supply chain performance

**23) Please estimate the changes in your Russian manufacturing unit's supply chain performance due to the collaboration with your key suppliers and customers:**

| | Significantly deteriorated | Minor negative effect | No change | Minor positive effect | Significantly improved |
|---|---|---|---|---|---|
| Order lead time | ○ | ○ | ○ | ○ | ○ |
| Inventory turns | ○ | ○ | ○ | ○ | ○ |
| Quality (defect rate) | ○ | ○ | ○ | ○ | ○ |
| Order fill rate | ○ | ○ | ○ | ○ | ○ |
| Stock outs | ○ | ○ | ○ | ○ | ○ |
| Total logistics costs | ○ | ○ | ○ | ○ | ○ |
| Return on investment | ○ | ○ | ○ | ○ | ○ |

Additionally to these key variables, other variables on mainly supply network structure were collected. These included for example the length and width of the supply chains and duration of customer relationships. Additionally key variables concerning supply chain uncertainty were collected. As applicable the analysis of the data presents results on the regression analysis as well as network structure and uncertainty.

# 5 Supply network cooperation and structure of Finnish industrial firms

This section describes the results derived from the empirical survey data, with separate considerations in the cases of exporting to Russia Finnish industrial firms and ones with production subsidiaries in Russia. Statistical comparison is not relevant between these two groups due to the low number of respondents in the latter case (n=11), with several missing values. In order to understand better the supply chain related challenges and strategies of the production subsidiaries in Russia, detailed case studies should be conducted. The production subsidiary respondents were incumbents in the following industries: electrical equipment, rubber and plastic products, machinery and equipment, food products, chemicals and textiles. The structure of this section is as follows. First, the network structures of the respondents are investigated. Second, we analyse the supply chain uncertainty experienced by the respondents. Finally, we look into the integration/cooperation activities of the firms, and the supply chain performance. In the case of the exporting firms, multiple regression analysis method is utilised in the attempt to unravel the relationships between integration and performance variables as hypothesized earlier.

## *5.1 Supply network structure*

We start our analysis from the production subsidiaries (Table 6). With mean sales of some 30.9 million EUR, these production units are on the average firmly embedded into the local business networks, 72% of production inputs are sourced locally, and 67% of output is sold locally inside Russia. Thus these respondents supply chains are local by definition, implying a multidomestic strategy of the parent company. Number of direct suppliers is 14 on the average, while the same number in customer side is 134. Managing distribution and sales may thus be expected to be heavy in terms administration. However, on the average the length of the demand chain (production to end user) seems to be shorter that in the sourcing side. The short demand chain again possibly reflects the industrial goods producers' dominance in our sample.

**Table 6 Network structure of production subsidiary respondents**

| | | *Sales (million EUR)* | *Share of local sourcing* | *Share of local sales* | *No. of direct suppliers* | *No. of direct customers* | *Demand chain length* | *Supply chain length* |
|---|---|---|---|---|---|---|---|---|
| N | Valid | 8 | 5 | 7 | 5 | 9 | 5 | 8 |
| | Missing | 2 | 5 | 3 | 5 | 1 | 5 | 2 |
| Percentiles | Mean | 30,9 | 72 | 67 | 14 | 134 | 0,7 | 1,4 |
| | Median | 10 | 80 | 70 | 12 | 40 | 0,5 | 1 |
| | 25 | 7 | 47 | 35 | 3,5 | 15 | 0,25 | 0,5 |
| | 50 | 10 | 80 | 70 | 12 | 40 | 0,5 | 1 |
| | 75 | 60 | 92 | 90 | 25 | 250 | 1,25 | 2 |

In the case of the exporters, we may perceive the great difference in the value of Russian operations related sales, which is only 10% of the production subsidiary operations (Table 7). The number of direct customers is also lower: 21 on the average. Demand chains are longer (with more distribution middle-men), which is most probably due to the lack of knowledge and experience from the market, affecting the ability to form direct end-user customer relationships. As the volumes are lower in this group of respondents, the expansion of operations in terms of FDI may also not be justifiable.

