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LogOnBaltic

LOGISTICS SURVEY IN ESTONIA

Ain Kiisler and
Tomi Solakivi

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EXECUTIVE SUMMARY

This survey is a part of LogOn Baltic project. The level of logistics in Estonian manufacturing, trading and logistics companies is assessed through logistics costs, performance indicators, Information Technology (IT) usage, competence, development needs, outsourcing and choice of location. No similar previous logistics surveys have carried out in Estonia yet.

186 companies' responses were gathered through a web based survey (manufacturing 38%, trading 38% and logistics companies 24%).

Logistics costs as percentage of turnover were on average 13.8% in manufacturing and 13.3% in trading. In trading sector there is strong and clear inverse correlation between company size and logistics cost level – bigger companies logistics cost as percentage of turnover are lower. In manufacturing insufficient number of medium and large size companies participated in survey do not allow make similar conclusion. It can be only argued that micro size companies total logistics costs are ca 15% higher than small size ones.

Since joining Estonia into the European Union (EU) in May 2004 transportation costs have increased both in manufacturing and trading sector. In trading sector also warehousing, logistics administration and other logistics costs have increased. Except transportation, logistics costs have been rather stable in manufacturing.

Manufacturers and traders presume the progression of logistics costs growth, especially in transportation and warehousing. Traders presume somewhat more significant logistics costs increase.

The most important area in development needs of personnel competence is transport management skills in manufacturing and logistics service providers sector. Trading companies need most of all to develop their inventory management competence.

Currently the most widely outsourced logistics activity in Estonian manufacturing and trading companies is international transportation - 97% outsource it at least in some extent. Other transport related activities (domestic transportation, freight forwarding, and reverse logistics) are also widely outsourced. Less outsourced logistics activities are invoicing and inventory management. Concerning the

development trends, IT systems, inventory management and warehousing are presumed to be the faster expanding fields of logistics outsourcing in Estonia.

Opinions on operating environment are rather neutral that positive. Most positive opinion is about general business perspectives, especially in trading and manufacturing sector.

Majority of Estonian manufacturing and trading companies see logistics as a tactical tool instead of strategic one. Only 27% of respondents agreed that logistics has a major impact on their firm profitability and one third agreed that logistics is the key source of their competitive advantage. By survey results, logistics is top management priority only in 29% of Estonian manufacturing and trading companies.

Estonian companies assess their logistics abilities and performance quite highly. The main logistics competitive advantage of Estonian companies in all sectors is their ability to respond to the needs and wants of key customers better than competitors.

83% of manufacturers and traders and 93% of logistics services providers find that regular monitoring and evaluation of logistics benefits their company. 75% of manufacturers and traders and 90% of logistics services providers regularly monitor and evaluate logistics costs internally. Respectively 45% and 53% do it with selected suppliers and / or clients. Benchmarking logistics performance metrics against competitors is much less in use and there is great difference between manufacturers and traders and logistics service providers – respectively 23% and 50% do it.

The most important future developments needs of manufacturing companies are logistics costs cutting, careful selection of logistics services providers and development of logistics information systems. For traders these are improvement of customer service, development of information systems and logistics costs cutting. Logistics service providers need first of all to increase their service provision capacity, develop agent network and extend the range of service offerings.

LÜHIKOKKUVÕTE

Käesolev uuring on osa rahvusvahelisest LogOn Baltic projektist. Uuring vaatleb Eesti tootmis-, kaubandus ja logistikafirmade logistika taset logistiliste kulude, tegevusmõõdikute näitajate, IT kasutamise, kutseoskuste, arenguvajaduste, outsourcimise ja asukohavaliku osas. Sarnaseid uuringuid ei ole Eestis varem läbi viidud.

Uuringu tulemused baseeruvad internetiuuringu käigus 186 Eesti firma poolt täidetud küsimustikel. 38% vastanud ettevõtete põhitegevuseks on tootmine, 38%-l kaubandus, 24%-l logistikateenuste osutamine.

Logistilised kulud moodustavad tootmisfirmades keskmiselt 13,8% ja kaubandusfirmades 13,3% käibest. Kaubandusfirmade puhul eksisteerib selge ja tugev pöördvõrdeline seos ettevõtete suuruse (käibe järgi) ja logistiliste kulude taseme vahel – mida suurem firma, seda väiksema osa moodustavad logistilised kulud käibest. Tootmise puhul ei võimalda vastanud suurte ja keskmiste tootmisfirmade ebapiisav arv samu järeldusi teha. Võib ainult väita et mikrosuuruses (aastakäive kuni 2 MEUR ehk 31,3 MEEK) tootmisettevõtete logistikakulud väljendatuna protsendina käibest on ca 15% suuremad kui väikestes tootmisfirmades (aastakäive 2-10 MEUR ehk 31,3-156,5 MEEK).

Peale Eesti astumist Euroopa Liitu 2004. a mais on transpordikulud kasvanud nii tootmises kui kaubanduses. Kaubanduses on lisaks suurenenud ka ladustamis-, logistilised administreerimise ning muud logistilised kulud. Tootmisfirmades on muud logistilised kulud peale transpordikulude pigem stabiilseks jäänud.

Tootmis- ja kaubandusfirmad eeldavad edasist logistikakulude suurenevat kasvu, seda eriti transpordi- ja ladustamiskulude osas. Võrreldes tootjatega on kaubandusfirmade logistikakulude kasvu ootused / kartused mõnevõrra kõrgemad.

Töötajate logistikalaste kutseoskuste arendamise vajaduste osas peavad tootmis- ja logistikafirmad enda arengu seisukohalt kõige olulisemaks transpordikorralduse alaste kutseoskuste taseme tõstmist. Kaubandusfirmade jaoks on kõige olulisem varude haldamise alaste kutseoskuste parendamine.

Kõige laiemalt outsourcitud logistiline tegevusvaldkond Eesti tööstuses ja kaubanduses on rahvusvaheline transport – 97% vastanud firmadest ostab seda mingil määral teenusena sisse. Muid transpordiga seotud tegevusi (Eestisisene vedu, veokorraldus, korje / tagastused) ostetakse samuti ulatuslikult sisse. Kõige vähem outsourcitakse arvete saatmist ja varade haldamist. Arengutrendide osas eeldavad vastanud, et logistilised IT süsteemid, varade haldamine ja ladustamine on kõige kiiremini laienevad logistikateenuste sisseostmise valdkonnad.

Arvamused tegutsemistingimuste kohta koduturul on pigem neutraalsed kui positiivsed. Kõige positiivsemalt on hinnatud üldiseid äritegevuse perspektiive, seda eriti kaubandus- ja tootmissektoris.

Valdav enamus Eesti tootmis- ja kaubandusfirmasid näeb logistikat pigem taktikalise kui strateegilise abinõuna. Ainult 27% vastanud tootmis- ja kaubandusfirmadest nõustub väitega, et nende kasumlikkus sõltub peamiselt logistikast. Vaid 1/3 vastanud firmade konkurentsieelis rajaneb eelkõige logistikal. Ainult 29%-s vastanud firmadest on logistika tippjuhtkonna prioriteediks.

Eesti firmad hindavad oma logistikaalast võimekust ja tegevussuutlikust üsna kõrgelt. Nii tootmis-, kaubandus- kui logistikaettevõtete peamine logistiline konkurentsieelis on nende suutlikkus rahuldada oma võtmeklientide soove ja vajadusi paremini kui konkurendid.

83% tootmis- ning kaubandusfirmadest ning 93% logistikafirmadest arvatakse, et logistilise tegevuse regulaarne jälgimine ja hindamine tuleb firmale kasuks. Vastavalt 75% ja 90% firmadest jälgivad ning hindavad regulaarselt oma logistilisi kulusid ja tegevusnäitajaid firmasiseselt. 45% ja 53% teeb seda koostöös valitud tarnijate ja/või klientidega. Oma logistiliste tegevusnäitajate võrdlemist konkurentide omaga (benchmarking) kasutatakse märksa vähem – 23% tootmis- ja kaubandusfirmadest ning 50% logistikafirmadest võrdleb enda tegevusnäitajaid konkurentide omaga.

Tähtsaimad tuleviku arenguvajadused Eesti tootmisfirmades on (tähtsuse järjekorras) logistiliste kulude vähendamine, hoolikas logistikateenuste pakkujate valik ning logistiliste infosüsteemide arendamine. Kaubandusfirmade puhul on nendeks klienditeeninduse parendamise, logistiliste infosüsteemide arendamine ja logistiliste kulude vähendamine. Logistikateenuste pakkujate jaoks on tähtsaim osutatavate teenusemahtude suurendamine, koostööpartnerite / esindajate võrgustiku arendamine ja pakutava teenuste valiku laiendamine.

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1 INTRODUCTION

1.1 Project introduction – LogOn Baltic

The LogOn Baltic project was approved within the Baltic Sea Region (BSR) INTERREG III B Neighbourhood Programme, which is sponsored by the European Regional Development Fund (ERDF), as part of the Structural Funds, and co-financed by national project partners.

The purpose of LogOn Baltic is to present solutions to improve the interplay between logistics and Information and Communication Technologies (ICT) competence and spatial planning and strengthening Small and Medium-sized Enterprises (SMEs) competitiveness in the BSR. This is primarily done by the production and dissemination of information for regional development agencies on how to support enterprises in the participating regions in the field of ICT and logistics, thus improving regional development.

The following regions are participating in the project:

- South-West Finland
- Östergötland (Sweden)
- Denmark
- Southern Metropolitan Region of Hamburg (Germany)
- West-Mecklenburg (Germany)
- North-East Poland
- Lithuania
- Latvia
- Estonia
- St. Petersburg (Russia)

LogOn Baltic provides an overview of logistics efficiency and logistics information systems and their exploitation, in order to improve the interaction between SMEs and other public/private actors.

On the one hand, the empirical activities of LogOn Baltic compare the existing logistics services and infrastructure with the logistics needs in the participating regions, making it possible to develop perspectives and action plans for strengthening the logistics competence in the

regions. On the other hand it describes the existing ICT infrastructure and services, revealing up to what extent they meet with the companies' needs for further development. In this way, LogOn Baltic focuses on:

a. identifying development agencies and evaluating their performance in each region
b. evaluating the level of logistics and ICT efficiency
c. suggesting concrete actions for regional and local public sector bodies

Data are gathered in each participating region using four tools, Development Measure Impact Analysis (DEMIA), Logistics survey, ICT survey and Expert Interviews; each of these is presented in a separate report. These results together with secondary data is presented in a regional report, that will describe the state of affairs in the region, with recommendations on what and how the region needs to develop. The regional reports are used as a basis for making an interregional comparison which is reported in an inter-regional report. All reports are available on the project homepage, www.logonbaltic.info.

1.2 Regional partner introduction

The regional partners in Estonia are Tallinn City Government, Tartu Science Park and Estonian Logistics Union.

Tallinn, the capital of Estonia, is located in the Northern Europe on the Baltic Sea and is a well-known Hanseatic Town. Tallinn is the largest city in Estonia and has developed into a major economical, political, cultural and social centre and tourist attraction of the country.

Tallinn City Government is the local government's executive body that is in charge of city departments, institutions administered by departments, and responsible for implementing policies and programs. Tallinn City Government fulfils the assignments given to it by legislative drafting, economic activity, control and the involvement of the residents. One of the main aims of Tallinn City Government is to create economical environment to promote entrepreneurship, attract investments and modernise economical structure.

Tartu is the second largest city and the centre of Southern Estonia. **Tartu Science Park**, the oldest science park in the Baltics, supports business innovation activities in the region by networking with universities, public and private sector. The technology incubator offers a variety of services to start-up companies and the ICT Centre

organises seminars, courses and contests for students and mediates several national and international ICT activities. Tartu Science Park also offers help to foreign companies in extending business to Estonia.

Estonian Logistics Association acts as an association for organisations, foundations and people who are involved in logistics. Estonian Logistics Association honours the principles of competitiveness of companies, co-operation, competition, development, professional skills and appreciation of human labour and the main goal is to promote national and international competitiveness in the area of logistics.

1.3 Logistics survey introduction

The survey is one of four tools for primary data collection, reflecting the current status and needs of logistics in the business community in the region. Three versions of the survey have been used, focusing on the following three types of companies:

a. Manufacturing/construction companies
b. Trading companies
c. Logistics service providers

The questionnaires consists of two parts: one part with general questions (being the same for the three types of companies), and another part with specific questions concerning the type of companies mentioned above. The same questionnaire has been used in all regions. Each region has had the opportunity to add one or two questions focusing on specific regional issues. The regional reports will therefore differ slightly.

The survey is mainly conducted as a web-based survey, but mail surveys, phone surveys and interviews has also been used as a complement in some regions.

This is by far the largest survey conducted in the Baltic Sea Region in the field of logistics. In this report data and analysis will be presented for one region only.

The data is also used to make a cross-regional analysis, focusing on differences and similarities between the regions. The cross-regional analysis is presented in a separate report avail-able at the project homepage www.logonbaltic.info.

2 SURVEY DESIGN

2.1 Target group and sample

A total of 2 960 persons were sent an email asking them if they would take part in the survey. The number of those who agreed to take part was 146, means that return rate was 4.9%. Three remainder emails was sent after a week intervals to them who had not replied yet.

In addition survey questionnaire was available in public website and information about it was spread to members of local logistics association. 40 persons filled survey questionnaires via public website.

So totally 186 Estonian respondents participated in this survey. The survey started on 10 January and was closed on 7 February 2007.

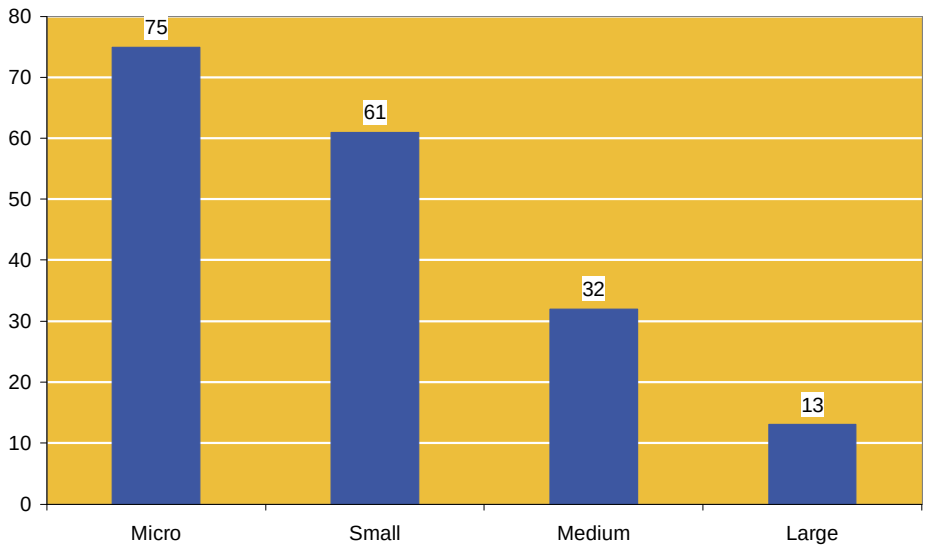

Figure 1 Number of respondents according to company size

Of the 186 responding companies 182 declared their year 2005 turnover. Figure 1 shows the distribution of responded companies by size.

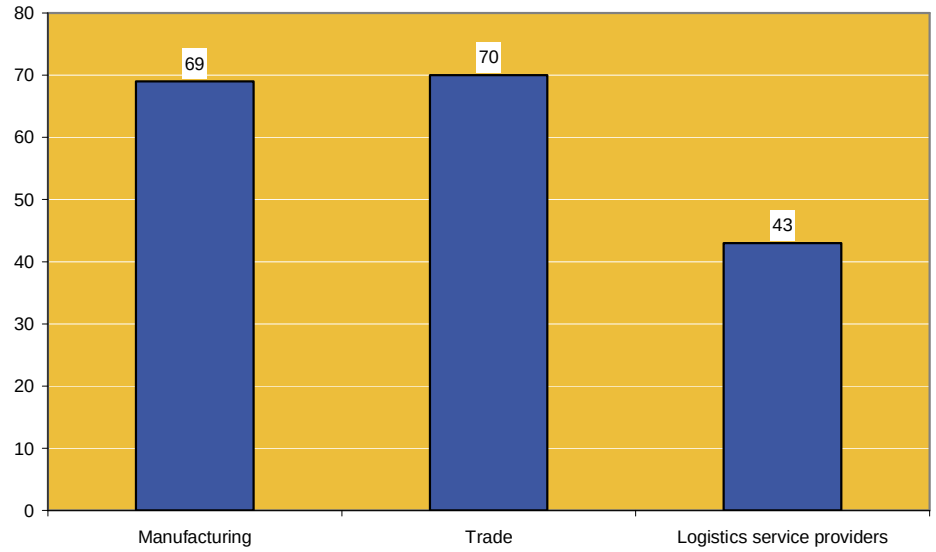

Figure 2 Number of respondents according to main industry

Of the respondents 38% (69) represented manufacturing and construction, 38% (70) trade and commerce and 24% (43) logistics companies (figure 2).

