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Lauri Ojala – Pia Jämsä (eds.)

***THIRD PARTY LOGISTICS –
FINNISH AND SWEDISH
EXPERIENCES***

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FOREWORD

Firms across industries face growing customer demand for better and cost-effective logistics services as a result of globalization, reductions in lead times and outsourcing. Integration of the supply chain is one way for industry to gain competitive advantage.

As a result, third-party logistics services (TPL) have emerged as a rapidly growing market. TPL is an organization's use of external logistics providers, in intended continuous relationships, which provide all or many of the logistical activities required by the user.

Logistics is one of the most commonly outsourced business activities. Firms tend to move from single transaction arrangements into long-term partnerships with TPL providers that offer integrated services. In increasingly complexity of economic networks, TPL arrangements have become an integral part of global manufacturing and trading operations. Through TPL, firms aim not only to cut costs but also to find ways of managing global streams of materials and information efficiently.

TPL is probably the fastest growing part of the logistics industry. In 2003 spending on logistics in the U.S. was estimated at US\$936 billion, of which TPL accounted for some US\$104 billion, or over 11 per cent. Similar percentages have been given for the European TPL market while in the rapidly developing Chinese logistics market, estimated at around US\$300 billion in 2003, the TPL market in 2004 was estimated at US\$12 billion.

One of the most important venues for Nordic logistics researchers is the NOFOMA conference (www.nofoma.org) which was held for the 18th time in Oslo in June 2006. In one of the earlier NOFOMA conferences, a group of researchers representing all five countries (Denmark, Finland, Iceland, Norway and Sweden) decided to initiate collaborative research in TPL issues. As a follow-up, a number of joint sessions were held in Denmark and Sweden.

The first collection of papers that stemmed from this collaboration was published in 2003 entitled "Third Party Logistics - A Nordic Research Approach". It was jointly edited by Tage Skjøtt-Larsen, Arni Halldorsson, Dan Andersson, Marianne Jahre, Heidi Dreyer, Helge Virum and Lauri Ojala, and it appeared in the publication series of the Turku School of Economics and Business Administration.

This collection of research and practitioner papers on TPL by Finnish and Swedish authors is a direct continuation of the work. It aims at shedding light on various aspects of TPL markets, operations and related research. It also demonstrates the versatile research and business activities on logistics in general and TPL issues in particular in the Nordic countries.

These activities have also led to a number of academic journal articles that Nordic authors have produced over the past years. One of the most recent examples is a paper that was accepted for publication in International Journal of Value Chain Management, Vol. 1, No.2. The article is entitled “Third party logistics – a Nordic approach” and authored by the same team of Nordic researchers that edited the 2003 TPL book referred to above.

We hope that this book will prove useful in teaching and research as well as for practitioners!

In Turku, June 2006

Lauri Ojala Pia Jämsä

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THE DEFINITION AND MARKET SIZE OF THIRD PARTY LOGISTICS SERVICES

Lauri Ojala, Dan Andersson and Tapio Naula

Abstract

The paper starts with defining Third and Fourth Party Logistics (TPL and 4PL, respectively) based on contemporary logistics literature. The definitions are shown to be rather vague. This paper deals predominantly with TPL issues and solutions.

It is difficult to exactly define and delimit the object, when the one wants to estimate the size of a TPL market. Despite this obvious drawback, the paper presents some of the latest estimates of the global and European TPL markets.

TPL is probably the fastest growing part of the transport industry. In 2003 spending on logistics in the U.S. was estimated at US\$936 billion, of which TPL accounted for some US\$104 billion, or over 11 per cent. Similar percentages have been given for the European TPL market while in the rapidly developing Chinese logistics market, estimated at around US\$300 billion in 2003, the TPL market in 2004 was estimated at US\$12 billion.

1 The development of third party logistics

1.1 Definition of third party logistics

The term Third Party Logistics (TPL) has been used to cover the whole range of logistics, from the outsourcing of only one of the more traditional activities to the outsourcing of very complex processes. Also other expressions are frequently used to describe similar arrangements, such as, logistics alliances, operational alliances in logistics, contract logistics and fourth party logistics (4PL).

However, there are well established definitions of TPL that share a common core: see for instance Virum (1993), Van Laarhoven and Sharman (1994), Berglund et al (1999), Langley et al (1999), Protrans (2003).¹ The term third-party logistics was defined by the EU-project Protrans as follows:

Activities carried out by an external company on behalf of a shipper and consisting of at least the provision of management of multiple logistics services. These activities are offered in an integrated way, not on a stand-alone basis. The co-operation between the shipper and the external company is an intended continuous relationship. (Protrans 2003)

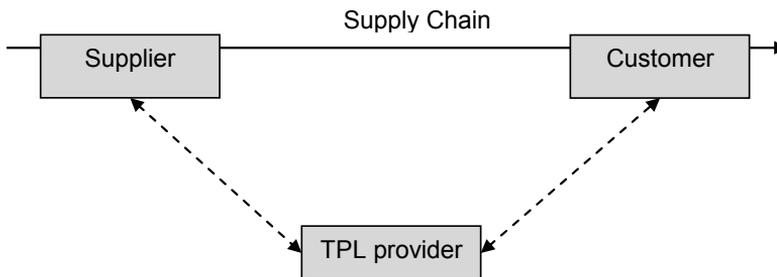


Figure 1: Third-party logistics, adapted from Pruth 2002, 26

From the perspective of the service buyer third party logistics can be described as a combination of the following:

- An external party provides all or a considerable number of the necessary logistics activities;
- A limited number of service providers is used by a shipper;
- With a focus on continuous relationships instead of single transactions, long term and close relationships are established;
- Several different types of logistics related activities integrated; and
- The parties try to take advantage of synergies that result from collaboration.