**Table 7 Network structure of exporting respondents**

| | | *Sales (million EUR)* | *No. of direct customers* | *Demand chain length* |
|---|---|---|---|---|
| N | Valid | 67 | 68 | 49 |
| | Missing | 5 | 4 | 23 |
| Percentiles | Mean | 3 | 21 | 2 |
| | Median | 0,5 | 5 | 1 |
| | 25 | 0,2 | 3 | 0,5 |
| | 50 | 0,5 | 5 | 1 |
| | 75 | 2,5 | 15 | 1,5 |

### *5.2 Supply network uncertainty*

Supply network uncertainty has been coined as one of the greatest problems in the management of supply chains. We have taken the approach of Bhatnagar and Sohal (2005) in measuring supply chain uncertainty in the Finnish industrial firms' supply

chains, separately addressing supply and demand side issues. First we analyse the production subsidiaries' situation.

Relationship length as an indicator of stability and the ability to create common operating procedures is interesting to look at (Table 8). In the production subsidiaries case, we may perceive the much greater length of customer relationships in comparison to the supplier relationships: on the average the customer relationships have lasted 48 months (4 years), that is twice the average length of supplier relationships (24 months). Possibly the difference could be explained by the gradualist internationalisation models, according to which these firms would have first served the Russian market through export creating customer relationships in the process. Later as production facilities were opened, the same customer relationships remained, while new supply relationships were established locally. This issue should be studied in more detail in further projects.

**Table 8 Business relationship length of the production subsidiaries (months)**

| | | *Supply relationship length* | *Customer relationship length* |
|---|---|---|---|
| N | Valid | 5 | 8 |
| | Missing | 5 | 2 |
| Mean | | 16,2 | 41 |
| Median | | 24 | 48 |
| Std. Deviation | | 13,6 | 20,3 |
| Percentiles | 25 | 1,5 | 20 |
| | 50 | 24 | 48 |
| | 75 | 27 | 60 |

On the average the supply side uncertainty in the chain is somewhat significant and high, as on the average 41-50% of supply deliveries are on time, 41-50% of supply orders are accurately filled, and 51-60% of supply deliveries are defect free (Table 9). Thus considerable time and effort is being put into managing the uncertainties in production input supplies. On the demand side the deviation from 100% accurate forecasts is on the average 31-40%, a quite high rate implying problems to managing inventories and filling out customer orders. There is however great deviation in answers, indicating various levels of success in managing supply chain uncertainty in the Russian market.

**Table 9 Supply chain uncertainty experienced by the production subsidiaries**

| | | *Share of on-time supply deliveries* | *Share of accurately filled out supply orders* | *Share of defect free supply orders* | *Demand forecast accuracy deviation* |
|---|---|---|---|---|---|
| N | Valid | 6 | 6 | 6 | 10 |
| | Missing | 4 | 4 | 4 | 0 |
| Mean | | 4,7 (41-50%) | 5 (41-50%) | 6 (51-60%) | 3,5 (31-40%) |
| Median | | 3,5 (31-40%) | 5 (41-50%) | 6 (51-60%) | 3 (21-30%) |
| Std. Deviation | | 3,1 | 3,2 | 3,1 | 2,6 |
| Percentiles | 25 | 2,5 (21-30%) | 1,8 (11-20%) | 4 (31-40%) | 1,8 (11-20%) |
| | 50 | 3,5 (31-40%) | 5 (41-50%) | 6 (51-60%) | 3 (21-30%) |
| | 75 | 8,3 (71-80%) | 8,3 (71-80%) | 8,5 (81-90) | 4,8 (41-50%) |

In the case of exporting firms we will naturally concentrate on customer relationships (Table 10). The length of customer relationships is on the average 36.5 months, some 3 years and 1 year shorter than in the production subsidiary case. The indicator for demand forecast accuracy deviation is the same in comparison to the production subsidiaries: 31-40% on the average. This is somewhat surprising as the longer demand chain would based on theoretically based assumptions imply greater variation in demand and increased difficulties in forecasting. The effect may be dampened to the large number of make-to-order and engineer-to-order companies in our sample.