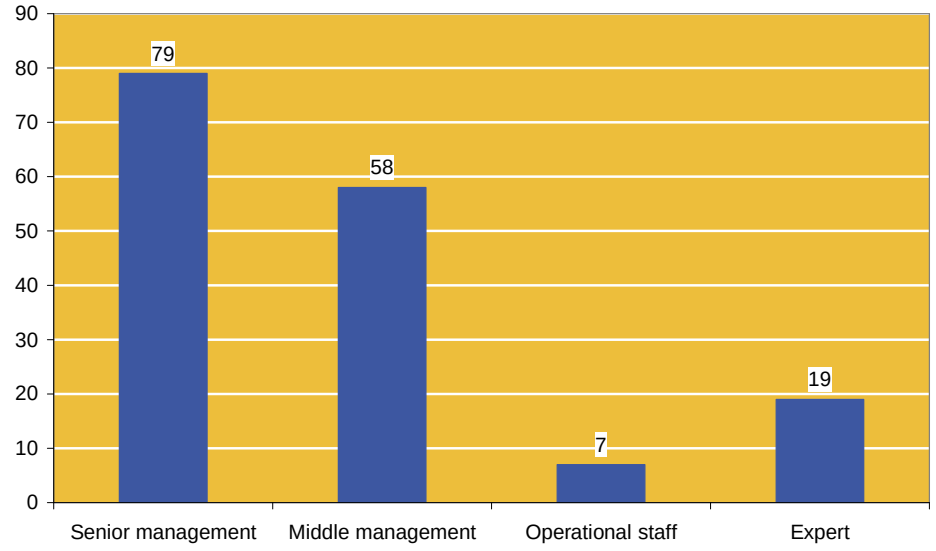

Figure 3 Number of respondents according to respondent's position in the company

Figure 3 shows respondents positions in the firm. Totally 179 respondents answered this question. The fifth respondent category "other" (16 answers) was an additional answer option in referred questionnaire but has not included in the chart in order to make it comparable with Finnish survey results where mentioned category was missing.

By accounted answers 48% (79) of respondents were in senior manager, 36% (58) middle level manager, 4% (7) operational staff and 12% (19) expert positions. The term "expert" was translated as "specialist" into Estonian.

83% (151) of respondents responded on behalf of the whole company or group of companies, 17 % (30) on behalf of an individual business unit. Totally 181 respondents answered this question.

2.1.1 Overview of manufacturers participated

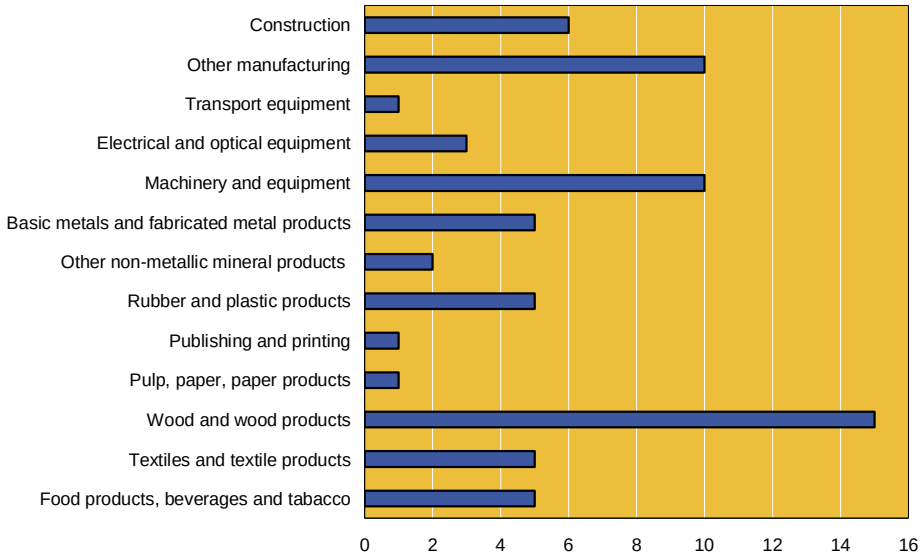

Figure 4 Companies in manufacturing and construction by sector

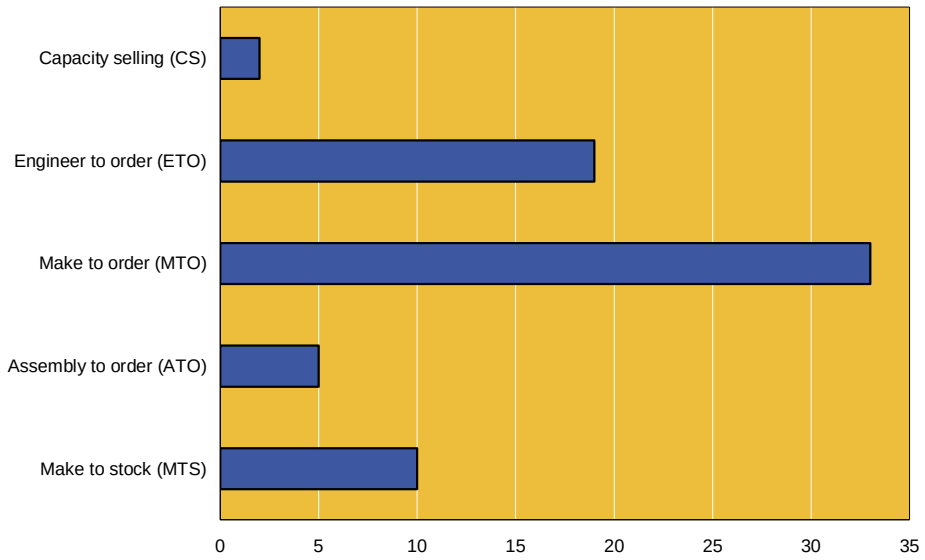

Figure 5 Manufacturing and construction companies by type of production

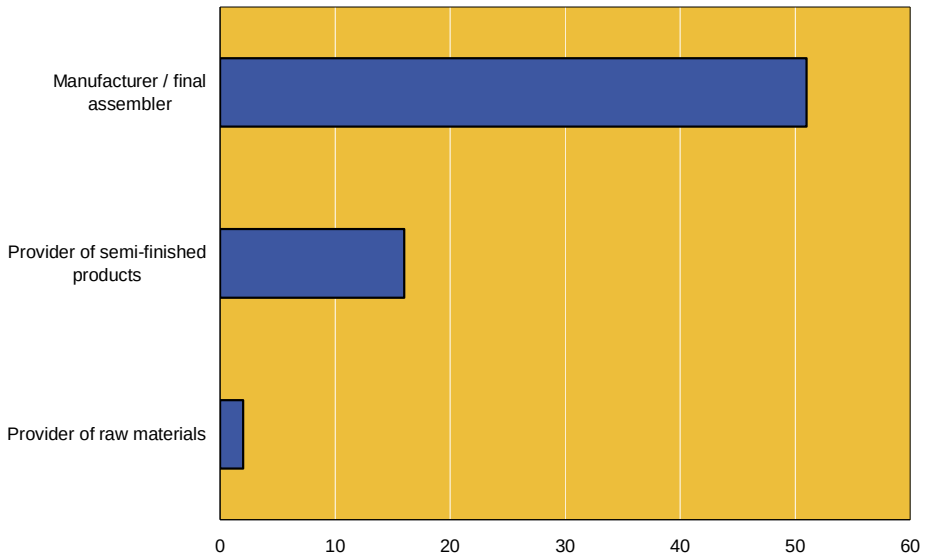

Figure 6 Manufacturing and construction companies by position in the supply chain

Figures 4-6 characterise manufacturing companies participated in survey. Half of them (52%) represent wood processing, machinery and other manufacturing industries (22%, 15% and 15% respectively).

Three quarters (74%) of manufacturing companies responded are manufacturers or final assemblers by type of production. Prevailing production types are making to order (48%) and engineering to order (28%).

2.1.2 Overview of manufacturers participated

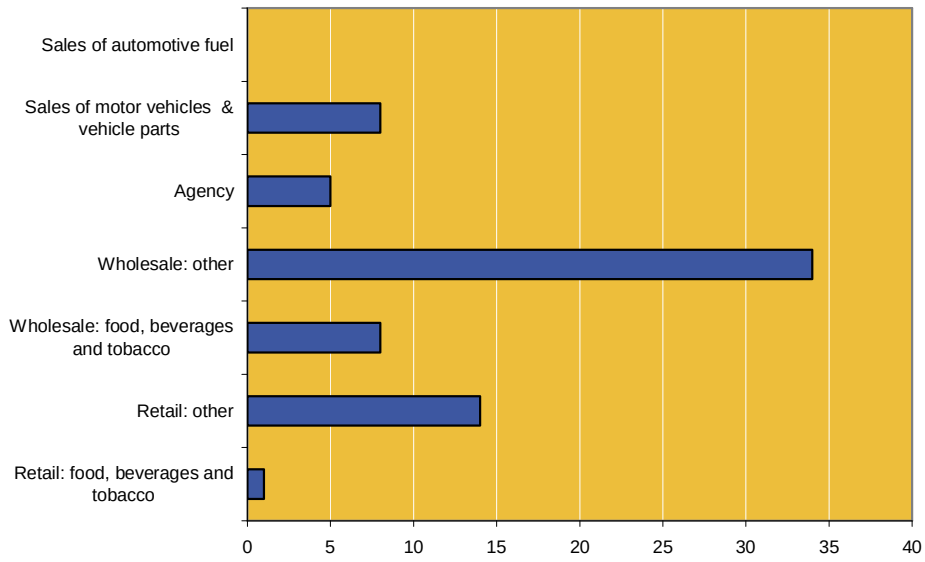

Figure 7 Trading companies by sector

Figure 7 shows trading companies by sector. 49% of trading companies participated in survey are wholesalers of other good (other than food, beverages and tobacco), 20% are retailers of other goods, the share of food, beverages and tobacco wholesalers and motor vehicle and vehicle parts sellers is 11% each.

2.1.3 Overview of logistics service providers participated

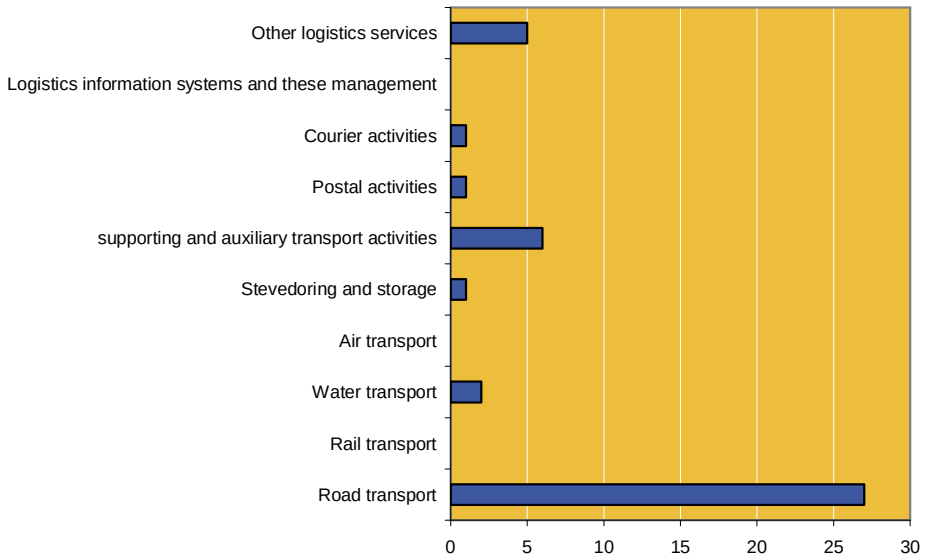

Figure 8 Transport service providers by sector

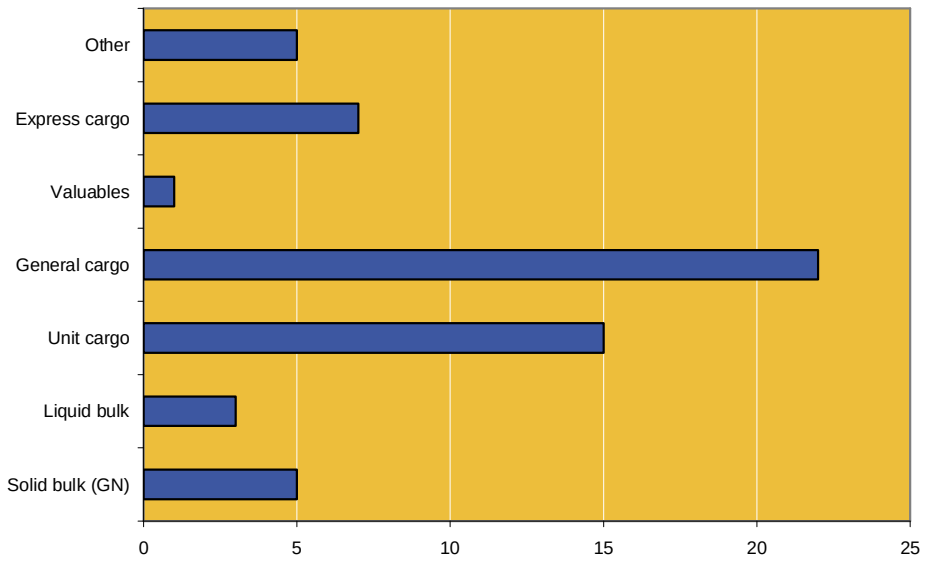

Figure 9 Logistics service providers by cargo type

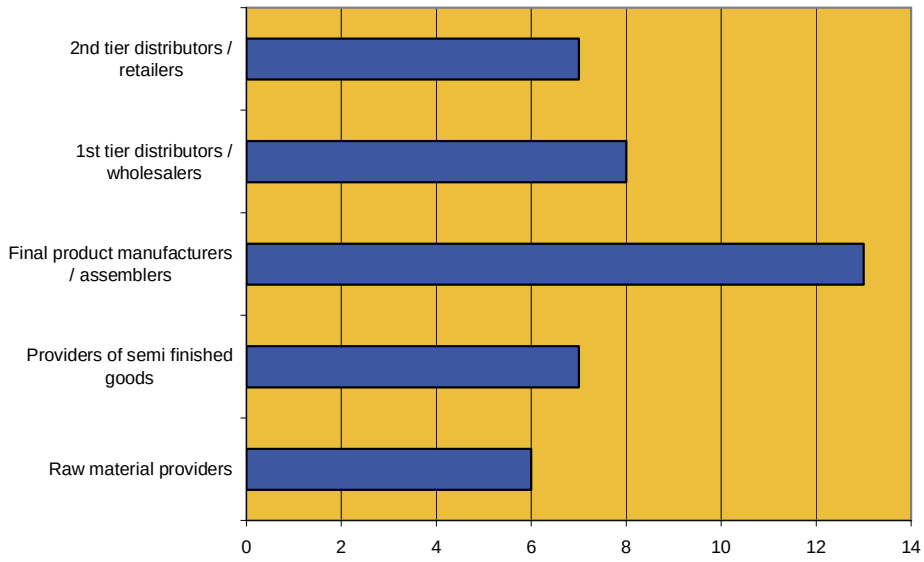

Figure 10 Logistics service providers by customer segment

Figures 8-10 characterise logistics service providers participated in survey. 63% of them are road transport companies, 14% represent supporting and auxiliary services (e.g. freight forwarding), 12% provide other logistics services.

By cargo type handled, general and unit cargo are prevailing (38% and 26% accordingly).

One third (32%) of responded logistics companies serve primarily final product manufacturers', 20% wholesalers. Both 17% of companies offer their services mainly to retailers and providers of semi- finished products, 14% serve primarily raw material providers.

2.2 Main themes of the survey

The questions concerning manufacturing companies and trade companies are similar and will be reported in chapter 4. The findings from the logistics service providers will be reported in chapter 5.

The main themes of the survey are:

- Current logistics costs and their development
- Key logistics indicators, including lead times, and customer service
- The need for further competence development

- Outsourcing, the situation today and expected development within the firm
- Operating environment, an assessment of the regional pros and cons
- Self assessment of the company's logistics activities and to what extent they are coordinated.