In order to improve the integration of the various stages in a supply chain, the number of handovers should be reduced. There should also be end-to-end accountability for distribution and related performance and costs, which means reducing the number of service providers in direct contact with a shipper and leaving a layer of second tier providers to be managed and coordinated by a TPL provider. Figure 2 shows a tiered service production system where the TPL provider manages other providers with specialized skills and resources.

¹ www.logistik.tu-berlin.de/sulogtra+protrans/protrans/

The TPL provider is responsible for user requirements and operational coordination of a supply chain. The TPL company may either have the necessary skills in house or subcontract certain activities to second tier service providers, such as carriers or warehouse operators.

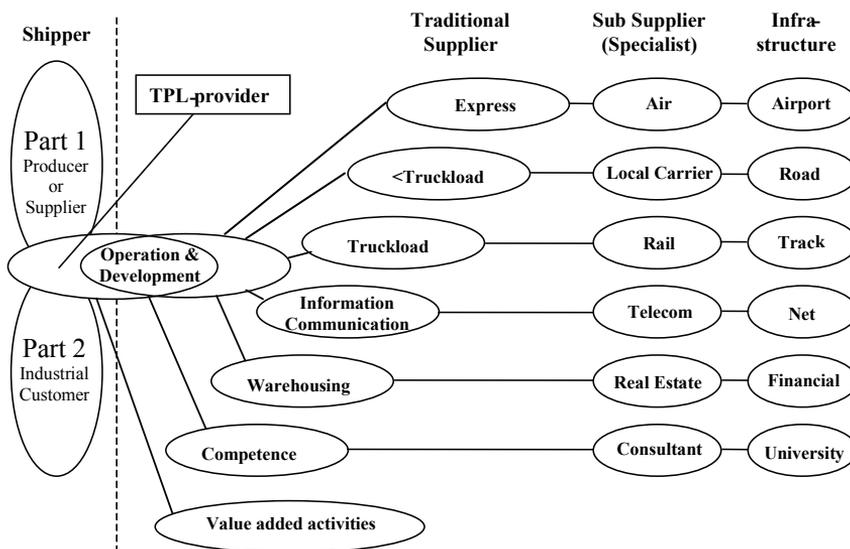


Figure 2: Tiering of the supply of TPL services, based on Abrahamsson and Wandel 1998

More advanced forms of third-party logistics are also known as fourth-party logistics 4PL a term coined by Andersen Consulting (now Accenture) in 1996. 4PL was defined as “an integrator that assembles the resources, capabilities and technology of its own organization and other organizations to design, build and run comprehensive supply chain solutions”.²

A TPL provider performs all or a part of the corporate logistics activities on behalf of a shipper (e.g. transportation, warehousing and inventory management) and is thus directly involved in these activities.

4PL, however, refers to a business model, where the 4PL provider integrates logistics and IT resources, capabilities, and technology to orchestrate the supply chains of their clients. The actual physical operations are performed by subcontracted logistics or other service providers. (See e.g. ALPHA Research Consortium (2004)). According to Protrans (2003) a 4PL company could be described as a TPL company without an asset base (i.e. no

² The trademark protection was subsequently watered down by the widespread use of the term, and in practice, the trademark holder has ceased to cite the protection of the term.

own physical resources in the form of e.g. warehouses or a transport fleet). This paper deals predominantly with TPL issues and solutions.

1.2 TPL and accepted business practice

Third party logistics is now an accepted business practice and is becoming increasingly common in Europe and the United States (Laarhoven et al. 2000; Andersson 1997; Sink & Langley 1997). The trend is towards more complex outsourcing where several logistics activities or even the entire logistics process are farmed out (Andersson & Norrman 2002). The outsourcing of logistics activities is not new but, traditionally, it has been single activities where the cheapest option that meets a pre-established service requirement is chosen. And the providers have been kept at "arm's length" with a minimum of information interchange (Andersson & Norrman 2002). Within the past few years, however, there has been a change in the arrangements between TPL providers and buyers. Cooperation between the two is longer term, is mutually binding and often combined with changes in both organization and information systems.

2 The pros and cons of using TPL

Companies' need to focus on their core competence, as well as reduced costs and better service, are the driving force behind the use of TPL (see e.g. Andersson 1997; Laarhoven et al. 2000). Outsourcing enables a company to leverage its resources, spread its risks and concentrate on issues critical to its survival and future growth. Many companies may not have competence in the operational logistics area but profit from their ability to manage relationships with firms that excel in this field (Sink & Langley 1997).