**Table 10 Supply chain uncertainty experienced by the exporters**

| | | *Customer relationship length* | *Demand forecast accuracy deviation* |
|---|---|---|---|
| N | Valid | 61 | 70 |
| | Missing | 11 | 2 |
| Mean | | 36,5 | 3,5 (31-40%) |
| Median | | 32 | 3 (21-30%) |
| Std. Deviation | | 34,4 | 2,7 |
| Percentiles | 25 | 12 | 1 (0-10%) |
| | 50 | 32 | 3 (21-30%) |
| | 75 | 48 | 5 (41-50%) |

### *5.3 Supply network cooperation and integration*

True to the established pattern, we start with the production subsidiary considerations on supply network cooperation and integration. In Table 11 the cooperation areas with suppliers are depicted, with means from the 5-point Likert-scale measurement device

(ranging from “without consulting”=1 to “joint decision”=5) as was presented in Figure 3. In the supply side the network cooperation seems to be somewhat meagre with only low degree of dialog and joint efforts in supply chain planning. IT application related integration is markedly nonexistent.

**Table 11 Supply side network integration of production subsidiaries**

| | *Mean* | *Std. Deviation* |
|---|---|---|
| Product development | 2,0 (some consulting) | 1,8 |
| Procurement | 2,3 (some consulting) | 2,1 |
| Inventory management | 1,7 (some consulting) | 1,6 |
| Production | 1,7 (some consulting) | 1,7 |
| Distribution | 1,8 (some consulting) | 1,9 |
| Design of the supply chain | 1,6 (some consulting) | 1,8 |
| Supply chain software implementation | 1,2 (without consulting) | 1,4 |

Interestingly however, the situation is a bit different on the demand/customer side, where dialog and cooperation are a level higher across the board (Table 12). Companies seek advice from their customers in many areas of supply chain management, with customer relationship management involving close cooperation. Also noteworthy is the higher level of software implementation related cooperation.

**Table 12 Demand side network integration of production subsidiaries**

| | *Mean* | *Std. Deviation* |
|---|---|---|
| Product development | 2,5 (seek advice) | 1,3 |
| Inventory management | 2,9 (seek advice) | 1,5 |
| Production | 2,2 (some consulting) | 1,3 |
| Sales administration | 3,4 (seek advice) | 1,6 |
| Customer relationship management | 3,7 (close involvement) | 1,4 |
| Distribution | 3,4 (seek advice) | 1,5 |
| Design of the supply chain | 3,3 (seek advice) | 1,6 |
| Supply chain software implementation | 2,6 (seek advice) | 1,5 |

In terms of cooperative visits to business partners with supply chain planning content, the results show a bit more than bimonthly visits on the average (Table 13). Customer visits are on a slightly higher level. Whether these differences are statistically significant is impossible to say due to the small sample size.

**Table 13 Network integration of production subsidiaries in terms of planning visits**

| | | *Visits with suppliers per year* | *Visits with customers per year* |
|---|---|---|---|
| N | Valid | 6 | 9 |
| | Missing | 4 | 1 |
| Mean | | 7,3 | 7,6 |
| Median | | 3 | 4 |
| Std. Deviation | | 11,3 | 9,3 |
| Percentiles | 25 | 1,5 | 1,5 |
| | 50 | 3 | 4 |
| | 75 | 12 | 11 |

Turning our attention to exporting firms, it is notable (although without statistical tests) that integration activities in the demand side are lower in some areas than in the production subsidiaries case (Table 14).

**Table 14 Demand side network integration of exporters**

| | *Mean* | *Std. Deviation* |
|---|---|---|
| Product development | 2,9 (seek advice) | 0,9 |
| Inventory management | 2,3 (some consulting) | 1,2 |
| Production | 2,1 (some consulting) | 1,2 |
| Sales administration | 2,7 (seek advice) | 1,3 |
| Customer relationship management | 2,8 (seek advice) | 1,2 |
| Distribution | 2,8 (seek advice) | 1,3 |
| Design of the supply chain | 2,6 (seek advice) | 1,2 |
| Supply chain software implementation | 1,9 (some consulting) | 1,1 |

Visits with customers take place 3.8 times a year on the average with standard deviation of 4.3. Thus cautiously concluding the border and the lower level commitment in the market is connected to maybe the lower number of supply chain planning visits.

### *5.4 Supply network performance*

Performance improvement is naturally at the heart of conducting cooperative activities in the supply chain and network. We asked the sample companies whether their supply chain performance experienced any improvements, or rather, changes as the result of supply network cooperation and integration activities. The results are quite interesting, as the true results of integration and the proper level of it is widely discussed in the

supply chain management literature. The 5-point Likert-scale ranged from “significantly deteriorated”=1 to “significantly improved”=5 (see Figure 4). The comparative results are shown in Table 15.