2.3 International reference data

During the recent years, numerous surveys about different aspects of logistics have been performed and published (see for example Bordeaux Ecole de Management 2003, Naula et al. 2006 and IBM 2005). Unlike the LogOn Baltic survey, most of the available logistics surveys tend to have a rather narrow scope, focusing on a smaller set of themes such as logistics costs or outsourcing of different logistics functions.

2.3.1 Logistics costs on national level

In 2005 Rodrigues, Bowersox and Calantone estimated the level of logistics costs in relation to the gross domestic product. Based on their survey from 2005, the logistics costs globally in 2002 were around USD 6,700 billion (approximately €6,450 billion), which would correspond to around 13.8% of global GDP. According to Rodrigues et al. the logistics costs have been decreasing around the world outside Europe. On the contrary, the logistics costs in some European countries have been rising at the same time.

Table 1 Global logistics costs in billion USD, % of GDP in selected areas of the world in 1997, 2000 and 2002 (Rodrigues, Bowersox and Calantone, 2005)

	1997		2000		2002	
Region	USD bill.	% of GDP	USD bill.	% of GDP	USD bill.	% of GDP
Europe	884	12,2 %	1100	12,8 %	1229	13,3 %
N. America	1035	11,0 %	1240	10,6 %	1203	9,9 %
Pacific Region	1459	14,5 %	1989	15,3 %	2127	15,7 %
S.America	225	14,3 %	280	14,4 %	272	14,3 %
Other areas	1492	15,4 %	1778	15,7 %	1902	16,0 %
Whole world	5095	13,4 %	6387	13,7 %	6732	13,8 %

Another estimate on the logistics costs on the national level is the estimate by The Council of Supply Chain Management Professionals (CSCMP, see www.cscmp.org). The council estimates that India's logistics costs as 11% of its GDP and as much as 21% in the case of China. The level of logistics costs in the USA seems to have fallen from 14.5% to as low as 8% in the past 25 years. The CSCMP estimates that the logistics costs in Europe are somewhat higher, at least 11% of GDP (The Economist, 2006).

Table 2 Comparison of logistics costs in selected European Union countries. Billion USD & % of GDP in 1997,2000 and 2002 (Rodrigues, Bowersox and Calantone, 2005)

	1997		2000		2002	
	Billion USD	% of GDP	Billion USD	% of GDP	Billion USD	% of GDP
Belgium	27	11,4 %	33	11,6 %	35	12,1 %
Denmark	16	12,9 %	20	13,0 %	23	13,6 %
France	158	12,0 %	177	11,9 %	186	11,6 %
Germany	228	13,1 %	323	15,3 %	374	16,7 %
Greece	17	12,6 %	24	12,9 %	26	13,0 %
Irland	8	14,0 %	19	15,3 %	21	14,9 %
Italy	149	12,0 %	167	11,8 %	186	12,2 %
Holland	41	11,9 %	50	11,8 %	56	11,8 %
Portugal	19	12,9 %	24	13,6 %	25	13,4 %
Spain	94	14,7 %	107	13,3 %	124	14,1 %
UK	125	10,1 %	157	10,7 %	174	11,3 %

2.3.2 Logistics costs on company level

Since 1982, the European Logistics Association (ELA) has together with the consulting company A.T. Kearney published a survey on logistics costs and other logistics related key variables. According to ELA, logistics costs as a share of companies' turnover has steadily decreased during 1987-2007 to a current level of some 6 percent of turnover. The results of the ELA –survey have to be interpreted with a bit of caution, though. The respondents of the survey, some 200 companies, are large, international companies with resources and competence to deal with logistics related issues and enjoy the possibilities of economies of scale and scope. In a sense, the results of the ELA –survey are not fully compatible with the results of the LogOn Baltic survey.

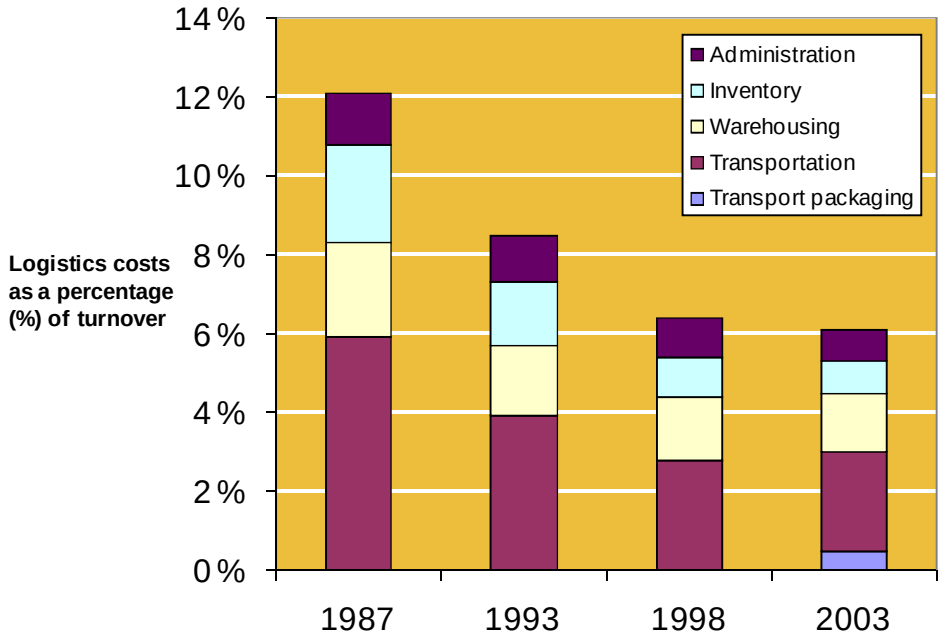

Figure 11 Logistics costs as a percentage of companies' turnover in the ELA/A.T. Kearney survey in 1987, 1993, 1998 and 2003 (European Logistics Association and A.T. Kearney, 2004)

2.3.3 Logistics outsourcing

Recent studies on logistics outsourcing and the development of logistics markets are for example Larson and Gammelgaard (2001) and Langley, Dort, Ang and Sykes (2005). According to the respective surveys, the common trend seems to be that the outsourcing of logistics operations is increasing rapidly around the world, although the current status and the pace of the development seem to vary across the different areas of the world. Outsourcing is also spreading to new areas of business and to a set of new logistics functions. Whereas the outsourcing of logistics has previously been mainly outsourcing of basic logistics operations such as transportation and warehousing, some new functions like logistics IT-systems will be growing in the future.

2.3.4 Location and operating preconditions

One of the dimensions of the LogOn Baltic study is the location of the company and the operating preconditions on the location. For example Gullander and Larsson (2001) have discussed the effect and significance of location and particularly its relation with the outsourcing of logistics. Logistics IT-systems have previously been discussed for example by Lai, Ngai and Cheng (2005).

3 FINDINGS FROM MANUFACTURING AND TRADE

3.1 Logistics costs

3.1.1 Logistics costs Manufacturing

The question about logistics costs was clearly understood wrong or answered inexactly by some respondents. 9 out of 64 answers about manufacturers logistics costs were eliminated from analysis as unrealistic using 0 < total logistics costs < 40 limit. According to data from valid 55 respondents the average logistics costs are 13.8% of turnover.

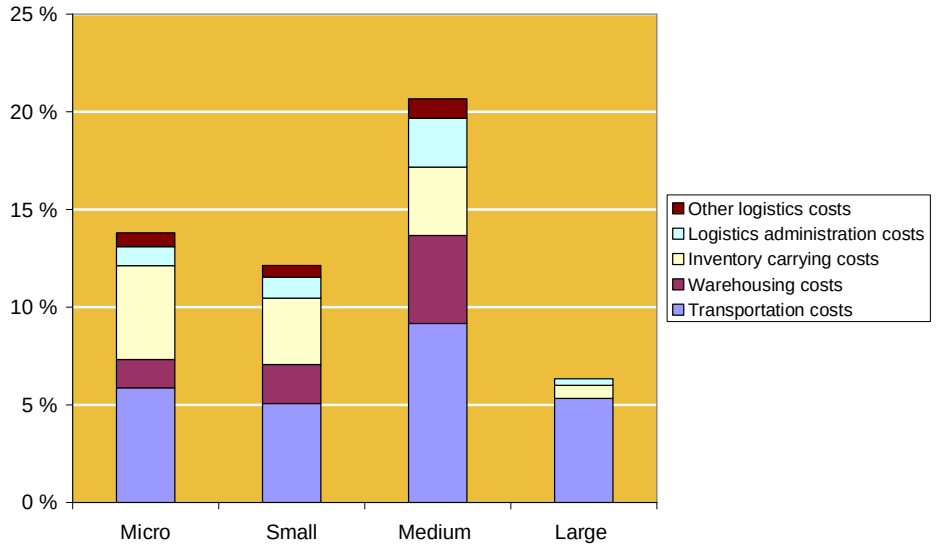

Figure 12 Logistics costs as a percentage of turnover, manufacturing companies

Estonian manufacturers average transportation costs are 6.0%, warehousing costs 1.9%, inventory carrying costs 4.1%, logistics administration costs 1.1% and all other logistics costs 0.7% of turnover.

Concerning company size – logistics costs level relationships, only micro and small companies can be compared in this. The number of valid logistics cost data about medium (6 respondents) and large companies (3 respondents) is too limited and different for making any objective conclusions.

Table 3 Logistics costs as percentage of turnover in micro and small size manufacturing companies

	Micro companies	Small companies
Transportation	5.9	5.1
Warehousing	1.5	2.0
Inventory carrying costs	4.8	3.4
Logistics administration	1.0	1.1
Other logistics costs	0.7	0.6
Total	13.8	12.1
No. of answers	31	15

By survey results in table 3 micro size firms total logistics costs are 14% higher than small size ones. This cost difference is mainly caused by differences in inventory carrying and transport costs. Surprisingly small size companies warehousing costs are 33% higher despite inventory carrying costs are 41% lover than micro size ones. One explanation could be that micro size manufacturers have concentrated on production of narrow product line according to concrete orders, orders are smaller and finished products are sent to clients without delay / waiting in distribution centre (DC) / warehouse. Bigger (small size) manufacturers are not so flexible – product line is wider and maybe more complicated, orders are bigger, more complicated and time consuming, finished products are stored, packed, consolidated before departure, etc. all this raises need for (finished goods) warehousing operations and increases warehousing costs.

Transport costs are far most unambiguously and accurately accounted logistics cost category in Estonian manufacturing companies, therefore most reliable. As both transport and overall logistics costs of micro size manufacturing companies are 14-16% higher compared to small size companies, it can be argued that Estonian micro size manufacturers logistics costs are ca. 15% higher than small size ones.

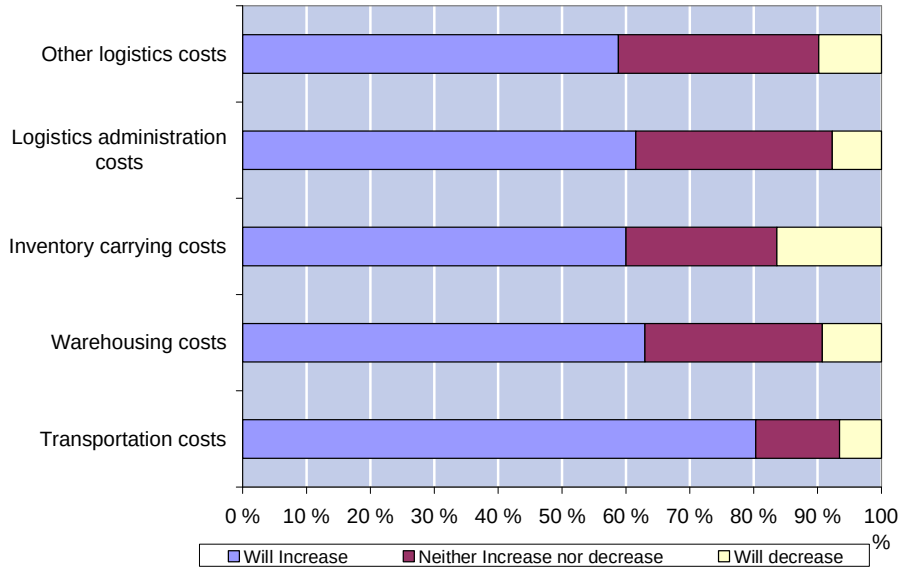

Figure 13 Estimate of the development of logistics costs, manufacturing companies

Figure 13 illustrates the manufacturers' opinions about logistics costs changes by 2010. 59-65 respondents answered to these questions, respondents number varies by logistics costs categories. "Do not know" answers are nor accounted in figure 5 chart.

Transport cost development (62 valid responses). Majority of respondents (79%) presume transport costs increase by 2010, of which 27% are ready for significant increase. 13% do not foresee any changes.

Warehousing costs development (54 valid responses). 63% presume this cost increase, of which 13% are ready for significant increase, 28% do not foresee any changes.

Concerning other logistics costs categories, around 60% of respondents foresee further increase, but less than transportation and warehousing costs – only 4-8% of respondents presume significant cost increase (6% in inventory carrying, 4% in administration, and 8% in other logistics costs). Only 17% respondents presume decrease of inventory carrying costs.

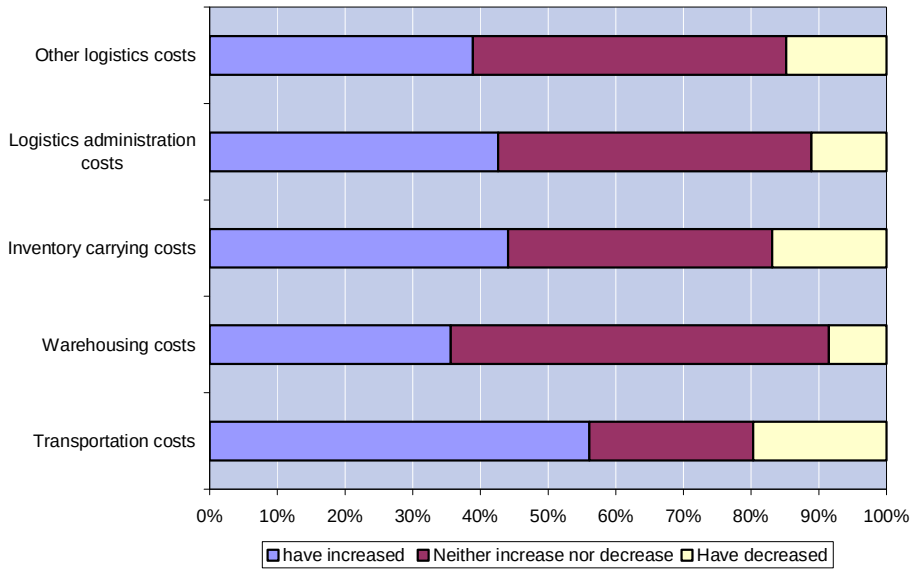

Figure 14 Estimate of development of logistics cost from 2004, manufacturing companies

One of Estonian local question asked respondents to estimate logistics costs developments after joining Estonia into EU in May 2004 by logistics costs categories. These results have presented in Figure 14. Except transportation costs, below half of respondents reported logistics costs increases since 2003/2004. Warehousing costs seems to be the most stable – by opinion of 56% of respondents there are no warehousing cost changes. This could be explained by increasing competition in warehousing space rent and warehousing services provider markets keeping warehousing related prices stable in Estonia. As warehouse space rent makes usually significant part of total warehousing costs, up to 1/3, rent prices have almost no changed after joining Estonia into EU – this event started warehouse building boom (logistics providers DCs, technology parks, manufacturers/traders own DCs) lasting up to now and bringing numerous high quality warehouse space into rent market, increasing these supply.

Surprisingly only 17% of respondents report about inventory carrying costs decrease after joining Estonia into EU, 39% have no changes, for 44% of respondents inventory carrying costs have somewhat increased.

Summing up, Estonian manufacturers presume progression of logistics costs increase, especially in the field of warehousing and transport. One main reason especially in warehousing is certainly the

sharp increase of labour costs in Estonia which is supposed to continue in the future.

3.1.2 Logistics costs Trade

According to valid answers from 51 respondents, Estonian trading companies average logistics costs make 13.3% of turnover, 0.5% less than average of manufacturing companies surveyed. Average transportation costs are 5.3%, warehousing costs 2.2%, inventory carrying costs 3.7%, logistics administration costs 1.6% and all other logistics costs 0.7% of turnover.