Reduced logistics costs and improved service are among the expected and realised benefits of TPL. In successful TPL operations, logistics costs tend to be reduced by 10 to 30 per cent compared to the previous operations, and measurable service indicators tend to improve too. Most of the savings materialize in inventory carrying costs, warehousing costs and order-cycle times (Andersson 1995, 1997; Protrans, 2003) rather than in transport costs.

Right after a TPL provider takes over the operations, cost and service can be negatively affected, as it takes some time for the personnel of the service provider to get accustomed to their customers' logistics system (Andersson 1995). Higher initial costs may also result from duplication of resources. (See Figure 3)

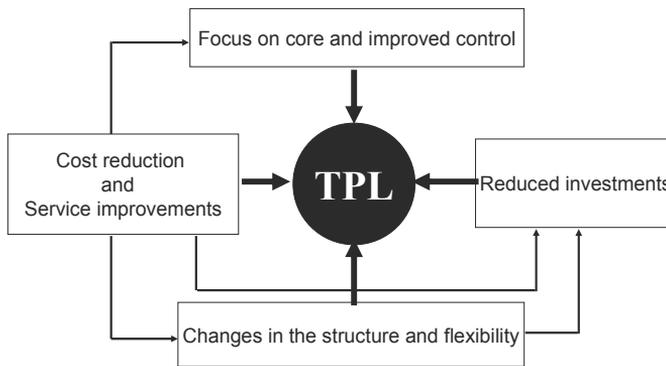


Figure 3: Driving forces behind and effects of the use of TPL-services, adapted from Andersson 1997

A basic assumption about the outsourcing of logistics is that a logistics service provider can make economies of scale by servicing more clients (see e.g. Fernie 1989; La Londe & Cooper 1989). Efficient operations have often been regarded an important source of long-term benefits, affecting cost and service levels (Andersson 1997). Efficiency can also be gained through operational expertise and the introduction of new personnel. Outsourcing can also lead to more visible cost and service measurements (Andersson 1998). Other advantages of TPL are reduced investment in fixed assets and higher capital turnover, which is of growing importance in the modern world. A company can pay for the capacity it needs and has a greater degree of flexibility (Andersson 1997). However, this is largely true for countries with a predictable operational environment and a plentiful supply of such services. In many developing countries, the ownership of transport and warehousing assets may be the only way to secure flexible operations.

A company's need for *fast and fundamental changes in its logistics structures*, resulting in lower costs and better service, may lead to it using TPL. It can also reduce the risk and time involved in entering new markets (Andersson 1995). In many cases, TPL relationships include a restructuring of distribution systems, often by centralising stockkeeping. TPL can also result in *improved control* of cost and service. As a larger share of logistics costs turns into variable direct costs and the activities are divided into smaller units, checks are made more frequently.

TPL solutions can be applied in most industries, but they do not necessarily suit every firm. Firms with well functioning logistics operations may not want to outsource these. Other reasons include over-dependence on the supplier, reduced direct customer/supplier contact, high switching costs, loss of jobs,

inadequate IT systems, loss of in-house expertise and risk of leaks of confidential information. (Aertsen 1993; Lieb et al. 1993; Sink et al. 1996; Sink & Langley; 1997; Razzaque & Sheng 1998; Berglund 1997; Andersson 1995). Potential buyers of TPL services may also anticipate increasing costs, if logistics is outsourced. Usually this is due to lack of understanding of what the in-house logistics costs were, particularly as many are counted as overheads. In a recent European survey (Protrans 2003), shippers generally believed that TPL providers were lacking a proactive approach to logistics management and thus failed to offer innovative concepts.

2.1 Changes in the context influencing the use of TPL

The increased use of TPL services needs to be looked at in relation to a number of changes in the logistics environment. According to Berglund *et al* (1999) the growth of TPL resulted from developments on both the demand and the supply side of the industry while Laarhoven and Sharman (1994) found some generic reasons such as competitive pressure and globalization. On the demand side the causes included reduction of assets, changes in distribution, triggered by the restructuring of production, and potential reduction of labour costs. On the supply side, they included deregulation of the transportation industry, which made it possible to provide TPL services more competitively, declining profit margins in basic services leading to a need to expand and upgrade, and availability of capital.

Increasing globalization means larger markets and a greater dispersion of customers and suppliers and hence a need for global logistics. (see e.g. Bagchi & Virum 1998; Sheffi 1990). Longer and more complex supply chains require more complex logistics systems, needing more administration and making increased demands on logistics competence. “Long supply lines, global manufacturing, and world-wide distribution systems mean that the expertise needed to support manufacturers in their bid to be the world class players is considerable.” (Sheffi 1990).

However, there is no truly global service provider for TPL. In many countries, e.g. developing or former state-regulated countries, the logistics infrastructure is insufficient, customs and regulations are unclear and inefficient, the market is undeveloped and the crime risk high (e.g. Nollet et al 1994; Speece & Kawahara 1995; Fawcett et al. 1995; Ta et al. 2000). This makes the risks for providers high as there are few trustworthy or capable potential partners and those that there are in a strong negotiating position.