**Table 15 Supply network performance change in production subsidiaries and exporters**

| | *Production subsidiaries* | | *Exporters* | |
|---|---|---|---|---|
| | Mean | Std. Dev. | Mean | Std. Dev. |
| Order lead time | 3,4 (no change) | 1,4 | 3,5 (minor positive effect) | 0,7 |
| Inventory turns | 3,6 (minor positive effect) | 1,3 | 3,3 (no change) | 0,6 |
| Quality (defect rate) | 3,5 (minor positive effect) | 1,4 | 3,5 (minor positive effect) | 0,7 |
| Order fill rate | 3,5 (minor positive effect) | 1,4 | 3,5 (minor positive effect) | 0,8 |
| Stock-outs | 3,2 (no change) | 1,3 | 2,9 (no change) | 0,7 |
| Total logistics costs | 3,5 (minor positive effect) | 1,4 | 3,3 (no change) | 0,7 |
| Return on investment | 3,7 (minor positive effect) | 1,5 | 3,3 (no change) | 0,5 |

Clear distinction between the two groups in terms of changes in performance is quite hard to make based on this data. Production subsidiaries were somewhat more positive about integration results, while naturally the small sample size hampers proper analysis.

In order to provide more robust analysis of integration and cooperation activities’ effects on performance we have conducted a multiple regression analysis on the exporter data, with an aim to determine which integration variables (independent) affect which performance variables (independent). Similar analysis was carried out by for example Bagchi and Skjoett-Larsen (2005). The resultant models are provided in Table 16.

**Table 16 Result of multiple regressions (n=72)**

| *Dependent variable* | *Independent variable(s)* | *Parameter estimate* | $R^2$ |
|---|---|---|---|
| Order lead time | **Design of the supply chain*** | **0,19** | 0,10 |
| Inventory turns | Product development** | -0,18 | 0,22 |
| | **Inventory management*** | **0,21** | |
| | **Distribution**** | **0,13** | |
| Quality (defect rate) | **Production**** | **0,16** | 0,15 |
| | Distribution** | -0,21 | |
| | **Design of the supply chain**** | **0,19** | |
| Order fill rate | na | | |
| Stock outs | Product development* | -0,27 | 0,13 |
| | **Design of the supply chain**** | **0,19** | |
| Total logistics costs | na | | |
| Return on investment | na | | |

* Indicates significance at 0.01 level; ** Indicates significance at 0.05 level

Order lead time is significantly affected by the general design activity of the supply chain with customers. The design of supply chain includes for example the facility locations, mode and carrier selection, and flow management. Coefficient of determinance of this model is 0.10, implying that at least some performance improvements can be achieved with joint-planning in the area of supply chain design. As in all the following cases, careful cost-benefit analysis processes must be undertaken in each customer collaboration case. Partnering activities should not be initiated across the spectrum of relationships, but with those with the most promising prospects.

The results on inventory turns are interesting as some 22% in variation of variable can be explained by collaboration in the areas of inventory management and distribution. The result on the negative effect of product development collaboration on inventory is somewhat ambiguous. In the existing literature the distribution of products, especially in the consumer goods sector has been described as possibly to be very challenging. Cooperation in this area would certainly produce good performance improvements as our empirical results indicate.

Quality of production output is significantly affected by cooperation and integration in the areas of production and design of the supply chain in general, with coefficient of determinance reaching 0.15. Making sure that products flow without subject to damaging and extreme conditions can be vital in the case of some products, such as fresh food. Using ordinary trucks instead of ones equipped with freezer equipment to transport food

products across the Finnish-Russian border is an extreme example of poor supply chain design, but taken from real life. The results of the model are highly logical in this light. Again the negative effect of cooperation in the area of distribution to quality is ambiguous, but may perhaps does reflect the deviating attention from quality issues as managerial resources are directed towards physical distribution, which is one of the most challenging issues in current supply chain management issues in Russia.