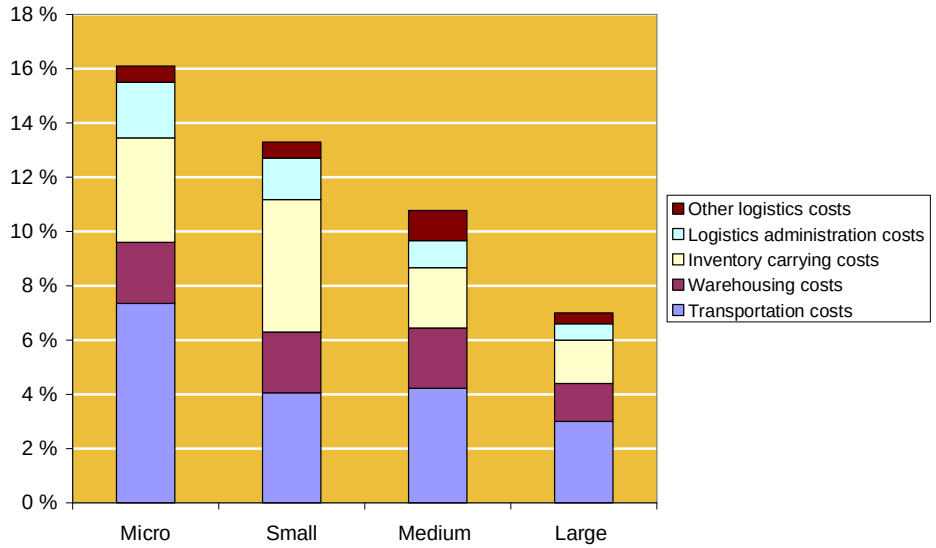

Figure 15 Logistics costs as a percentage of turnover, trading companies

Figure 15 and table 4 show trading companies logistics costs level depending on size. By the survey results the impact of trading companies' size on total logistics costs is quite impressive – micro and large companies logistics costs expressed as percentage of turnover differ more than twice (2.3 times) ranging from 16.1% in micro size traders to 7.0% in large ones!

Despite the low number of respondents in large and medium size categories it can be concluded that logistics costs expressed as percentage of turnover directly depend on company size. It concerns especially transportation, inventory carrying and logistics administration

costs. The percentage of warehousing and other logistics costs seem to be more independent of company size.

Table 4 Logistics costs as percentage of turnover in trading companies by size

	Micro firms	Small firms	Medium firms	Large firms
Transportation	7.4	4.1	4.2	3.0
Warehousing	2.3	2.2	2.2	1.4
Inventory carrying costs	3.9	4.9	2.2	1.6
Logistics administration	2.1	1.5	1.0	0.6
Other logistics costs	0.6	0.6	1.1	0.4
Total	16.1	13.3	10.8	7.0
No. of answers	20	17	9	5

The correlation between company size and logistics costs seems to be stronger in trading sector compared to manufacturing, at least in micro and small size categories. The total logistics costs of micro size manufacturers are 14% higher than small ones. In trading sector this difference is 21%. Also transportation costs (as most unambiguously and accurately accounted logistics cost category) differences between these size categories are much bigger in trading sector.

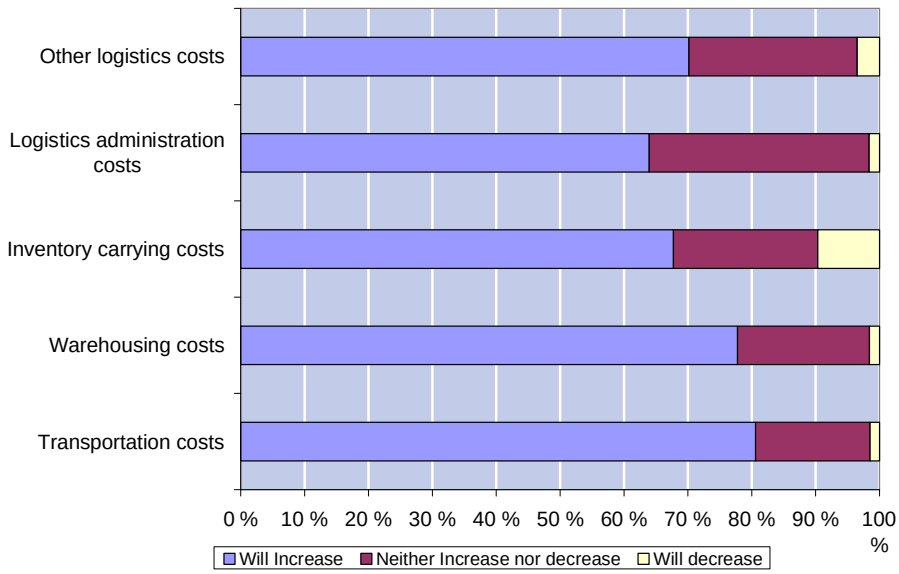

Figure 16 The estimate of the development of logistics costs, trading companies

Figure 16 illustrates the Estonian traders' opinions about logistics costs changes expressed as share of turnover by 2010. 57-67 respondents answered to these questions, respondents number varies by logistics costs categories. "Do not know" answers are nor accounted in figure 7 chart.

Transport cost development (67 valid responses). Like in manufacturing, majority of respondents (81%) presume transport costs increase by 2010, of which 33% are ready for significant increase. 18% do not foresee any changes.

Warehousing costs development (63 valid responses). 78% presume this cost increase, of which 14% are ready for significant increase, 21% do not foresee any changes.

Concerning other logistics costs categories, 64-70% of respondents foresee further cost increase. Only 10% respondents presume decrease of inventory carrying costs, nobody is hoping significant decrease in this cost category.

In comparison with Estonian manufacturers, traders seem to be more pessimistic in relation to logistics costs development future. The share of respondents hoping logistics cost decrease is much lower than manufacturers ones; share of respondents presuming further (and more significant) costs increase is higher, except transport and administration costs categories, where manufacturers and traders opinions are quite similar. The biggest difference in manufacturers and traders opinions concerns warehousing costs – only 63% of manufacturers presume these costs increase against traders 78%. Probably the reason is that usually trading companies warehousing operations are more labour intensive in comparison with manufacturers ones, therefore traders have and will be more influenced by sharp rise of labour costs in Estonia. Also bigger share of traders compared to manufacturers foresee inventory carrying and other logistics cost increase (68% against 60% and 70% against 59%).

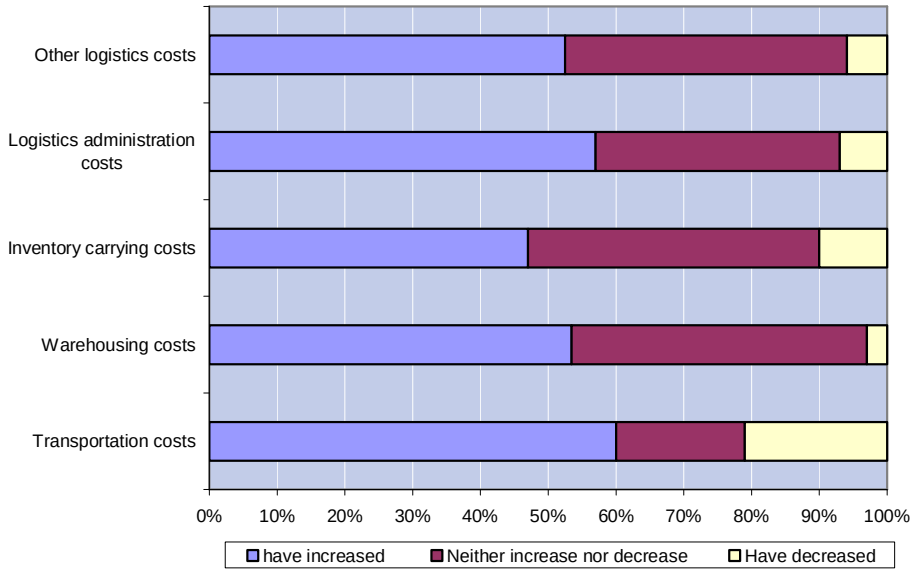

Figure 17 Estimate of development of logistics cost from 2004, trading companies

One of Estonian local question asked respondents to estimate logistics costs developments after joining Estonia into EU in May 2004 by logistics costs categories. These results have presented in Figure 17. Except inventory carrying costs, above half of respondents reported logistics costs increases since 2003/2004. Unlike manufacturers traders logistics costs increase is more even by cost categories ranging from 47% (inventory carrying) to 60% (transportation).

The shares of manufacturers and traders reporting transportation costs and inventory carrying costs increase are relatively similar (transportation: traders 60% against manufacturers 56 %, of which "significant increase" answers shares 16% against 12%; inventory carrying costs: 47% : 43% and 10% : 3%). In other logistics costs categories the share of traders reporting costs increase is much higher (warehousing: 53% : 36%, administration 57% : 43%, other 53% : 39%). Only 10% of traders have been able to lower their inventory carrying costs against manufacturers 17%.

3.2 Logistics indicators

Table 5 presents Estonian manufacturers and traders logistics indicators survey results. Some adjustments about the customer order

fulfilment cycle: one third (33%) of responded trading companies fulfil their customer orders within 1 day / 24 hours, 22% need 2 days / 25-48 hours for this. Same figures for responded manufacturers are 7% and 9%.

Table 5 Logistics indicators of Estonian manufacturing and trading companies

LOGISTICS INDICATORS	N	Average	Answers distribution				
			96-100%	91-95%	81-90%	71-80%	<71%
Perfect order fulfillment, %							
Manufacturers	64	80.5	25.0%	12.5%	18.8%	28.1%	15.6%
Traders	64	85.6	28.1%	20.3%	20.3%	10.9%	20.3%
	N	Average	Answers distribution				
			<8 days	8-14 days	15-30 days	31-60 days	>60 days
Customer order fulfillment cycle, days							
Manufacturers	59	21.5	37.3%	16.9%	28.8%	11.9%	5.1%
Traders	64	5.6	79.7%	10.9%	9.4%	0.0%	0.0%
End product inventory, days							
Manufacturers	58	13.9	55.2%	13.8%	24.1%	5.2%	1.7%
Traders	61	42.1	21.3%	9.8%	27.9%	23.0%	18.0%
Days of sales outstanding, days							
Manufacturers	58	30.2	3.4%	17.2%	55.2%	20.7%	3.4%
Traders	63	23.7	9,5%	30.2%	42.9%	15.9%	1.6%
Days payables outstanding, days							
Manufacturers	59	32.7	0.0%	11.9%	59.3%	23.7%	5.1%
Traders	62	36.5	4.8%	8.1%	48.4%	30.6%	8.1%

3.3 Logistics competence

Figure 18 shows the development needs of personnel competence in Estonian manufacturing companies. Predominantly the biggest competence need is for transport managements skills, followed by business strategy competence.

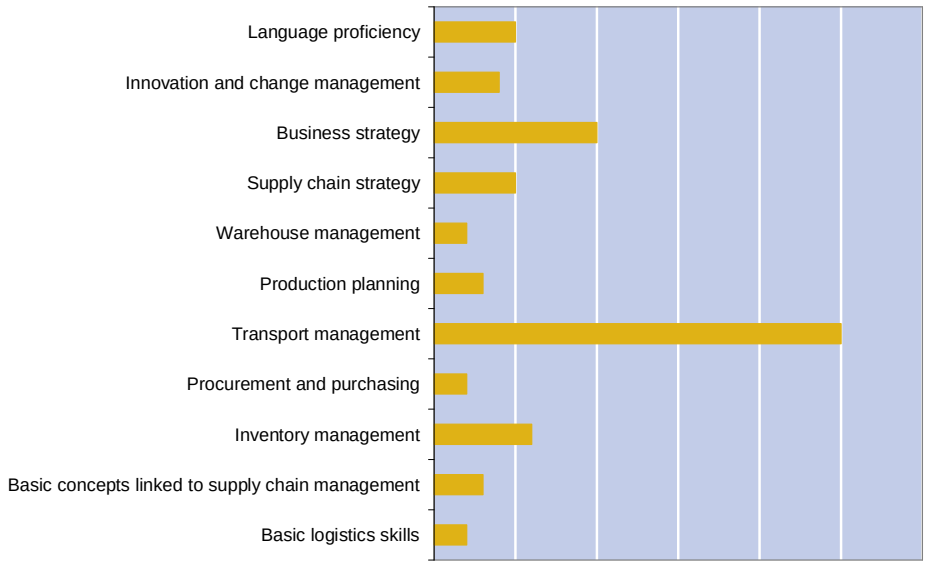

Figure 18 The development needs of personnel competence, manufacturing companies

Figure 19 The development needs of personnel competence, trading companies

Figure 19 shows the development needs of personnel competence in Estonian trading companies. The biggest competence need is for inventory management skills, followed by supply chain strategy and

supply chain management basic concepts knowledge. Unlike manufacturers transport management is not among traders personnel competence development needs priorities.

The conclusion could be that Estonian (average) traders logistics systems and these development levels are in more advanced level compared to manufacturers ones. Manufacturers still need more transport management competences in order to cope with increasing transportation costs, increasing requirements of customers concerning distribution and customer service and maybe arrangement of supplies from suppliers. It may be that up to latest years Estonian manufacturers have in great part acted as subcontractors, relying great part on their clients' in logistics matter. As Estonian labour costs have risen permanently, subcontracting is not more beneficial / possible for local manufacturers. They have been forced to switch on more value adding businesses, which has caused among other things a need for more independent and complicated transport solutions arranged by themselves.

This transport arrangement stage seems to be already completed by Estonian traders some time ago probably due to their business peculiarity (traders overall competitiveness depends in great part on competitiveness of their distribution system) and maybe stronger competition they are facing already from the end of nineties. Instead of it traders turn more attention on inventory management and supply chain management concepts and strategies (e.g. development of partnerships, wider information exchange with clients and logistics providers).

3.4 Outsourcing of logistics operations

Figure 20 shows the survey results about extent of outsourcing logistics functions in Estonian manufacturing and trading companies. The most commonly outsourced function is transportation and functions tied to transportation as freight forwarding and reverse logistics. 97% of Estonian manufacturing and trading companies outsource their international transportation (84% have outsourced over 75% of these operations), 95% domestic transportation (50% over 75%). Freight forwarding is outsourced in 83% of companies (43% over 75%) and reverse logistics in 77% companies (48% over 75%). There is no significant outsourcing difference between manufacturers and traders.

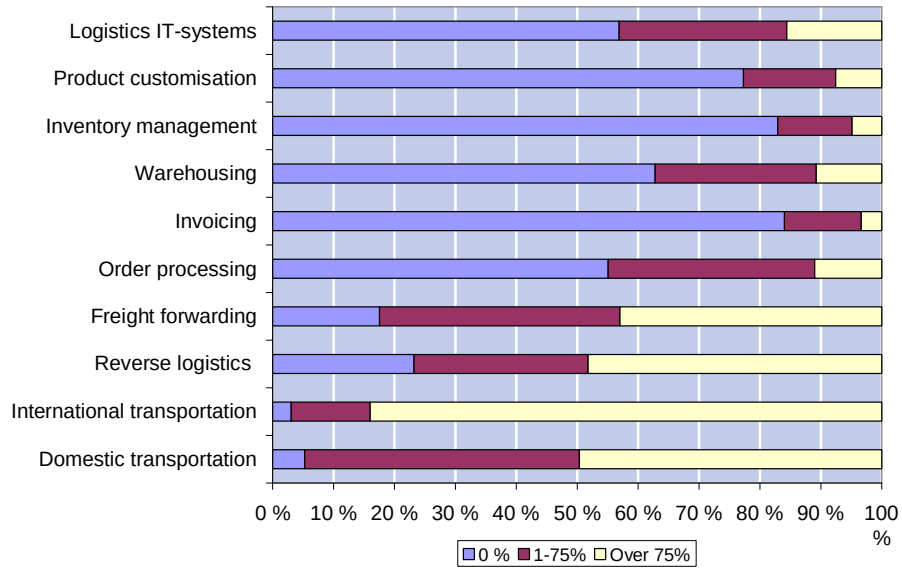

Figure 20 Outsourcing of different logistics functions, manufacturing and trading companies in Estonia

Order processing, logistics IT systems and warehousing are outsourced in 37-45% of companies (45%, 43% and 37% respectively). Invoicing, inventory management and product customization are less outsourced.

Figure 21 shows the survey results about the extent of outsourcing logistics functions by 2010 in Estonian manufacturing and trading companies. Respondents foresee further expansion of logistics functions outsourcing. There is exception of this trend also – the share of trading companies outsourcing international transports over 75% is supposed to be decreased in the future (current share 85% against 74% in 2010).