In the global market place it is not enough to have a good product or low prices. In order to remain competitive, companies need to focus on customers'

needs and offer a superior service while simultaneously keeping inventory levels low. Today the increased complexity and growing service requirements, combined with demands for cost reductions, is a daunting challenge. Restructuring of logistics systems and substituting inventories with information are ways to meet this challenge. This requires good (real time) information about the goods flows from the suppliers so that supply chain uncertainty and related safety stock can be reduced. Third-party logistics can have a central role here.

Growing globalization is, in part, a result of *deregulation*, which has also played an important role in the development of the supply of TPL services. According to Virum (1993)

Deregulation of transport, which has led to greater price and service competition among carriers is an important part of the changing environment. European transport companies are looking for more value-added services to compensate for the reduced margins and to solidify their market position.

2.2 Consolidation brings mergers and acquisitions

Globalization has also brought about consolidation and merges and acquisitions (M&A) in a number of industries, including the logistics industry (AACFB 2001). This consolidation is a result of various factors including economies of scale and scope, deregulation, demand for one-stop shop logistics services, which calls for increased geographic coverage and a wider range of services.

New pan-continental or even world-wide logistics networks, the so-called “mega-carriers”, have emerged, which are able to offer companies the whole range of necessary services, including firms or business units which specialize in TPL (see Klaus 1999; Peters & Jockel 1998). Also the global container shipping, stevedoring and airlines industries have experienced a profound restructuring and consolidation since the 1980s (See e.g. Song et al. 2005; Midoro et al. 2005).

In the late 1990s extra impetus in Europe came from the privatisation of national post offices. The TNT Post Group and Deutsche Post are among the biggest European logistics companies. Large M&A’s in the logistics industry include Deutsche Bahn’s acquisition of the Stinnes Group in 2002, and Deutsche Post World Net’s completed acquisition of a U.K. logistics company Exel in December 2005. According to DHL, this made them the Global No. 1 in sea freight, ocean freight and contract logistics.

The development of *information technology* has been of great importance. Some companies have decided not to invest in the highly sophisticated IT systems now required for efficient logistics services and therefore turn to a TPL provider. The application of the concept of *supply chain management* (SCM) has increased demand for flexible and effective logistics systems. Increased complexity has resulted in the forging of partnerships with multiple linkages in contrast to the traditional single interface between the buyer and seller of a product.

Environmental requirements can also result in increased use of TPL. Transport has been increasing more rapidly than economic growth in general, which has concerned policy makers. One hypothesis is that large TPL providers may facilitate the increased use of multimodal transport and thus reduce the effect on the environment (Protrans 2003).

A proper analysis of how to improve the current transport system's effect on the environment must look beyond the need to introduce more environmentally friendly vehicles and other technical aspects. TPL solutions tend to improve (i) load factor or reduce road transport kilometres; (ii) firms' transport network design; and (iii) the ability to handle reverse material flows (reverse logistics). (Protrans 2003).

3 Different types of third party logistics providers

There are a number of interpretations how and around when TPL services actually lifted off as commercial operations in their own right. One of these is cited by Sowinski (2005). According to Jerry Levy, the Vice President Marketing of Bax Global, the TPL industry started around 1990 by offering simple non core activities such as warehousing, transportation, basic customs clearance, transportation management and documentation.

Today TPL companies play a more significant role, offering a much greater range of more complex activities including purchase order and supply chain management.

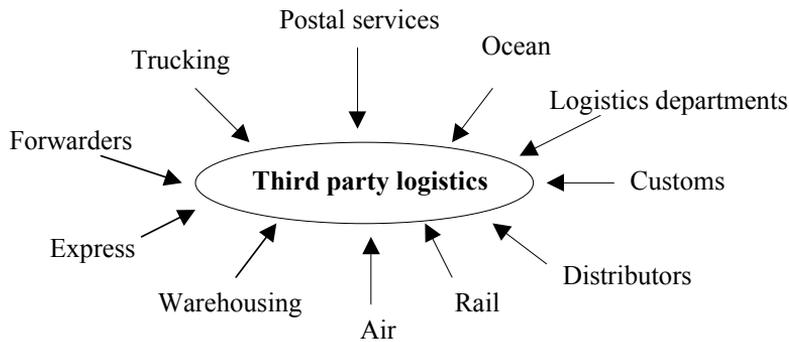


Figure 4: Origins of third party logistics providers, Source: Berglund et al. 1999

There were three waves of entrants into the TPL market (Berglund et al (1999; see also Figure 4).

- Asset-based providers, which offer dedicated logistics services primarily through the use of their own assets, e.g. trucks and warehouses.
- Skill-based providers, which are companies that typically do not own physical logistics assets but provide consultancy and financial services, IT-services and management skills.
- Network logistics providers, which are express parcel companies that have built up global transport and communication networks in order to expedite shipments.

TPL providers form clusters which offer an increasing number of services as well as management, ranging from traditional services such as forwarding, trucking and distribution into third party logistics. The companies seem to move increasingly into each other's traditional business areas, which causes greater competition. They can be grouped into three categories: solution providers, distribution providers and transport providers (Protrans 2003; Berglund 2000).

Solution providers are most heavily involved in all aspects of the shippers' logistics systems and offer a complete solution. Distribution providers are somewhat less involved in general (with the exception of strategic design activities where they are much less involved) but their service offering is broad and they offer both transport and warehousing related services. Transport providers, which focus on transport related services, are the least involved in the various logistics activities.