In reducing stock-out situations, the results show that product development oriented cooperation has a negative effect, again somewhat ambiguous result, as one would perhaps assume that joint development efforts would enhance probabilities of successful new product launches and help build adequate stocks to suit demand development scenarios. This result however would require more detailed studies in order to reach proper level of understanding. Design of the supply chain has a significant positive effect on stock-out reduction, again underlining the crucial role of joint-planning in the areas of facility locations, mode and carrier selection and flow management. The model has a coefficient of determinance of 0.13.

In summary we may point out the positive effects of cooperation with customers to supply chain performance in general, and specifically in the areas of supply chain design, production, inventory management and distribution. Through joint-planning, customer service can be improved through order lead time reduction, improved order fill rates (less stock-outs) and better quality. Companies may also economize in working capital requirements and minimize obsoleteness as inventory turns can be improved by the means of collaborative efforts.

## 6 Concluding remarks

The rationale behind this study was to establish a knowledge base on whether Finnish firms have actually managed to initiate supply network cooperation in operations planning and management (RQ1) and what is the impact of these activities on performance (RQ2). Thus these two research questions were put forth, in conducting a survey among the Finnish industrial firms engaged in Russian operation either through exports or actually producing goods in Russia. It is deemed crucial to manage these supply chains effectively to secure competitive position in the market, as the Russian emerging market begins to show signs of saturation in some of the sectors. As it would be possible for the Finnish companies to build on common ground with their Russian suppliers and customers and thus establish even strategic partnerships as appropriated by cost-benefit analysis, this report is provided in order to encourage such calculative increases in cooperation initiatives in the Finnish-Russian supply chain and networks.

While the statistically rigorous comparison of the two main groups of companies (exporters and production subsidiaries) was not possible to due to the small number of respondents in the production subsidiaries' case, we nevertheless provided some comparisons and cautious conclusions. The following points were indicated as interesting results:

- Production subsidiaries demand chains are shorter (less middlemen) in comparison to the exporters' chains. Implications are important for supply chain uncertainty in the form of for example hampered sales forecasting due to greater demand variability. Echelon elimination (middlemen reduction) could be considered as a remedy.
- Production subsidiaries have greater number of customers and have significant levels of local sourcing and sales, implying a high level of embeddedness in the local market. Boldly speculating one could say that exporters most probably don't have enough access to market knowledge and the business and social networks to effectively manage supply chains and remain competitive, as markets develop in Russia.
- In terms of relationship length it was found that in the case of production subsidiaries, the customer relationship length is much longer than in the case of

suppliers, indicating maybe the path from exporter to establishing operations in Russia. Also current exporters have shorter customer relationships. In order to reduce supply chain uncertainty and as appropriate key customer and supplier relationships should established with long-term perspective.

- Supply chain uncertainty indicators were considered to be quite high, and thus the cost of managing sourcing in Russia as well as sales can be considered substantially higher than in more developed markets. Again strategic partnership could be considered as remedy to improve for example the timeliness and quality of supplies as well as better forecasting accuracy of sales. The last notion is naturally not highly relevant in the make-to-order and engineer-to-order companies that formed the majority of the respondents.
- In terms of supply network cooperation, the results showed greater level of cooperation with customers in comparison to suppliers. Sales administration, distribution and customer relationships management were important areas of cooperation. IT systems implementation was notably lacking in integration efforts. Visits with business partners were almost twice as common annually in production subsidiaries as in the exporters' case. The greater "distance" to customers across the border most probably has affected this form of cooperation.
- The respondents were cautious in hailing the great performance improvements from supply network cooperation. Only minor positive effects were reported, with number of "no change in performance due to cooperation" areas.
- In the exporters' case a more rigorous methodology utilisation was possible and the results of the multiple regression analysis shows the following positive relationships of cooperation areas and performance: (1) design of the supply chain to order lead time, (2) inventory management and distribution to inventory turns, (3) production and design of the supply chain to quality, and (4) design of the supply chain to stock-outs.

Overall the results are interesting and cautiously encourage to greater levels of supply network cooperation and integration also in Russia. However, as literature shows nondiscriminate partnershipping should not be initiated, but careful analysis of where and when to pursue supply network partnerships in both the supply and the demand side. Customer profitability and potential should be assessed and necessary

key-account programmes established. As the results indicated Finnish firms currently perceive supply management a bit more challenging in Russia. Therefore firms should consider the level of importance of each supply source and the overall sourcing strategy, whether critical (time, accuracy, quality are important) or leveraged (price is important) (see Cousins & Lawson 2006). Simply put, in critical sourcing strategy collaborative relationships and strategic partnerships are the most appropriate tool with selected suppliers, while arms-length supply relationships leveraged with bargaining power are the mode of operation facilitating improved performance.