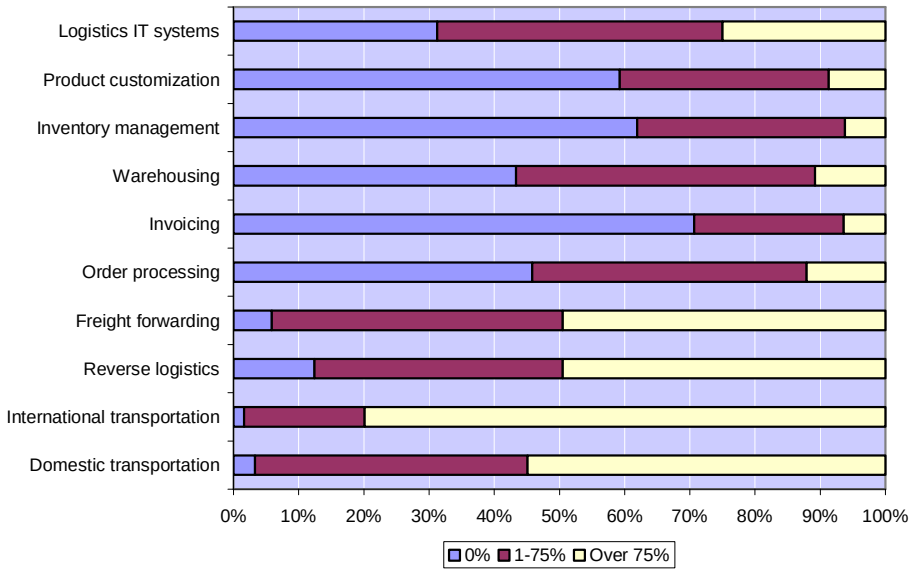

Figure 21 Outsourcing of different logistics functions in 2010, manufacturing and trading companies in Estonia

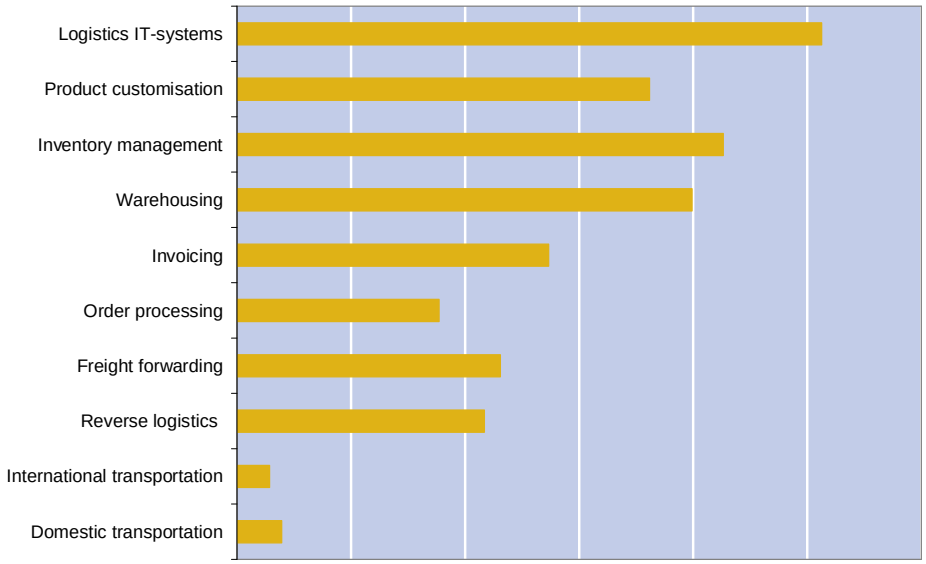

Figure 22 The relative trend of outsourcing, companies in Estonia

The outsourcing expansion trends are summarised in figure 22. The outsourcing of logistics IT systems is presumed to be the faster expanding field of logistics outsourcing in Estonia. By 2010, additional 26% of firms are expected to outsource their logistics IT systems in

some extent compared to current situation. Inventory management, warehousing and product customisation outsourcing are the next by expansion rate – additional 21%, 20% and 18% accordingly.

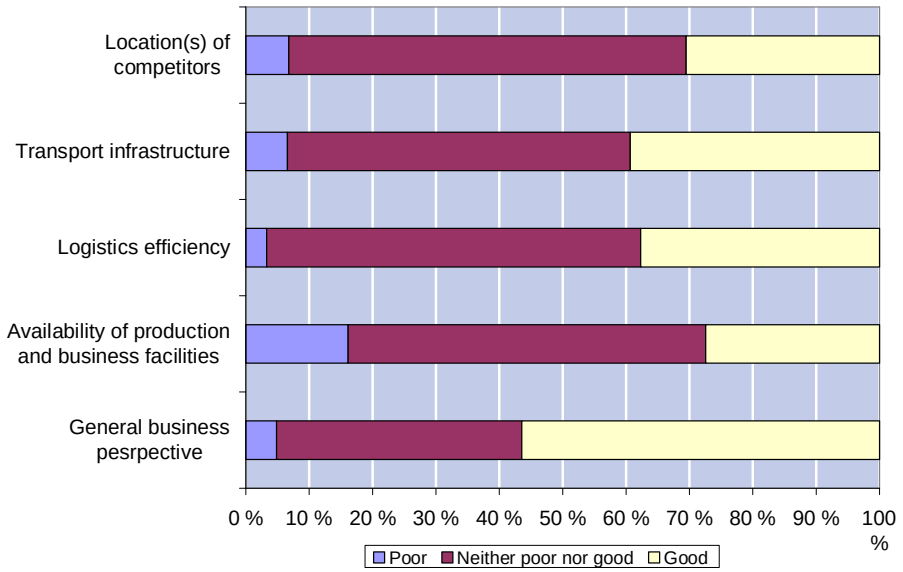

Figure 23 Manufacturing companies' opinions on their operating environment

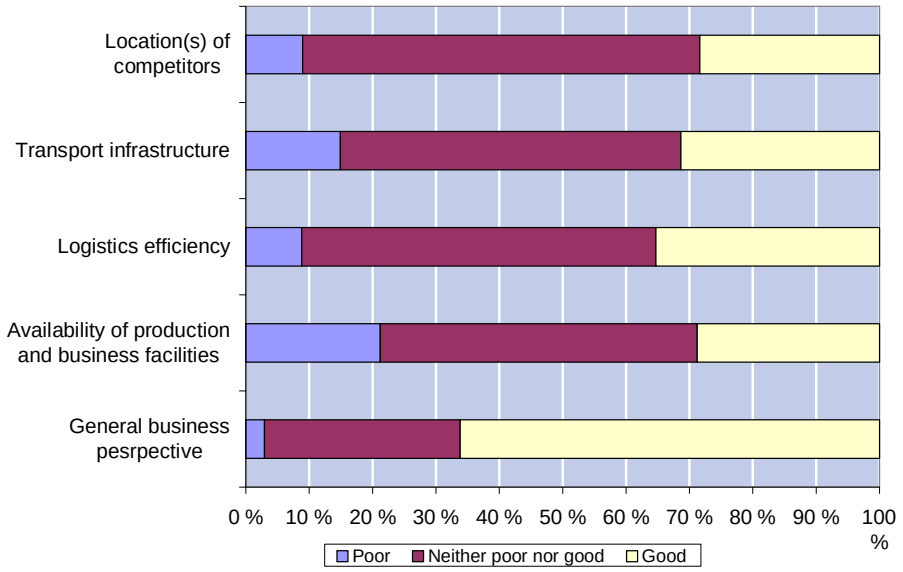

Figure 24 Trading companies' opinions on their operating environment

Figures 23 and 24 show manufacturing and trading companies' opinions about their operating environment. These opinions are rather neutral than positive, except general business perspective where positive opinions are prevailing, especially in the case of trading companies. At the same time 21% of trading companies estimate availability of production and business facilities poor (against 17% of manufacturers). Transport infrastructure is estimated as poor by 15% of trading and 7% of manufacturing companies.

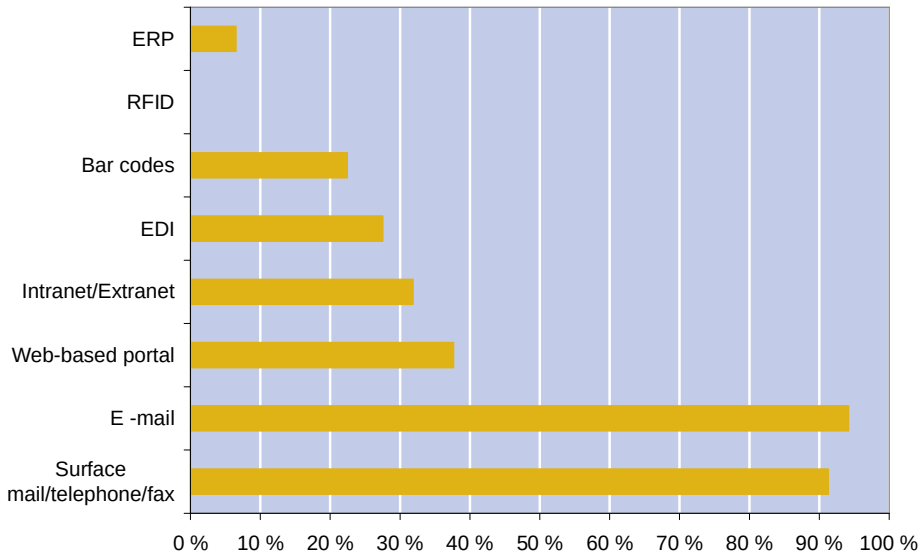

Figure 25 The usage of different ICT-systems, manufacturing and trading companies in Estonia

Figure 25 shows the usage of different ICT systems. Of course the usage of email and surface mail, telephone, fax is prevailing. 37% respondents use web based portals, 32% Intranet/Extranet, 27% Electronical Data Interchange (EDI) and, 22% barcodes. The Enterprise Resource Planning (ERP) systems are in use in 7% respondents.

There are some differences between manufacturers and traders ICT use. Traders use more widely Intranet/Extranet, EDI and barcodes (traders 37%, 33% 26% against manufacturers 26%, 22%, 19% accordingly). 9% of manufacturers use ERP systems against traders 4%.

3.5 Self assessment of the companies

Table 6 presents the results of respondent companies' self-assessments on complexity in the supply chains. Respondents rate their companies' performance quite highly – 58-73% of respondents consider their firms' performance better as their major competitors.

Table 6 Companies' self-assessment of transparency in the supply chain

	Much worse	Worse	Neither worse nor better	Better	Much better
My firm has been able to reduce the time between order receipt and customer delivery to as close as zero as possible	1	5	45	43	26
My firm is able to meet the quoted or anticipated delivery dates and quantities on a consistent basis	1	2	41	51	28
My firm is able to respond to the needs and wants of key customers	1	1	31	47	42
My firm is abel to notify customers in advance of delivery delays and product shortages	1	5	47	48	23
My firm is able to modify order size, volume or composition during logistics operations	1	6	29	37	46
My firm is able to accommodate delivery times for specific customers	1	6	42	41	32

Respondents rate especially highly their companies' ability to be flexible. 73% of respondents consider their firm better in responding to the needs and wants of key customers. By opinion of 70% respondents, their company is able to modify order size, volume or composition during logistics operation better than competitors.

Companies' ability to notify customers in advance of delivery delays and to reduce time between order receipt and customer delivery time is rated relatively lower – accordingly 57% and 58% of respondents consider their companies better in this matter.

Table 7 Companies' views on the future development of the supply chain

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We regularly monitor and evaluate our logistics costs and performance internally	1	12	19	75	21
We regularly monitor and evaluate logistics costs and performance with selected suppliers and/or customers	5	32	32	49	8
We regularly benchmark logistics performance metrics against our competitors	8	41	43	24	3
Regular monitoring and evaluaton of logistics benefits our firm	1	3	17	64	41
We regularly monitor the environmental effects of our logistics operations	16	38	32	19	12

Table 7 shows the respondents views on the future development of the supply chain. 83% of respondents monitor and evaluate the logistics benefits of their firm. 75% of them regularly monitor and evaluate their logistics costs and performance internally, 45% do it with selected suppliers and / or clients.

Concerning the benchmarking and monitoring logistics operations environmental effects – only respectively 23% and 26% respondents do it, 41% and 46% do not.

Table 8 Companies' self assessment on internal collaboration in logistics operations

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
Logistics has a major impact on our profitability	8	47	41	26	10
Logistics has a major impact on our customer service level	7	25	42	40	18
Logistics is a key source of competitive advantage for our firm	10	37	40	30	12
Logistis is a top management priority in our firm	14	39	37	30	7

Table 8 gives overview about companies' assessment on the importance of logistics in their operations. Surprisingly only 27% respondents agree that logistics has a major impact on their firm profitability and 33% agree that logistics is the key source of their competitive advantage. The share of disagreed respondents is 42% and 36% accordingly. Proceeding from this, only 29% agrees that logistics is top management priority in their firm, 42% clearly disagree with this statement.

The only statement in this table where the share of agreed respondents (44%) surpasses share of disagreed ones (24%) concerns logistics impact on company service level.

Summing up - seems that majority of Estonian manufacturing and trading companies see logistics rather as tactical tool instead of strategic one.

Table 9 Companies' self-assessment on internal collaboration in logistics operations

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We effectively share operational information within our firm	0	11	28	73	18
We are well prepared for internal disturbances and irregularities in our operations	0	13	39	66	10
Our information systems provide operational managers with sufficient and timely information to manage logistics activities	1	22	34	58	13
Strategic planning and target setting is done in collaboration between functions/ departments	0	13	18	78	19

Table 10 Companies' self assessment on external collaboration in logistics operations

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We effectively share operational information with selected suppliers and/or customers	1	4	16	89	20
We are well prepared for external disturbances and irregularities in our operations	0	18	43	53	12
Our information systems support the sharing of operational information with selected suppliers and/or customers	4	16	25	69	13
We effectively collaborate with selectd suppliers and/or customers to facilitate operational planning and to improve forecasting	1	9	24	78	14

Tables 9-10 show the survey results in respondents' self-assessment on internal and external collaboration in logistics operations.

Respondents rate their operational information sharing with external partners more effective than this one within own company – 84% of respondents agree that their external information sharing is effective against 70% of agreements about internal one. Same about information systems quality – 65% of respondents agree that their IT systems support information sharing with selected external suppliers / clients against 55% agreements about their IT systems ability to

provide own company operational managers sufficient and timely information. It is worth mentioning that information sharing ability is rated much higher than IT systems quality actually realizing this information. Does it mean that current IT systems quality may be bottleneck in information sharing?

Also both internal and external collaboration abilities of respondent companies are relatively highly rated – 76% of respondents agree that strategic planning and target setting is done in collaboration between functions/departments, 73% agree that they effectively collaborate with selected suppliers/customers to facilitate operational planning and improve forecasting.

Respondents' lowest rating concerns their ability to be prepared for external disturbances and irregularities of their operations (52% agreements). Concerning preparation for internal disturbances and irregularities in operations – 59% respondents agree with it.