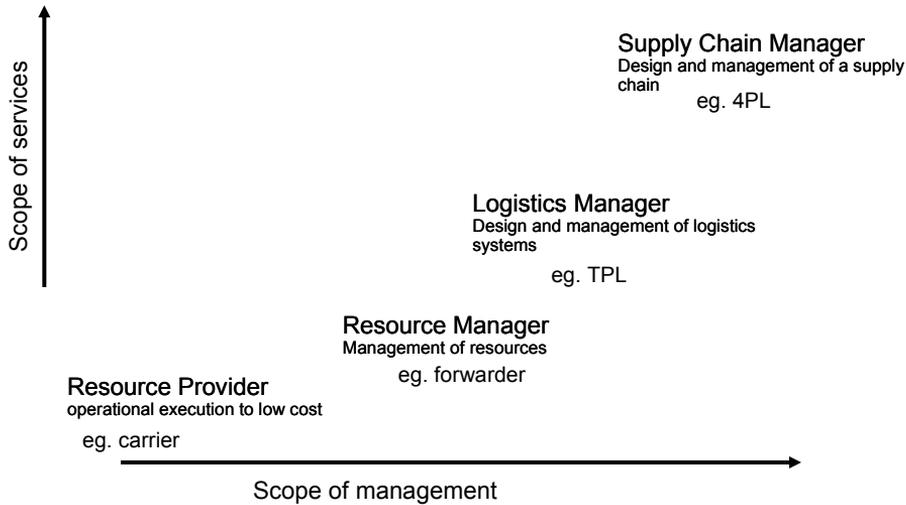


Figure 5: Different clusters of TPL service providers

Although the purchasers of logistics services try to keep the number of their suppliers to the minimum in order to save costs there are still relatively few logistics providers that operate on a truly global scale and can respond fully to current customer demand. The logistics market is still fragmented, both globally and regionally. In 2004 the ten largest firms in the United States accounted for only 30 per cent of total turnover and the top 20 for only 42 per cent (Table 1).

Given the expected growth in logistics, particularly in value added services and management and/or information based services it might be expected that all TPL providers hope to become solution providers. However, this is not the case. The ability of transport and distribution providers to become solution providers has been constrained by their lack of resources and technical skills and appear to compete solely on the basis of the most efficient asset utilisation. Solution providers, on the other hand, seem to have the competence to address the growing demands of their outsourcing customers and deliver better logistics performance than transport and distribution providers. Using solution providers could therefore improve shippers' logistical performance (Protrans 2003), which implies that better performance is the result of more extensive logistics outsourcing and the involvement of TPL providers at strategic and tactical decision making levels.

Table 1: Top 20 TPL providers and largest TPL buyers in the United States, 2004. Source: Armstrong 2005

Firm	Sales in 2004 (US\$ mn)	Market share 2004 (%)	Market accumulation (%)	Firm	Number of TPL providers in use
UPS Supply Chain Solutions	5,300	5.1	5.1	General Motors	43
C H Robinson Worldwide	4,342	4.2	9.3	DaimlerChrysler	32
Exel, Americas	3,400	3.3	12.5	Ford Motor	30
Expeditors Int'l of Washington	3,318	3.2	15.7	Volkswagen	28
Penske Logistics	3,250	3.1	18.9	Hewlett-Packard	26
EGL Eagle Global Logistics	2,589	2.5	21.3	Unilever	24
BAX Global Supply Chain Mnt.	2,441	2.3	23.7	Procter&Gamble	22
UTi Worldwide	2,300	2.2	25.9	General Electric	21
Kuehne + Nagel	2,233	2.1	28.1	Siemens	19
Schneider Logistics, Inc.	2,153	2.1	30.1	BMW	17
Caterpillar Logistics Services	2,000	1.9	32.0	Georgia-Pacific	16
Ryder System, Inc.	1,860	1.8	33.8	IBM	16
DHL Logistics	1,474	1.4	35.3	Nestlé	16
Hub Group, Inc.	1,427	1.4	36.6	Royal Philips	16
Schneider Dedicated Operations	1,322	1.3	37.9	Toyota Motor	16
Menlo Worldwide	1,300	1.3	39.1	Home Depot	15
Werner Dedicated	806	0.8	39.9	Sara Lee	15
TNT Logistics North America	780	0.8	40.7	Altria Group	14
J.B.Hunt Dedicated Contract Serv.	760	0.7	41.4	Coca-Cola	13
FedEx Supply Chain Services	700	0.7	42.1	Nissan Motor	12

Sales indicate the total US turnover of the firms rather than their TPL turnover.

Crucial to the provision of comprehensive logistics solutions is a pool of highly developed and widespread skills and sufficient resources, which can either be developed within a single large company or be the result of company alliances that combine their specific resources. The opportunities for transport and distribution providers are either to establish economies of scale in a limited set of services and/or a broad set of services within a constrained geographic area as they are unlikely otherwise to have sufficient size to achieve economies of scale and/or critical mass. They may have to aim to be the preferred sub-contractors to solution providers, which are the architects and managers of logistics systems.