## References

Bagchi, P.K. & Skjoett-Larsen, T. (2005), "Supply chain integration: a European survey", *The International Journal of Logistics Management*, Vol. 16, No. 2, pp. 275-294.

Bank of Finland, http://www.bof.fi/.

Beamon, B.M. (1999), "Measuring supply chain performance", *International Journal of Operations & Production Management*, Vol. 19, No. 3, pp. 275-292.

Bhatnagar, R. & Sohal, A.S. (2005), "Supply chain competitiveness: measuring the impact of location factors, uncertainty and manufacturing practices", *Technovation*, Vol. 25, No. 5, pp. 443-456.

Boubekri, N. (2001), "Technology enablers for supply chain management", *Integrated Manufacturing Systems*, Vol. 12, No. 6, pp. 394-399.

Braithwaite, A. & Christopher, M. (1991), "Managing the Global Pipeline", *The International Journal of Logistics Management*, Vol. 2, No. 2, pp. 55-62.

Buckley, P.J. & Ghauri, P.N. (2004), "Globalisation, economic geography and the strategy of multinational enterprises", *Journal of International Business Studies*, Vol. 35, No. 2, pp. 81-98.

Burghess, K., Singh, P.J. & Koroglu, R. (2006), "Supply chain management: a structured literature review and implications for future research", *International Journal of Operations & Production Management*, Vol. 26, No. 7, pp. 703-729.

Canning, L. & Hanmer-Lloyd, S. (2002), "Modelling the adaptation process in interactive business relationships", *Journal of Business & Industrial Marketing*, Vol. 17, No. 7, pp. 615-636.

Childerhouse, P. & Towill, D.R. (2004), "Reducing uncertainty in European supply chains", *Journal of Manufacturing Technology Management*, Vol. 15, No. 7, pp. 585-598.

Childerhouse, P. & Towill, D.R. (2003), "Simplified material flow holds key to supply chain integration", *Omega*, Vol. 31, No. 1, pp. 17-27.

Christopher M. (1998), *Logistics and supply chain management*, 2nd ed., London: FT Prentice-Hall.

Cousins, P.D. & Lawson, B. (2006), "Linking the Chain: Aligning Sourcing Strategy and Supplier Relationships", *SCMrg Executive Briefing Series*, 2006-03.

Cousins, P.D., Lawson, B., & Squire, B., (2006), "Supply Chain Management: theory and practice - the emergence of an academic discipline?", *International Journal of Operations and Production Management*, Vol. 26, No. 7, pp. 697-702.

Cousins, P.D. & Menguc, B. (2005), "The implications of socialization and integration in supply chain management", *Journal of Operations Management*, forthcoming.

Croom, S., Romano, P. & Giannakis, M. (2000), "Supply chain management: an analytical framework for critical literature review", *European Journal of Purchasing & Supply Management*, Vol. 6, No. 1, pp. 67-83.

CSCMP, Council of Supply Chain Management Professionals, available at: http://cscmp.org/Website/AboutCSCMP/Definitions/Definitions.asp.

Davis, T. (1993), "Effective Supply Chain Management", *Sloan Management Review*, Vol. 34, No. 4, pp. 35-46.

Finnish Customs, http://www.tulli.fi/en/index.jsp?language=en.

Forman, H. & Lippert, S.K. (2005), "Toward the development of an integrated model of technology internalization within the supply chain context", *The International Journal of Logistics Management*, Vol. 16, No. 1, pp. 4-27.

Forrester, J. (1961), *Industrial Dynamics*, MIT Press, Cambridge, MA.

Frohlich, M. & Westbrook, R. (2001), "Arcs of integration: an international study of supply chain strategies", *Journal of Operations Management*, Vol. 19, No. 2, pp. 185-200.

Geary, S., Childerhouse, P. & Towill, D. (2002), "Uncertainty and the Seamless Supply Chain", *Supply Chain Management Review*, July/August, pp. 52-61.

Giannakis, M. & Croom, S. (2004), "Toward the Development of a Supply Chain Management Paradigm: A Conceptual Framework", *The Journal of Supply Chain Management*, Vol. 40, No. 2, pp. 27-37.