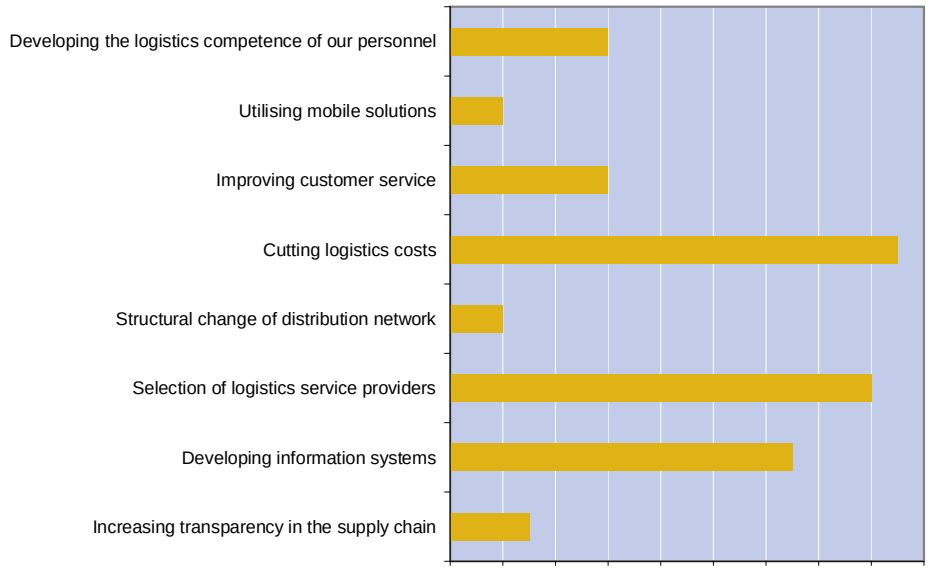

Figure 26 The most important future development needs of manufacturing companies

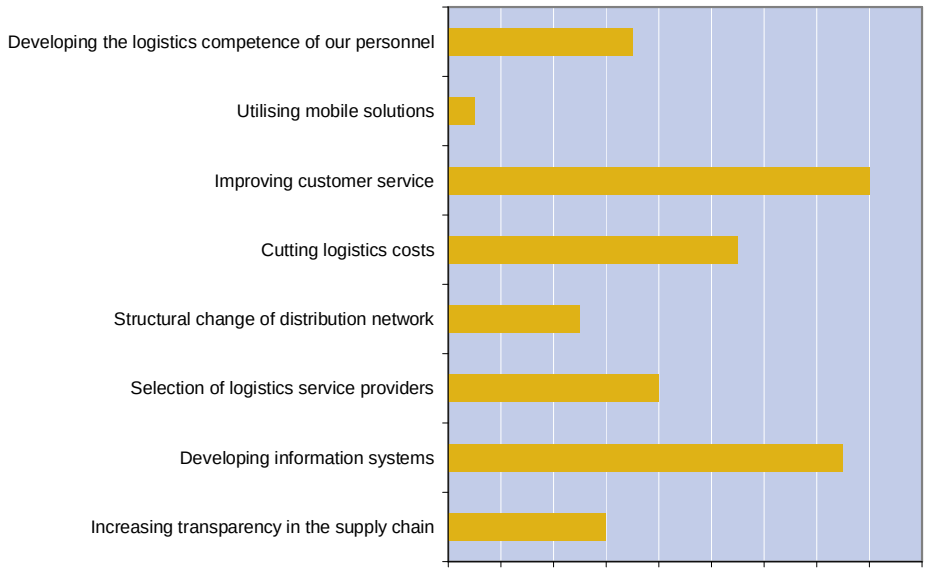

Figure 27 The most important future development needs of trading companies

Figures 26 and 27 show the most important future development needs for Estonian manufacturing and trading companies by number of respondents mentioned individual needs. For manufacturers the most important development needs are cutting of logistics costs (especially transport costs), careful selection of logistics service providers and development of logistics information systems. For traders the most important development needs are the further improvement of customer service, logistics IT systems development and cutting logistics costs.

4 FINDINGS FROM LOGISTICS SERVICE PROVIDERS

4.1 Client structure and market development

Figure 28 shows the distribution of turnover in logistics services companies for different type of services in 2005 and 2010 estimation. According to survey results majority (61%) of logistics services provided by respondents are purely transport services, 4% are purely warehousing services, 13% are standardised logistics packages combining at least transportation and warehousing, 22% are service packages customised to certain needs of certain clients.

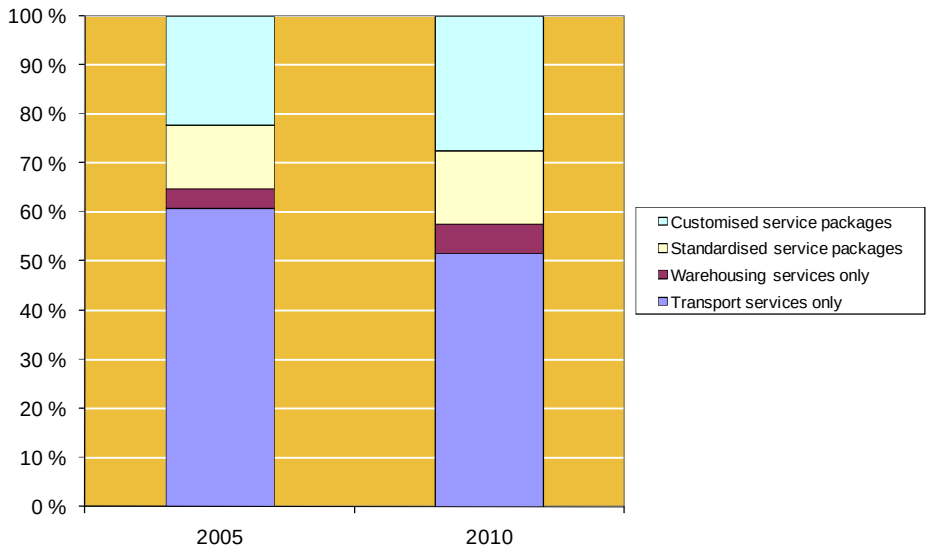

Figure 28 Distribution of turnover in logistic services companies for different types of services 2006 and 2010 (estimate)

By 2010 the share of purely transport services is supposed to decrease to 52%. The customised service packages will have 27%

share, standardised service packages 15% and purely warehousing services 6%.

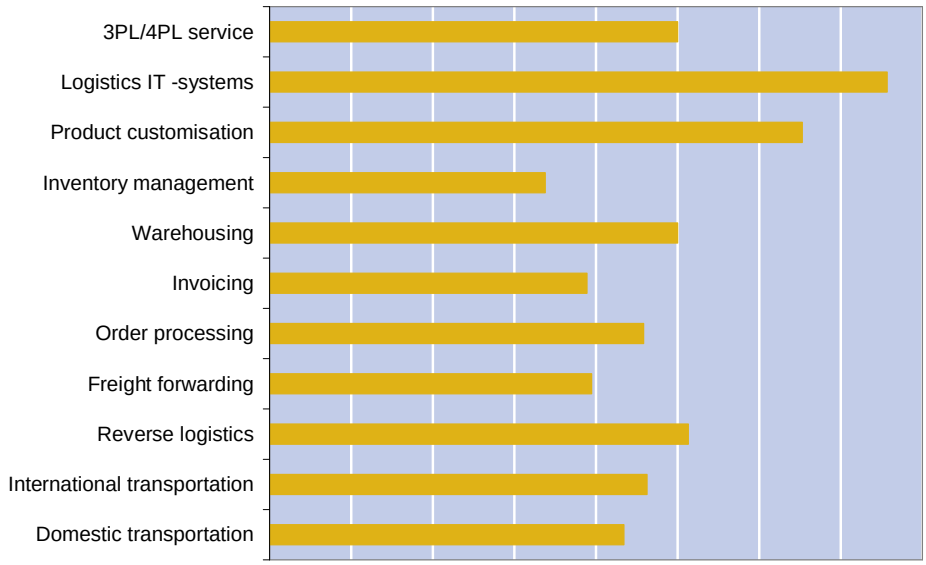

Figure 29 The relative trend of outsourcing, logistics service providers in Estonia

Figure 29 shows the relative trends by 2010 in outsourcing of different logistics services by opinion of logistics service providers participated in survey. By this logistics companies expect quite even and significant growth of demand in all logistics outsourcing sectors. Relatively the biggest growth rate is foreseen in logistics IT and product customisation outsourcing. It coincide with their clients opinions (figure 21) by which the IT systems outsourcing is the fastest expanding area of logistics outsourcing and product customisation outsourcing growth rate is also estimated being above average.

4.2 Logistics competence

Figure 30 shows the most important personnel competence needs of Estonian logistics services providers. By the survey the most important is need for transport management competency followed by service provision planning and innovation and change management.

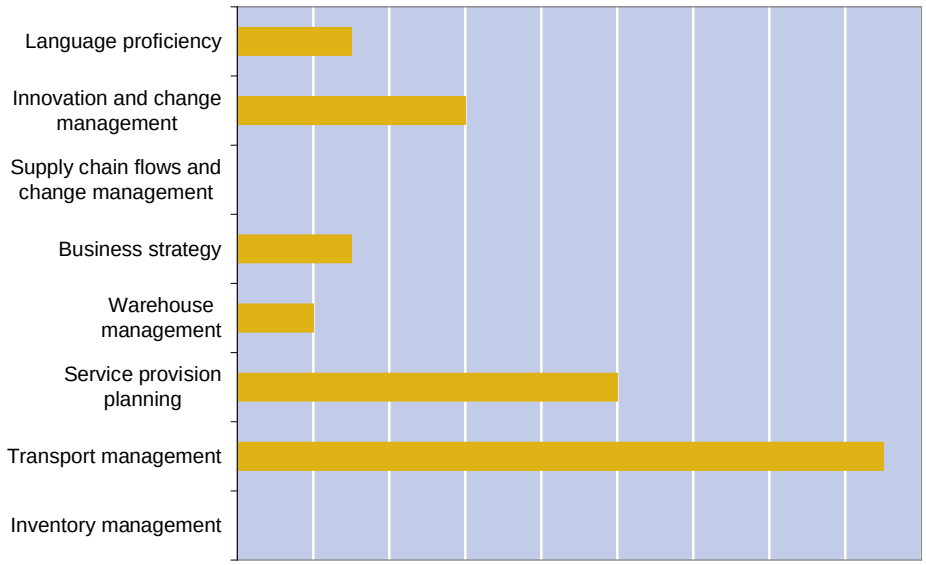

Figure 30 The most important development needs of personnel competence, logistics service providers

4.3 Development needs and threats of the future

Figure 31 shows the largest threats to business by Estonian service provider opinions. Far the biggest threat is availability of competent staff (as everywhere in Estonia due to sharp labour shortage arising after joining into EU), followed by increasing cost of service provision and tightening competition.

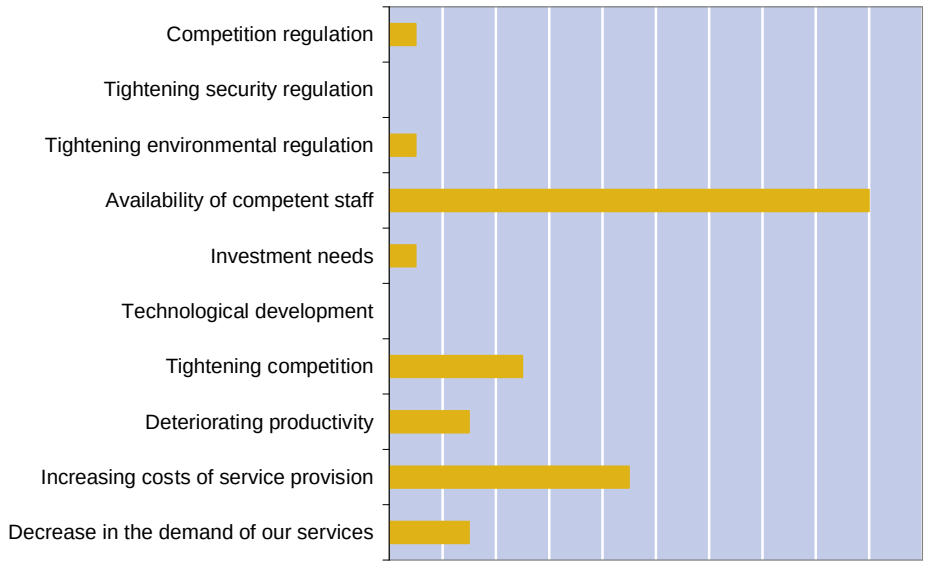

Figure 31 Largest threats to business, logistics service providers

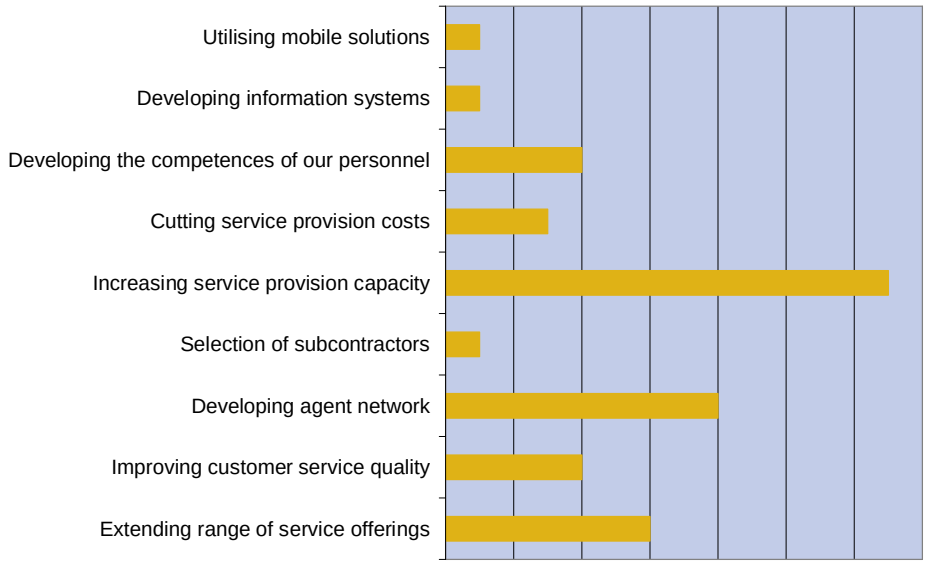

Figure 32 The most important development needs of the future, logistics service providers

Figure 32 describes Estonian logistics providers most important development need of the future. Most important need is increasing service provision capacity in conditions of labour shortage and rapidly increasing demand. Developing agent networks and extending range of

services are also above average important for Estonian logistics services providers. Summing up – it seems that currently the main care of average Estonian service provider is to keep pace with growing demand for logistics services by their clients.

4.4 Operating environment

Figure 33 shows logistics service providers' opinions on their operating environment. Similarly to manufacturers and traders the opinions are rather neutral than positive. Compared to manufacturers and traders lesser share of logistics providers estimates their location in relation to competitors and general business perspectives as "good". Also the dissatisfaction with transport infrastructure is higher – 20% of respondents consider transport infrastructure poor against manufacturers 7% and traders 15%.

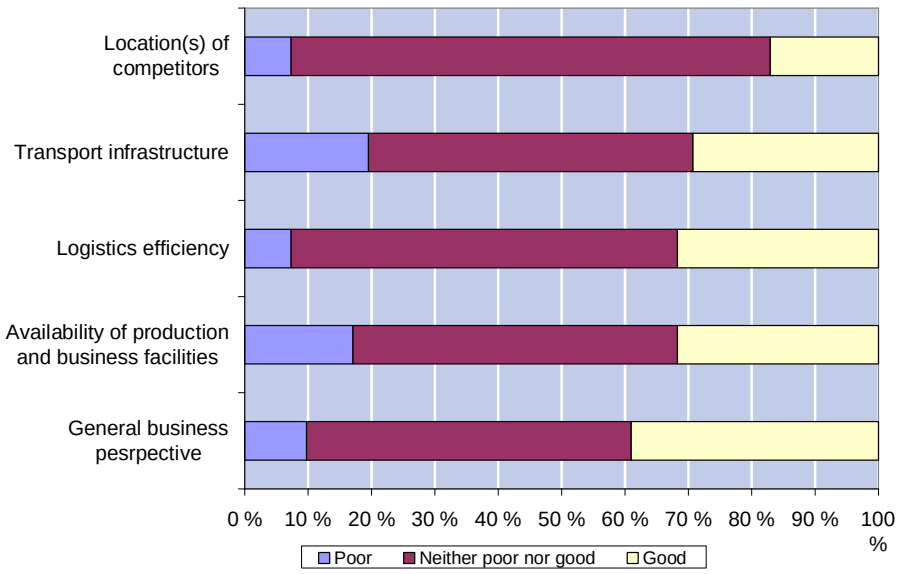

Figure 33 Logistics service providers' opinions on their operating environment

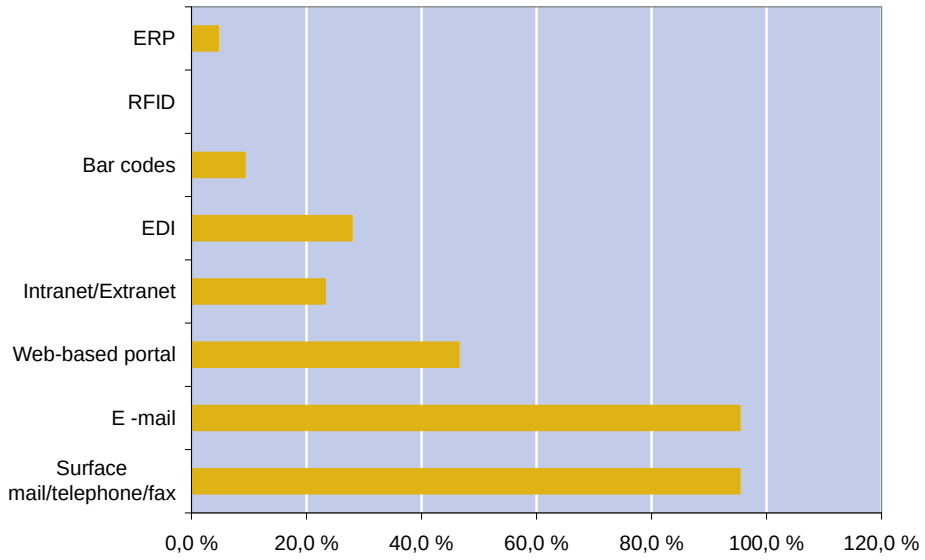

Figure 34 The usage of different ICT-systems, logistics service providers in Estonia

Figure 34 shows the usage of different ICT systems by Estonian logistics service providers. In comparison with Estonian manufacturers and traders logistics service providers use more web-based portals (47% against 37%) but less bar coding (9% against 22%). EDI usage level (28%) is less than traders, more than manufacturers.