3.1 Services that can be part of TPL

Bundled logistics services are generally based on integrated transport, warehousing and information services. Although it has been argued that TPL provides the most advanced services this is not the case. Network design,

development of logistics systems, inventory control, light manufacturing are among the least frequently outsourced services although they have been increasing in importance (Sink & Langley 1997; Andersson 1997; Berglund et al. 1999; Andersson & Jockel 2002).

It is primarily operational services that are offered in a TPL relationship. Although the providers are good at implementing and performing this type of service they lack the necessary competence to work strategically and proactively (Rosén 1999; Andersson & Jockel 2002). Langley et al (2004) found that in Western Europe over 89 per cent and in North America 66 per cent of respondents had outsourced outbound transportation and warehousing in 2004. Very high percentages were also seen in freight forwarding and customs clearance (Table 2).

Table 2: 20 most frequently outsourced logistics activities in 656 firms. Source: Langley 2004

Outsourced Logistics Services, per cent of respondents use

Logistics activity	North America	Western Europe	Asia-Pacific	Latin America
Outbound transportation	66	89	100	89
Inbound transportation	54	82	84	68
Warehousing	72	70	88	51
Customs clearance	57	48	68	68
Customs brokerage	60	34	88	57
Freight forwarding	47	40	84	35
Cross docking/ shipment consolidation	55	49	40	22
Order fulfilment and distribution	35	22	52	14
Return/reverse logistics	27	32	32	24
Procurement of logistics	16	33	24	35
Inventory management	16	27	40	22
Product returns and repair	22	30	36	11
Freight bill auditing/ payment	53	19	8	11
Information technology	19	24	16	27
Product marking/ labelling/packaging	25	29	20	11
Fleet management	9	18	40	16
Consulting services	21	12	28	22
4PL services	10	19	24	16
Carrier selection	13	25	8	19
Product assembly/ installation/manufacturing	16	16	12	5

The figures indicate the percentage of respondents applying each of the logistics activities listed above

There are notable differences in outsourcing practices between regions. Logistics users in Western Europe tend to use outsourcing more for activities such as transportation, carrier selection, 4PL services and fleet management than do users in North America. Again, financially related logistic services seem to be more developed in North America. This is indicated by higher use of outsourcing of freight bill auditing and payment services (Langley et al. 2004).

4 Size and growth of the TPL market

4.1 The market is large - and growing

It is difficult to estimate the size and growth of the TPL market as it is unclear which companies should be included and to what extent their turnover comes from TPL as there are no statistics available. However, what is clear is that the market is substantial and growing fast.

Berglund et al (1999) put the TPL market in Western European at between US\$5-7 billion at the end of the 1990s, using a rather strict definition of third party logistics.³

Klaus (Invest in Germany, 2005), estimated the total logistics costs in Europe in 2003 at approximately €585 billion.⁴ Also in 2003, a UK consultancy, Eyefortransport, estimated European companies' logistics expenditure at around €115–130 billion. However, it did not give a breakdown of costs or countries so a comparison between the figures is not possible.⁵ It estimated the European TPL market at approximately €29-33 billion, equivalent to 25 per cent of the total logistics market (Eyefortransport 2003). In 2003 DHL predicted that by 2006 the Asian TPL market would be worth over US\$2.7 billion as a result of increased globalization and relocation of production to Asia (Knee 2003). (See Table 3.)

³ See Berglund, M., et al (1999), p.61

⁴ Includes the 15 EU-countries and Switzerland and Norway

⁵ Includes costs for traditional logistics activities such as warehousing, transport etc but also administration, planning and control and capital costs.

Table 3: Selected indicators of logistics market size and structure

Logistics spendingⁱ	US\$ billion
United States	936
Japan	400
China	300
Germany	150
France	97
TPL market size	
United States and Canada ⁱⁱ	104
Western Europe ⁱⁱⁱ	37 – 63
China ⁱⁱⁱⁱ	12
TPL market structure	
United States and	
Canada	Fragmented. 20 largest firms generate 40% of total TPL sales
Europe	Fragmented. 20 largest firms generate 33% of total TPL sales
China	Highly fragmented. Vast majority of firms generate less than US\$25 million of annual sales

ⁱ⁾ In 2003. For Germany and France in 2002. Source: Eyefortransport, 2005.

ⁱⁱ⁾ In 2004. Source: Armstrong, 2005.

ⁱⁱⁱ⁾ In 2003. Source: EFT, 2003.

ⁱⁱⁱⁱ⁾ In 2004. Source: Latitude Capital Group, 2005.

4.2 Comparing TPL in different regions

The use of TPL services seems to vary from region to region, however, it must be observed that differences also may be a result of varying definitions of TPL. In Europe for example it is more common as a viable long term solution than in the United States or Australia. However, in all cases it appeared to be a strategic rather than an operational decision.