Gunasekaran, A., Patel, C. & Tirtiroglu, E. (2001), "Performance measures and metrics in a supply chain environment", *International Journal of Operations & Production Management*, Vol. 21, No. 1/2, pp. 71-87.

Harland, C. M. (1996), "Supply Chain Management Relationships, Chains and Networks", *British Journal of Management*, 7, Special Issue, pp. S63–S81.

Harland, C.M., Lamming, R.C., Walker, H., Phillips, W.E., Caldwell, N.D., Johnsen, T.E., Knight, L.A., Zheng, J. (2006), "Supply Management: Is it a Discipline?", *International Journal of Operations & Production Management*, Vol. 26, No. 7, pp. 730-753.

Harland, C., Zheng, J., Johnsen, T. & Lamming, R. (2004), "A Conceptual Model for Researching the Creation and Operation of Supply Networks", *British Journal of Management*, Vol. 15, No. 1, pp. 1-21.

Hilmola, O.-P., Hejazi, A. & Ojala, L (2005), "Supply chain management research using case studies: a literature analysis", *International Journal of Integrated Supply Management*, Vol. 1, No. 3, pp. 294–311.

Houlihan, J.B. (1985), "International supply chain management", *International Journal of Physical Distribution and Materials Management*, Vol. 15, No. 1, pp. 22–38.

Kerr, C. & Colborn, G. (2006), "Chasing the dragon", *Logistics Europe*, January/February, pp. 18-22.

Lambert, D.M. & Cooper, C.M. (2000), "Issues in Supply Chain Management", *Industrial Marketing Management*, Vol. 29, No. 1, pp. 65-83.

Lambert, D.M., Emmelhainz, M.A. & Gardner J.T. (1996), "Developing and Implementing Supply Chain Partnerships", *The International Journal of Logistics Management*, Vol. 7, No. 2, pp. 1-17.

Lee, H.L., Padmanabhan, V. & Whang, S. (1997), "Information distortion in a supply chain: the bullwhip effect", *Management Science*, Vol. 43, No. 4, pp. 546-558.

Levitt, T. (1983), "The Globalization of Markets", *Harvard Business Review*, Vol. 61, No. 3, pp.92-102.

Mills, J., Smith, J. & Frizelle, G. (2004), "A strategic review of supply networks", *International Journal of Operations and Production Management*, Vol. 24, No. 10, pp. 1012-1036.

Mouritsen, J., Skjoett-Larsen, T. & Kotzab, H (2003), "Exploring the contours of supply chain management", *Integrated Manufacturing Systems*, Vol. 14, No. 8, pp. 686-695.

Narasimhan, R. & Mahapatra, S. (2004), "Decision models in global supply chain management", *Industrial Marketing Management*, Vol. 3, No. 1, pp. 21-27.

Power, D. (2005), "Supply chain management integration and implementation: a literature review", *Supply Chain Management: an International Journal*, Vol. 10, No. 4, pp. 252-263.

Prater, E. (2005), "A framework for understanding the interaction of uncertainty and information systems on supply chains", *International Journal of Physical Distribution & Logistics Management*, Vol. 35, No. 7/8, pp. 524-539.

Rosenzweig, E.D., Roth, A.V. & Dean, J.W. (2003), "The influence of an integration strategy on competitive capabilities and business performance: An exploratory study of consumer products manufacturers", *Journal of Operations Management*, Vol. 21, pp. 437-456.

Rugman, A.M & Brewer, T.L. (2001). *The Oxford Handbook on International Business*. Oxford University Press, UK.

Ryans Jr., J.K., Griffith, D.A., White, D.S. (2003), "Standardization/adaptation of international marketing strategy - Necessary conditions for the advancement of knowledge", *International Marketing Review*, Vol. 20, No. 6, pp. 588-603.

Stevens, G. (1989), "Integrating the Supply Chain", *International Journal of Physical Distribution and Material Management*, Vol. 19, No. 8, pp. 3-8.

van der Vorst, J.G.A.J. & Beulens, A.J.M. (2002), "Identifying sources of uncertainty to generate supply chain redesign strategies", *International Journal of Physical Distribution & Logistics Management*, Vol. 32, No. 6, pp. 409-430.