4.5 Self assessment of the companies

Table 11 presents the results of Estonian logistics service providers' self-assessments on complexity in the supply chain. Respondents rate their company's performance quite highly – 63-74% of respondents consider their firm's performance better than main competitors.

Table 11 Companies' self assessment on complexity in the supply chain

	Much worse	Worse	Neither worse nor better	Better	Much better
My firm has been able to reduce the time between order receipt and customer delivery to as close as zero as possible	0	4	11	22	3
My firm is able to meet the quoted or anticipated delivery dates and quantities on a consistent basis	0	4	8	21	5
My firm is able to respond to the needs and wants of key customers	0	2	9	16	12
My firm is abel to notify customers in advance of delivery delays and product shortages	1	0	14	9	14
My firm is able to modify order size, volume or composition during logistics operations	1	2	9	15	11
My firm is able to accommodate delivery times for specific customers	1	2	7	18	10

Logistics service providers rate especially highly their companies ability to accommodate delivery times (74% considers their companies better than competitors) and ability to respond the needs and wants of key customers (72% of respondents suppose they are better than competitors). These two abilities seem to be the main competitive advantages of Estonian logistics service providers.

The estimations about abilities to notify customers in advance of delivery delays / product shortages and to reduce the time between order receipt and customer delivery are relatively lowest ones – accordingly 61% and 63% of respondents rate their firms performance better than competitors in these matter.

Compared with manufacturers and traders opinions – the biggest difference is in ratings to ability of accommodating delivery times for specific customers. 74% of logistics service providers consider themselves better than competitors against manufacturers and traders 60%.

Table 12 Companies' self-assessment on the future of supply chain

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We regularly monitor and evaluate our logistics costs and performance internally	0	2	2	16	20
We regularly monitor and evaluate logistics costs and performance with selected suppliers and/or customers	2	9	8	14	7
We regularly benchmark logistics performance metrics against our competitors	3	4	12	19	0
Regular monitoring and evaluaton of logistics benefits our firm	0	0	3	15	22
We regularly monitor the environmental effects of our logistics operations	1	13	14	9	1

Table 12 shows the Estonian logistics service providers' views on the future development of supply chain. 93% of respondents monitor and evaluate of logistics benefits of their firm. 90% of them regularly monitor and evaluate their logistics costs and performance internally. These shares are significantly higher than manufacturers' and traders' ones (83% and 75% accordingly). It seems to be logical - logistics is logistics service providers' core business and this performance is therefore controlled more carefully.

53 % of respondents regularly monitor and evaluate logistics costs and performance with selected suppliers and clients – this share is a bit higher than manufacturers' and traders' one (45%). The share of logistics service providers and manufacturers and traders not doing that is similar (28% and 29% accordingly).

Logistics service providers benchmark their logistics performance metrics against competitors much more than manufacturers' and traders do – 50% against 23%.

Only 26% of logistics service providers regularly monitor the environmental effects of their logistics operations – the same share as manufacturers and traders have. 37% of logistics service providers do not this at all.

Tables 13-14 show the survey results in logistics service providers' self-assessment on internal and external collaboration in logistics operations.

Table 13 Companies' self assessment on internal collaboration in logistics operations

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We effectively share operational information within our firm	0	2	2	20	16
We are well prepared for internal disturbances and irregularities in our operations	0	4	6	24	6
Our information systems provide operational managers with sufficient and timely information to manage logistics activities	1	5	7	21	6
Strategic planning and target setting is done in collaboration between functions/departments	0	4	4	20	12

Table 14 Companies self assessment on external collaboration in logistics operations

	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
We effectively share operational information with selected suppliers and/or customers	0	1	7	22	10
We are well prepared for external disturbances and irregularities in our operations	0	5	7	22	4
Our information systems support the sharing of operational information with selected suppliers and/or customers	2	7	6	21	3
We effectively collaborate with selectd suppliers and/or customers to facilitate operational planning and to improve forecasting	1	1	6	27	4

Generally logistics service providers assess their collaboration abilities higher than manufacturers and traders do, especially on internal collaboration. 90% agree that they effectively share operational information within their firm (against 70% of manufacturers and traders). 68% agree that their information systems provide operational managers with sufficient and timely information (against manufacturers and traders 55%). 75% believe that they are well prepared for internal disturbances and irregularities of their operations (against manufacturers and traders 59%).

80% of respondents agree that strategic planning and target setting is done in collaboration between company own function / departments. Manufacturers & traders have quite similar result – 76%.

Concerning external collaboration, logistics service providers' advantages are not so significant more. They are better prepared for external disturbances and irregularities in their operations (68% of agreements against manufacturers and traders 52%) due to their business peculiarity. Other external collaboration assessments are rather similar with manufacturers and traders ones. 80% of logistics service providers agree that they effectively share information with selected suppliers and / or clients (against manufacturers and traders 84%). 79% agree that they effectively collaborate with selected suppliers / customers to facilitate operational planning and to improve forecasting (against manufacturers and traders 73%). 62% agree that their information systems support the sharing of operational information with selected suppliers / clients (against manufacturers and traders 65%).

5 SUMMARY AND CONCLUSIONS

There is no previous thorough logistics surveys made in Estonia. LogOn Baltic survey is the first one giving some overview about the logistics situation in local market. Survey results are basing the data from 186 manufacturing, trading and logistics companies participated in survey.

By survey results, average Estonian companies' logistics costs are 13.6% of turnover ranging from 13.3% in trading sector to 13.8% in manufacturing sector. In trading sector there is strong and clear correlation between company size and logistics costs (as % of turnover) levels – bigger companies logistics cost are lower. Concerning manufacturing, insufficient number of medium and large size companies participated in survey do not allow to make similar conclusion. It can be only argued that micro size manufacturing companies total logistics costs are ca 15% higher than small size ones.

Since joining Estonia into EU in May 2004 transportation costs have increased by opinion of over 50% manufacturers and traders responded. Other logistics costs have been rather stable in manufacturing. In trading sector over 50% of respondents reported also warehousing, logistics administration and other logistics costs increase.

Manufacturers and traders presume the progression of logistics costs growth, especially in transport (over 80% of respondents), followed by warehousing costs. Traders are somewhat more pessimistic with respect to logistics costs other than transportation increase: roughly 70% answered traders foresee further cost increase against 60% of manufacturers.

The most important area in development needs of personnel competence is transport management skills in manufacturing and logistics service providers sector. Trading companies need most of all to develop inventory management competence.

Currently most widely outsourced logistics activity in Estonian manufacturing and trading companies is international transportation - 97% of respondents outsource it at least in some extent. Other transport related activities (domestic transportation, freight forwarding, and reverse logistics) are also widely outsourced (77-95%). Less outsourced logistics activities are invoicing and inventory management

– 16-17% of respondents are outsourcing these at lest in some extent. Concerning the development trends, IT systems, inventory management and warehousing are presumed to be the faster expanding fields of logistics outsourcing in Estonia.

Opinions on operating environment are rather neutral that positive among survey respondents. The most positive opinion is about general business perspectives, especially in trading and manufacturing companies.

Concerning usage of different ICT systems 37% of responded manufacturers and traders use Web based portals, 32% Intranet/Extranet, 27% EDI, 22% bar coding and 7% ERP systems. Logistics service providers use more web-based portals (47%) but less bar coding (9%) and ERP systems (4%). EDI usage is on the same level as manufacturers and traders have (28%).

One of the interesting results of survey was that majority of Estonian manufacturing companies see logistics as a tactical tool instead of strategic one. Surprisingly only 27% of respondents agreed that logistics has a major impact on their firm profitability and one third agreed that logistics is the key source of their competitive advantage. By survey results, logistics is top management priority only in 29% of Estonian manufacturing and trading companies.

Estonian companies assess their logistics abilities and performance quite highly. In questions asking respondents to compare their logistics performance with their competitors' one, 58-74% of respondents consider their own company performance better. By opinion of respondents the main logistics competitive advantage of Estonian companies in all sectors is their ability to respond to the needs and wants of key customers better than competitors.

83% of manufacturers and traders and 93% of logistics services providers find that regular monitoring and evaluation of logistics benefits their company. 75% of manufacturers and traders and 90% of logistics services providers regularly monitor and evaluate logistics costs internally. Respectively 45% and 53% do it with selected suppliers and / or clients. Benchmarking logistics performance metrics against competitors is much less in use and there is great difference between manufacturers and traders and logistics service providers – respectively 23% and 50% do it.

One a little bit surprising survey result is that Estonian manufacturers and traders assess their operational information sharing with external partners more effective than this one within own company – 80% of respondents agreed that their external information sharing is effective

against 70% of agreements about internal one. Same about information systems quality – 65% of respondents agreed that their IT systems support information sharing with selected external suppliers and / or clients against 55% agreements about their IT systems ability to provide own company operational managers sufficient and timely information. Logistics service providers are much more effective in internal information sharing – 90% agreed that this is effective in their firm, 68% agreed that their information system ensure operational managers sufficient and timely information. External information abilities are estimated quite similar level with manufacturers and traders.

The most important future developments needs of manufacturing companies are logistics costs cutting, careful selection of logistics services providers and development of logistics information systems. For traders these are improvement of customer service, development of information systems and logistics costs cutting. Logistics service providers need first of all to increase service provision capacity, develop agent network and extend the range of service offerings.

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APPENDIX

Appendix 1 Interview guideline

[General Questions for all respondents]

G1. Background information

a) Company name / Name of business unit: [Open field]

b) Postal code: [Open field]

c) Email address (required only if you wish to receive the customised survey report): [Open field]

d) Respondent's position in the firm:

[Drop-down menu]

Senior management

Middle management

Operational staff

Expert

Other

G2. Please choose whether you wish to respond on behalf of the whole firm or a group of companies OR an individual business unit.

Both options are hereon referred to as "your firm".

[Drop-down menu]

I wish to respond on behalf of the whole firm or a group of companies.

I wish to respond on behalf of an individual business unit.

G3. Please indicate the number of employees in your firm at the end of 2005.

[Drop-down menu]

1-9

10-49

50-249

250-499

500-999

1000-1999

2000-4999

5000-10000

Over 10000

G4. Please indicate the turnover of your firm in 2005.

[Drop-down menu]

0-2 M EUR

2.1-5 M EUR

5.1-10 M EUR

10.1-25 M EUR

25.1-50 M EUR

50.1-100 M EUR

100.1-500 M EUR

500.1-1000 M EUR

1.1-5 billion EUR

over 5 billion EUR

[NOTE: this is a general scale used by Eurostat for EU statistics; please, provide us the corresponding national scales that conform to this in your national currency for Sweden, Estonia, Latvia, Lithuania and Poland!]

G5. Please choose the main sector that your firm represents.

[Drop-down menu]

Manufacturing and construction

Trading

Logistics services

[General scales and terms that need to be translated]

Will decrease significantly

Will decrease somewhat

Neither decrease nor increase

Will decrease somewhat

Will increase significantly

No response

Internally

With customers

With suppliers
With logistics providers

Much worse
Somewhat worse
Neither worse nor better
Somewhat better
Much better

Strongly disagree
Disagree
Neither disagree nor agree
Agree
Strongly agree

Very poor
Poor
Neither poor nor good
Good
Very good

[Questions for manufacturing firms]

M6. Please choose the industry that best fits your firm's field of business.
[Drop-down menu]

Manufacturing of food products, beverages and tobacco
Manufacturing of textiles and textile products
Manufacturing of leather and leather products
Manufacturing of wood and wood products
Manufacturing of pulp, paper and paper products
Publishing and printing
Manufacturing of coke, refined petroleum products, and nuclear fuel
Manufacturing of chemicals, chemical products, and man-made fibres
Manufacturing of rubber and plastic products
Manufacturing of other non-metallic mineral products
Manufacturing of basic metals and fabricated metal products
Manufacturing of machinery and equipment
Manufacturing of electrical and optical equipment

Manufacturing of transport equipment

Other manufacturing

Construction

M7. Please choose the option that best describes production in your firm.

[Drop-down menu]

Products are made to stock (MTS).

Products are assembled to order (ATO).

Products are made to order (MTO).

Customer specific products are engineered to order (ETO – including project-driven businesses).

Our business focuses on selling the manufacturing capacity of other firms to customers (capacity selling, CS).

M8. Please choose the option that best describes your firm's position in the production chain (see figure).

[Drop-down menu OR tick box, where only one option can be chosen]

Provider of raw materials

Provider of semi-finished products

Manufacturer / assembler of final products

M9. Please estimate how many percent of your firm's PRODUCTION CAPACITY was located in each of the following geographical areas in 2005.

NOTE! The total should add up to 100%.

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) In the domestic market
b) Outside the domestic market but within the EU (incl. Norway, Iceland and Switzerland)
c) Outside the EU but within Europe
d) In the rest of the world

M10. Please estimate how many percent of your firm's SALES were generated in each of the following geographical areas in 2005.

NOTE! The total should add up to 100%.

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) In the domestic market
b) Outside the domestic market but within the EU (incl. Norway, Iceland and Switzerland)
c) Outside the EU but within Europe
d) In the rest of the world

M11. Please estimate how many percent of your firm's PURCHASES originated from each of the following geographical areas in 2005.

NOTE! The total should add up to 100%.

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) From the domestic market

b) From outside the domestic market but from the EU (incl. Norway, Iceland and Switzerland)

c) From outside the EU but from Europe

d) From the rest of the world

M12. Please estimate the following logistics costs of your firm expressed as percentages of firm turnover in 2005. [Drop-down menus (0-40% range under each in 1% intervals)]

NOTE! The total should NOT add up to 100%.

Direct logistics costs

a) Transportation and cargo handling (incl. transport packaging)

b) Warehousing (cost of running own warehouse or buying the service)

Indirect logistics costs

c) Inventory carrying cost (incl. cost of capital tied in inventory)

d) Logistics administration (costs from functions indirectly related to logistics)

Other direct and indirect logistics costs

e) All other logistics costs

M13. Please estimate how the relative share of the following logistics costs will develop by 2010 in your firm compared to firm turnover.

[5-point scale under each (Will decrease significantly…Will increase significantly) + "No response"]

Direct logistics costs

f) Transportation and cargo handling (incl. transport packaging)

g) Warehousing (cost of running own warehouse or buying the service)

Indirect logistics costs

h) Inventory carrying cost (incl. cost of capital tied in inventory)

i) Logistics administration (costs from functions indirectly related to logistics)

Other direct and indirect logistics costs

j) All other logistics costs

M14. Please estimate how many percent of the following logistics operations are and will be managed by an external service provider in your firm.

[5-point scale under each (0%; 1-25%; 26-50%; 51-75%; Over 75%) + "No response"]

M14.1. At the moment

a) Domestic transportation

b) International transportation

a) Reverse logistics
b) Freight forwarding
c) Order processing
d) Invoicing
e) Warehousing
f) Inventory management
g) Product customisation/finalisation
h) Logistics IT systems

M14.1. In year 2010

a) Domestic transportation
b) International transportation
c) Reverse logistics
d) Freight forwarding
e) Order processing
f) Invoicing
g) Warehousing
h) Inventory management
i) Product customisation/finalisation
j) Logistics IT systems

M15. Which of the following methods are used on a weekly basis in your firm for managing the order-delivery process?

[Separate tick box under each]

a) Surface mail / telephone / fax
b) Email
c) Web-based portal, e.g. Internet marketplace
d) Intranet/Extranet
e) Electronic Data Interchange (EDI)
f) Bar Codes
g) RFID (Radio Frequency Identification)
h) Enterprise Resource Planning system (ERP)
i) Other

M16. Please estimate your firm's logistics performance in terms of the following key figures.

[Open fields under each, which accept numbers only]

a) How many **%** of your customer orders are delivered by the requested day and time in complete and perfect condition including all documentation (perfect order fulfilment %)?
b) How many **days** is your average customer order fulfilment cycle time (i.e. average number of days required from customer order receipt to order delivery)?

a) How many **days** of end-product inventory does your firm hold in stock on average?
b) What is the average number of **days** of sales outstanding in your firm (i.e. average number of days between customer order delivery to receipt of customer payment)?
c) What is the average number of **days** of payables outstanding in your firm (i.e. average number of days between supplier order receipt to order payment)?