In Langley et al (2005), respondents on four continents were asked whether they identify themselves as users or non-users of TPL services. The growth of TPL has been swift in Asia, where the share of TPL users rose from 58% in 2002 to 83% in 2005. In Asia, logistics outsourcing first concentrated in industrialized countries, e.g. Japan, Singapore, Republic of Korea and Taiwan (Knee 2003). However, the practice has reached also more remote areas especially in China, where growing industrialization sets demand for TPL services (Eyefortransport 2005). In Western Europe, somewhat surprisingly, the usage of TPL declined from 94% to 74% during the same period. In United States and Canada, the share of TPL users has remained on a high level of 78% -80%. Latin America seems to lag slightly back in this sense: in 2004 the share of TPL users was 67% and 72 % in 2005. (See Table 4)

Europe seems to be ahead of other regions in using international TPL. The most commonly outsourced services are warehousing, transport and freight

forwarding but in the United States, Australia and Europe the emphasis is on efficiency (e.g. shipment consolidation) while in Asia it is on effectiveness (e.g. order fulfillment). Overall, European companies seem to be more committed to TPL than companies in the United States or Asia.⁶ This is partly reflected in expenditure on TPL in relation to the total logistics budget. The highest proportion of TPL expenditure occurs among European and Asian companies and the lowest in the United States.

According to Langley et al (2004) companies in Western Europe spend 51 per cent of their logistics budget on TPL services, compared with 43 per cent in United States and Canada.

Table 4: Summary of outsourcing practices in the United States, Australia, Asia-Pacific and Europe; percentage of respondents. Sources: Millen et al, 1997, 1995, Murphy and Poist, 2000, Sohal et al, 2002, 1999, Bhatnagar et al, 1999

Country parameter	United States	Australia	Asia-Pacific	Europe
Service usage/provision				
– More than three years	70%	70%	84%	92%
Satisfaction with TPL services				
– Satisfied	57%	63%	86%	82%
– Very satisfied	30%	33%	8%	15%
Proportional expenditure on TPL (of total logistics expenditure)				
– Low (less than 20%)	73%	50%	50%	36%
– High (more than 80%)	5%	16%	20%	18%
Positive impact of TPL				
– On logistics cost	95%	88%	93%	88%
– On performance in general	100%	89%	89%	92%

The impact of TPL on operational performance as well as the problems encountered does not seem to differ much between regions. However, European companies reported the highest rates of rationalization in relation to capital investment in people. 11 per cent of respondents reported the elimination of over 90 per cent of full time logistics positions, 50 per cent reported less than 20 per cent while the rest were somewhere between. In comparison, 78 per cent of US companies reported a rationalization factor of

⁶ 48 per cent of European respondents report extensive commitment to TPL compared with only 7 per cent of US respondents and 22 per cent of Australian respondents. There were none in Asia.

less than 20 per cent, and in Australia the figure was 59 per cent while in neither country was a reduction of 90 per cent or more reported. In Asia, 16 per cent of respondent reported human resource cuts of less than 20 per cent and 5 per cent made cuts of over 90 per cent, leaving the rest in between.

5 Conclusion

One of the main conclusions from the conceptual literature review is that available definitions on TPL and 4PL vague. Nevertheless, they give a basis of understanding the nature of TPL operations, and as a result, also give tools to estimate the market size.

Most empirical studies use either industry interviews or surveys to measure the size of TPL markets. According to a widely held opinion in the logistics industry, which is also substantiated in market surveys, TPL is likely to be the fastest growing part of the transport industry.

In 2003 spending on logistics in the U.S. was estimated at US\$936 billion, of which TPL accounted for some US\$104 billion, or over 11 per cent. Similar percentages have been given for the European TPL market while in the rapidly developing Chinese logistics market, estimated at around US\$300 billion in 2003, the TPL market in 2004 was estimated at US\$12 billion.

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CUSTOMER COORDINATION AS A BASE FOR THIRD PARTY LOGISTICS PROVIDERS EFFECTIVENESS AND EFFICIENCY

Susanne Hertz and Monica Macquet

Abstract

There has been little interest in the interdependence of different customers, different customer combinations and the importance of the customers' customer for the TPL firm performance and customer relationships. This paper uses the three basic questions of TPL firm's customer coordination in creating efficiency and effectiveness. The first question discusses the bases for TPL coordination of different customer activities, the second question describes the knowledge developed between customers. The third question discusses the influence that each player has. The purpose of this paper is to study how TPL firms coordinate their customers in order to develop competitive services and what the important factors influencing the effectiveness and efficiency are of the coordination. Also the complexity of coordinating is discussed not only in customers' systems but also those of the customers' customer and the suppliers being part of the same systems.

1 Background

By offering many product varieties, customized products, JIT transports, express deliveries and a variety of after sales services large international firms seek to secure future growth and competitive advantage. Technological development, shorter product lifecycles, mass customization and international competition are among the most important driving forces underlying these new service and product offerings. These offerings have emphasized the need for supply chain management and new logistics solutions as well as for the development of logistics service providers.

There is a growing interest and demand on more advanced services by the logistics providers. Transport and logistics firms as well as new types of providers such as logistics department of manufacturing firms, consultancy firms, and IT firms have developed into the field of third party logistics offering not just transportation, and warehousing but a large variety of value-added services including designing and managing the total global or international logistics operations for the customer.

These providers and their networks become important in means of creating competitive advantage for their customers. As a result alliances with third party logistics providers (TPL) - are growing in number and content.