Vickery, S.K., Jayaram, J., Droge, C., & Calantone, R. (2003), "The effects of an integrative supply chain strategy on customer service and financial performance: an analysis of direct versus indirect relationships", *Journal of Operations Management*, Vol. 21, No. 5, pp. 523-539.

Wilding, R. (1998), "The supply chain complexity triangle – Uncertainty generation in the supply chain", *International Journal of Physical Distribution and Logistics Management*, Vol. 28, No. 8, pp. 599-616.

Williamson, O.E. (1979), "Transaction Cost Economics: The Governance of Contractual Relations", *Journal of Law and Economics*, Vol. 22, No. 2, pp. 233-261.

**Electronic publications of the Pan-European Institute**
**ISSN 1795-5076**

Freely available at http://www.tse.fi/pei/pub

**2007**

4/2007
**Liuhto, Kari**
A future role of foreign firms in Russia's strategic industries

3/2007
**Lisitsyn, Nikita**
Technological cooperation between Finland and Russia: Example of technology parks in St. Petersburg

2/2007
**Avdasheva, Svetlana**
Is optimal industrial policy possible for Russia? Implications from value chain concept

1/2007
**Liuhto, Kari**
Kaliningrad, an attractive location for EU investors

**2006**

11/2006
**Lorentz, Harri**
Food Supply Chains in Ukraine and Kazakhstan

10/2006
**Hannula, Kaisa-Kerttu**
Doing Business in Ukraine - Experiences of two Finnish Companies

9/2006
**Uiboupin, Janek**
Industrial Clusters and Regional Development in Ukraine: the Implications of Foreign Direct Investments and Trade

8/2006
**Avdasheva, Svetlana**
Russian Furniture Industry: Enterprises' Upgrading from the Value-Chain Theory Perspectives

7/2006
Food Industry Value Chains in Leningrad Oblast and Krasnodar Krai
(Finngrain – Vilja-alan yhteistyöryhmä)

6/2006
**Zashev, Peter – Vahtra, Peter**
Kazakhstan as a Business Opportunity – Industrial Clusters and Regional Development

5/2006
**Keskitalo, Päivi**
Internationalisation of Finnish Environmental Technology to Poland

4/2006
**Heiskanen, Katja**
Internationalisation of Finnish Small and Medium-sized Companies towards the New EU Member States in the Baltic Sea Region

3/2006
**Zashev, Peter**
Belarus as a Business Opportunity?

2/2006
**Johansson, Linda**
International Business Operations of Companies with Russian Involvement in Southwestern Finland

1/2006
**Vahtra, Peeter**
Expansion or Exodus? - Trends and Developments in Foreign Investments of Russia's Largest Industrial Enterprises

**2005**

10/2005
**Hannula, Kaisa-Kerttu**
Host Country Determinants and Investment Motives of Finnish FDI in the Publishing Sectors of Bulgaria and Romania

9/2005
**Vahtra, Peeter**
Russian Investments in the CIS - Scope, Motivations and Leverage

8/2005
**Liuhto, Kari - Zashev, Peter - Heiskanen, Katja (ed.)**
The Approaching EU Accession of Bulgaria and Romania - New Opportunities for EU Enterprises

7/2005
**Liuhto, Kari (ed.)**
Kaliningrad 2020: Its Future Competitiveness and Role in the Baltic Sea Economic Region

6/2005
**Levando, Dmitry**
Investigation into the Structure of Reasoning in Economics

5/2005
**Vahtra, Peeter - Pirilä, Hannu - Hietanen, Satu**
ICT-sektori Baltiassa ja Puolassa

4/2005
**Zashev, Peter**
Between the Co-competitors: Belarus, Moldova and Ukraine Economic Integration in a Bi-polar Europe

3/2005
**Pirilä, Hannu**
Baltian ja Puolan taloudet vuonna 2004 - EU-jäsenyyden ja nopean talouskasvun vuosi

2/2005
**Liuhto, Kari - Vincze, Zsuzsanna (ed.)**
Wider Europe

1/2005
**Lisitsyn, Nikita E. - Sutyrin, Sergei F. - Trofimenko, Olga Y. - Vorobieva, Irina V.**
Outward Internationalisation of Russian Leading Telecom Companies


www.tse.fi/pei/pub