M17. Please assess the logistics performance of your firm relative to its major competitors.

[5-point scale under each (Much worse…Much better) + "No response"]

a) My firm has been able to reduce the time between order receipt and customer delivery to as close to zero as possible.
b) My firm is able to meet the quoted or anticipated delivery dates and quantities on a consistent basis.
c) My firm is able to respond to the needs and wants of key customers.
d) My firm is able to notify customers in advance of delivery delays and product shortages.
e) My firm is able to modify order size, volume or composition during logistics operations.
f) My firm is able to accommodate delivery times for specific customers.

M18. Please indicate the extent to which you agree or disagree with the following statements regarding *logistics performance evaluation* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We regularly monitor and evaluate our logistics costs and performance internally.
b) We regularly monitor and evaluate logistics costs and performance with selected suppliers and/or customers.
c) We regularly benchmark logistics performance metrics against our competitors.
d) Regular monitoring and evaluation of logistics benefits our firm.
e) We regularly monitor the environmental effects of our logistics operations.

M19. Please indicate the extent to which you agree or disagree with the following statements regarding the *importance of logistics* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) Logistics has a major impact on our profitability.
b) Logistics has a major impact on our customer service level.
c) Logistics is a key source of competitive advantage for our firm.
d) Logistics is a top management priority in our firm.

M20. Please indicate the extent to which you agree or disagree with the following statements regarding *internal collaboration in logistics operations* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information within our firm.

a) We are well prepared for internal disturbances and irregularities in our operations.
b) Our information systems provide operational managers with sufficient and timely information to manage logistics activities.
c) Strategic planning and target setting is done in collaboration between functions/departments.

M21. Please indicate the extent to which you agree or disagree with the following statements regarding *external collaboration in logistics operations* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information with selected suppliers and/or customers.
b) We are well prepared for external disturbances and irregularities in our operations.
c) Our information systems support the sharing of operational information with selected suppliers and/or customers.
d) We effectively collaborate with selected suppliers and/or customers to facilitate operational planning and to improve forecasting.

M22. Please choose the most important future development need of your firm in terms of logistics operations.

[Drop-down menu]

Increasing transparency in the supply chain
Developing information systems
Selection of logistics service providers
Structural change of distribution network
Cutting logistics costs
Improving customer service
Utilising mobile solutions
Developing the logistics competence of our personnel

M23. Please indicate the competence area of your personnel the development of which would most benefit your firm.

[Drop-down menu]

Basic logistics skills
Basic concepts linked to supply chain management
Inventory management
Procurement and purchasing
Transport management
Production planning
Warehouse management
Supply chain strategy
Business strategy

Innovation and change management

Language proficiency

M24. Please rate the external operational conditions that your firm faces in its domestic location(s) in terms of...

[5-point scale under each (Very poor…Very good) + "No response"]

a) General business perspective

b) Availability of production and business facilities

c) Logistics efficiency

d) Transport infrastructure

e) Location(s) of our competitors

[Questions for trading firms]

T6. Please choose the industry that best fits your firm's field of business.

[Drop-down menu]

Retail: Food, beverages and tobacco

Retail: Other

Wholesale: Food, beverages and tobacco

Wholesale: Other

Agency

Sales of motor vehicles and motor vehicle parts

Sales of automotive fuel

T7. Please estimate how many percent of your firm's SALES were generated in each of the following geographical areas in 2005.

NOTE! The total should add up to 100%.

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) In the domestic market

b) Outside the domestic market but within the EU (incl. Norway, Iceland and Switzerland)

c) Outside the EU but within Europe

d) In the rest of the world

T8. Please estimate how many percent of your firm's PURCHASES originated from each of the following geographical areas in 2005.

NOTE! The total should add up to 100%.

[Drop-down menus (0; 1-100% range under each in 5% intervals) OR open fields, which accept numbers only]

a) From the domestic market
b) From outside the domestic market but from the EU (incl. Norway, Iceland and Switzerland)
c) From outside the EU but from Europe
d) From the rest of the world

T9. Please estimate the following logistics costs of your firm expressed as percentages of firm turnover in 2005.

NOTE! The total should NOT add up to 100%.

[Drop-down menus (0-40% range under each in 1% intervals) OR open fields, which accept numbers only]

Direct logistics costs

a) Transportation and cargo handling (incl. transport packaging)
b) Warehousing (cost of running own warehouse or buying the service)

Indirect logistics costs

c) Inventory carrying cost (incl. cost of capital tied in inventory)
d) Logistics administration (costs from functions indirectly related to logistics)

Other direct and indirect logistics costs

e) All other logistics costs

T10. Please estimate how the relative share of the following logistics costs will change by 2010 in your firm compared to firm turnover.

[5-point scale under each (Will decrease significantly…Will increase significantly) + "No response"]

Direct logistics costs

a) Transportation and cargo handling (incl. transport packaging)
b) Warehousing (cost of running own warehouse or buying the service)

Indirect logistics costs

c) Inventory carrying cost (incl. cost of capital tied in inventory)
d) Logistics administration (costs from functions indirectly related to logistics)

Other direct and indirect logistics costs

e) All other logistics costs

T11. Please estimate how many percent of the following logistics operations are and will be managed by an external service provider in your firm.

[5-point scale under each (0%; 1-25%; 26-50%; 51-75%; Over 75%) + "No response"]

T14.1. At the moment

a) Domestic transportation
b) International transportation
c) Reverse logistics
d) Freight forwarding

a) Order processing
b) Invoicing
c) Warehousing
d) Inventory management
e) Product customisation/finalisation
f) Logistics IT systems

T14.1. In year 2010

a) Domestic transportation
b) International transportation
c) Reverse logistics
d) Freight forwarding
e) Order processing
f) Invoicing
g) Warehousing
h) Inventory management
i) Product customisation/finalisation
j) Logistics IT systems

T12. Which of the following methods are used on a regular basis in your firm for managing the order-delivery process?

[Separate tick box under each]

a) Surface mail / telephone / fax
b) Email
c) Web-based portal, e.g. Internet marketplace
d) Intranet/Extranet
e) Electronic Data Interchange (EDI)
f) Bar Codes
g) RFID (Radio Frequency Identification)
h) Enterprise Resource Planning system (ERP)
i) Other

T13. Please estimate your firm's logistics performance in terms of the following key figures.

[Open fields under each, which accept numbers only]

a) How many **%** of your customer orders are delivered by the requested day and time in complete and perfect condition including all documentation (perfect order fulfilment %)?
b) How many **days** is your average customer order fulfilment cycle time (i.e. average number of days required from customer order receipt to order delivery)?
c) How many **days** of end-product inventory does your firm hold in stock on average?

a) What is the average number of **days** of sales outstanding in your firm (i.e. average number of days between customer order delivery to receipt of customer payment)?
b) What is the average number of **days** of payables outstanding in your firm (i.e. average number of days between supplier order receipt to order payment)?

T14. Please assess the logistics performance of your firm relative to its major competitors.

[5-point scale under each (Much worse…Much better) + "No response"]

a) My firm has been able to reduce the time between order receipt and customer delivery to as close to zero as possible.
b) My firm is able to meet the quoted or anticipated delivery dates and quantities on a consistent basis.
c) My firm is able to respond to the needs and wants of key customers.
d) My firm is able to notify customers in advance of delivery delays or product shortages.
e) My firm is able to modify order size, volume or composition during logistics operations.
f) My firm is able to accommodate delivery times for specific customers.

T15. Please indicate the extent to which you agree or disagree with the following statements regarding *logistics performance evaluation* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We regularly monitor and evaluate our logistics costs and performance internally.
b) We regularly monitor and evaluate logistics costs and performance with selected suppliers and/or customers.
c) We regularly benchmark logistics performance metrics against our competitors.
d) Regular monitoring and evaluation of logistics benefits our firm.
e) We regularly monitor the environmental effects of our logistics operations.

T16. Please indicate the extent to which you agree or disagree with the following statements regarding the *importance of logistics* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) Logistics has a major impact on our profitability.
b) Logistics has a major impact on our customer service level.
c) Logistics is a key source of competitive advantage for our firm.
d) Logistics is a top management priority in our firm.

T17. Please indicate the extent to which you agree or disagree with the following statements regarding *internal collaboration in logistics operations* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information within our firm.
b) We are well prepared for internal disturbances and irregularities in our operations.

a) Our information systems provide operational managers with sufficient and timely information to manage logistics activities.
b) Strategic planning and target setting is done in collaboration between functions/departments.

T18. Please indicate the extent to which you agree or disagree with the following statements regarding *external collaboration in logistics operations* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information with selected suppliers and/or customers.
b) We are well prepared for external disturbances and irregularities in our operations.
c) Our information systems support the sharing of operational information with selected suppliers and/or customers.
d) We effectively collaborate with selected suppliers and/or customers to facilitate operational planning and to improve forecasting.

T19. Please choose the most important future development need of your firm in terms of logistics operations.

[Drop-down menu]

Increasing transparency in the supply chain
Developing information systems
Selection of logistics service providers
Structural change of distribution network
Cutting logistics costs
Improving customer service
Utilising mobile solutions
Developing the logistics competence of our personnel

T20. Please indicate the competence area of your personnel the development of which would most benefit your firm.

[Drop-down menu]

Basic logistics skills
Basic concepts linked to supply chain management
Inventory management
Procurement and purchasing
Transport management
Production planning
Warehouse management
Supply chain strategy
Business strategy
Innovation and change management

Language proficiency

T21. Please rate the external operational conditions that your firm faces in its domestic location(s) in terms of...

[5-point scale under each (Very poor…Very good) + "No response"]

a) General business climate
b) Availability of production and business facilities
c) Logistics efficiency(availability of good quality logistics services)
d) Transport infrastructure
e) Location(s) of our competitors

[Questions for logistics service providers]

L6. Please choose the industry that best fits your firm's field of business.

[Drop-down menu]

Road transport
Rail transport
Water transport
Air transport
Stevedoring and storage
Supporting and auxiliary transport activities
Postal activities
Courier activities
Management of logistics information and logistics information systems
Other logistics services

L7. Please choose the *main* type cargo that your firm typically handles.

[Drop-down menu OR tick box, where only one option can be chosen]

Solid bulk
Liquid bulk
Unit cargo
General cargo
Valuables
Express cargo
Other

L8. Which part of the production chain does your firm *primarily* serve?

[Drop-down menu OR tick box, where only one option can be chosen]

Providers of raw materials

Providers of semi-finished products

Manufacturers / assemblers of final products

First tier distributors (e.g. wholesalers)

Second tier distributors (e.g. retailers)

L9. Please estimate how many percent of your firm's turnover was generated in each of the following geographical areas in 2005.

[Drop-down menus (0; 1-100% range under each in 5% intervals) OR open fields, which accept numbers only]

a) In the domestic market

b) Outside the domestic market but within the EU (incl. Norway, Iceland and Switzerland)

c) Outside the EU but within Europe

d) In the rest of the world

L10. Please estimate how many percent of your firm's turnover was generated in 2005 from…

[Drop-down menus (1-100% range under each in 5% intervals)]

a) Sales to your largest customer?

b) Sales to your 5 largest customers?

L11. Please estimate how many percent of your firm's turnover was generated in 2005 from…

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) Pure transportation services?

b) Pure warehousing services?

c) Standardised logistics service packages?

d) Customised logistics service packages?

L12. Please estimate how many percent of your firm's turnover *will be generated in 2010* from…

[Drop-down menus (0; 1-100% range under each in 5% intervals)]

a) Pure transportation services?

b) Pure warehousing services?

c) Standardised logistics service packages?

d) Customised logistics service packages?

L13. Please estimate how the demand of the following logistics services will develop by 2010.

[5-point scale under each (Will decrease significantly…Will increase significantly)]

a) Domestic transportation

b) International transportation

c) Reverse logistics

a) Freight forwarding
b) Order processing
c) Invoicing
d) Warehousing
e) Inventory management
f) Product customisation/finalisation
g) Logistics IT systems
h) 3PL/4PL service [Third Partly / Fourth Party Logistics service]

L14. Which of the following methods are used on a regular basis in your firm for managing the customer service process?

[Separate tick box under each]

a) Surface mail / telephone / fax
b) Email
c) Web-based portal, e.g. Internet marketplace
d) Intranet/Extranet
e) Electronic Data Interchange (EDI)
f) Bar Codes
g) RFID (Radio Frequency Identification)
h) Enterprise Resource Planning system (ERP)
i) Other

L15. Please assess the level overall logistics competence...

[5-point scale under each (Very low … Very high) + "No response"]

a) Of your firm.
b) Of your customers.
c) Of your suppliers
d) Of your competitors

L16. Please assess the performance of your firm relative to its major competitors.

[5-point scale under each (Much worse…Much better) + "No response"]

a) My firm has been able to reduce the time between customer order receipt and service delivery to as close to zero as possible.
b) My firm is able to meet the quoted or anticipated service delivery dates on a consistent basis.
c) My firm is able to respond to the needs and wants key customers.
d) My firm is able to notify customers in advance of service delivery delays or other complications.
e) My firm is able to modify service composition during logistics operations.
f) My firm is able to accommodate service delivery times for specific customers.

L17. Please indicate the extent to which you agree or disagree with the following statements regarding *logistics performance evaluation* from the perspective of your firm.

[5-point scale under each (Much worse…Much better) + "No response"]

a) We regularly monitor and evaluate our logistics costs and performance internally.
b) We regularly monitor and evaluate logistics costs and performance with selected subcontractors and/or customers.
c) We regularly benchmark logistics performance metrics against our competitors.
d) Regular monitoring and evaluation of logistics benefits our firm.
e) We regularly monitor the environmental effects of our logistics operations.

L18. Please indicate the extent to which you agree or disagree with the following statements regarding *internal collaboration* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information within our firm.
b) We are well prepared for internal disturbances and irregularities in our operations.
c) Our information systems provide operational managers with sufficient and timely information to manage logistics activities.
d) Strategic planning and target setting is done in collaboration between functions/departments.

L19. Please indicate the extent to which you agree or disagree with the following statements regarding *external collaboration* from the perspective of your firm.

[5-point scale under each (Strongly disagree…Strongly agree) + "No response"]

a) We effectively share operational information with selected subcontractors and/or customers.
b) We are well prepared for external disturbances and irregularities in our operations.
c) Our information systems support the sharing of operational information with selected subcontractors and/or customers.
d) We effectively collaborate with selected subcontractors and/or customers to facilitate operational planning and to improve forecasting.

L20. Please indicate the most important future development need of your firm.

[Drop-down menu]

Extending range of service offerings
Improving customer service quality
Developing agent network
Selection of subcontractors
Increasing service provision capacity
Cutting service provision costs
Developing the competences of our personnel
Developing information systems

Utilising mobile solutions

L21. Please indicate the competence area of your personnel the development of which would most benefit your firm.

[Drop-down menu]

Inventory management
Transport management
Service provision planning
Warehouse management
Business strategy
Supply chain flows and networks
Innovation and change management
Language proficiency

L22. Which of the following do you consider to be the most serious threat to your firm?

[Drop-down menu]

Decrease in the demand of our services
Increasing costs of service provision
Deteriorating productivity
Tightening competition
Technological development
Investment needs
Availability of competent staff
Tightening environmental regulation
Tightening security regulation
Competition regulation

L23. Please rate the external operational conditions that your firm faces in its domestic location(s) in terms of….

[5-point scale under each (Very poor…Very good) + "No response"]

a) General business perspective
b) Availability of production and business facilities
c) Logistics efficiency
d) Transport infrastructure
e) Location(s) of our competitors

[Regional questions for Estonian respondents]

1. Please estimate, how the relative share of logistics costs compared to your firm turnover has changed during 3 last years / after joining Estonia into EU in 2004.

[5-point scale (Has decreased significantly...Has increased significantly) +"No response"]

Has decreased significantly

Has decreased somewhat

Neither decrease nor increase

Has increased somewhat

Has increased significantly

2. Please estimate, how the level of logistics customer service of your firm has changed during 3 last years / since joining Estonia into EU in 2004.

[5-point scale (Much worse...Much better) +"No response"]

Much worse

Somewhat worse

Neither worse nor better

Somewhat better

Much better

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2:2007 Analytical Framework for the LogOn Baltic Project
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3:2007 Aggregated logistics survey report *(working title)*
Håkan Aronsson and Naveen Kumar

4:2007 Aggregated ICT survey report *(working title)*
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