An important prerequisite for an industrial firm to outsource their logistics activities and form a logistical alliance with a TPL firm would be that the TPL firm can offer certain advantages in quality, speed, flexibility, know-how and price. Thus to create skills, competencies, and gain scale/scope advantages, that are superior to what the customer can achieve themselves, will be necessary for the survival of a TPL provider. Therefore the selection, coordination and learning from processes of and with different customers and customers' customers and suppliers become increasingly important.

However, the studies of logistics service providers have been focusing mainly on the service products offered by TPL, such as customer demands, skills needed and the degree of integration in their relationships with their customers (Lieb & Randall 1996; Andersson 1997; Berglund 1998; Bagchi & Virum 1998; Knemeyer & Murphy 2004)

There has been little interest in the interdependence of different customers, and how scale and scope economies shift with different customer combinations and the importance of the customers' customer for the TPL firm performance and customer relationships, which is the focus of this paper.

There are three basic questions tied to the understanding of how TPL firms coordinate their customers and create efficiency and effectiveness. The first question is a more general one discussing the bases for TPL coordination of different customer activities? The next question is to what extent the knowledge developed from specific customers is utilized, standardized and/or transferred to other customers? The final question would be to what extent customers indirectly via TPL or directly influence each other?

Based on these questions the purpose of this paper is to study how TPL firms coordinate their customers in order to develop competitive services and what the important factors influencing the effectiveness and efficiency are of the coordination.

In its coordination the logistics firm will have to handle the complexity of coordinating not only the customers' systems, but also those of the customers' customer and the suppliers being part of the same systems.

We will base our findings on empirical studies of TPLs, their customers and customers' customers and suppliers.

2 Theoretical framework

Theoretically we use a combination of industrial network approach, business logistics and supply chain management. The theoretical framework is used to get an understanding on how TPL firms could coordinate their customers' activities, what the important determinants for the coordination are and how the market and logistics strategy of the customer would influence such coordination.

The focus is on coordination between firms and their activities. This will include discussing the TPL services, relationships and coordination activities and dimensions, the role of product characteristics, and marketing and logistics strategies. We start by giving a short definition of the concept TPL provider and its services.

2.1 Type of services and activities

A third party logistics firm (TPL or TPL firm) is a middleman in the logistics channel that has specialized in providing logistics services, by contract, for a given period, taking over all or a considerable number of the logistics activities for other firms. (Virum 1993) A logistics partnership is defined as a long-term formal or informal relationship between shippers and logistics providers to render all or a considerable amount of logistics activities for the shipper.

The TPL providers perform many different activities. Several researchers have been studying the contents of logistics services and how third party logistics providers operate. (Andersson 1995, 1997; Berglund 1998; Bagchi & Virum 1998; Christopher 1998; Lieb & Randall 1996; Andersson et al. 2003) Typical services outsourced to TPL are transportation, warehousing, inventory, value-added services, information services, and design and re-engineering of the chain. The first three are the most common services of TPL and also the most frequently outsourced services of industrial firms. (Andersson 1995; Berglund 1998). The service types can be combined in many ways depending on the demands from the TPL's customers.

Even though the different types of service activities performed probably play a role for the possibility to coordinate customers of the TPL firm, the existing classification of TPL services is not sufficient to create a basis for a

discussion about how the TPL firm coordinates the activities of the different customers in order to create competitive advantage.

We need to develop a better understanding in what ways these service activities are coordinated and if there are other types of dimensions playing a role when coordinating between the customers and customers' customers of the TPL firm.

We start by looking at coordination of firms and activities. After this we turn into other possible dimensions that might play a role in the coordination.

2.2 Network, relationships and activities

The relationships between interconnected actors form the basis in the industrial network approach. Changes take place within and between relationships, bonds and links involving actors, resources and activities. (Johanson & Mattsson 1992; Håkansson & Snehota 1995)

2.2.1 Interconnectedness and the TPL firm

As a TPL firm you are interconnected not only to the customer but you also connect to the other firms in the supply chain. You connect the customer with its customers or the customer with its suppliers. This interconnectedness means that when coordinating activities of the customers we need to take the customers customer into account. However, the studies of TPL firms have mainly focused on the relationship between the provider and the customer. (Berglund et al. 1999; Bagchi & Virum 1998; Maltz & Ellram 1997) They have left out other relationships in the network, such as customers' customers, customers' suppliers or relationships between different customers. Customers are interconnected via the TPL firm and the effects of changing activities would have repercussions on the other relationships. Furthermore, if the relationships are only indirectly related an increasing degree of integration would mean augmented interconnectedness.

2.2.2 Interacting dimensions in the relationship

In the industrial network approach the exchange within a relationship involves not only an economic, physical, technical, legal and knowledge exchange between firms but also a social exchange where trust and communication is vital. These exchange dimensions are interacting. (Hertz 1993; Håkansson &

Snehota 1995) However, trust between firms seems to be especially important when there is much at stake for the firms. This is often true when a firm is outsourcing parts of its supply, operations and/or distribution to TPL. (Maltz & Ellram 1997) Even though trust is of basic importance to each single relationship trust does not have to exist directly between the relationships in a network such as between different customers.

These dimensions are of importance for the development within a relationship. But to what extent will they influence the coordination between relationships?

The aim when coordinating customers and their activities is to create higher efficiency and effectiveness for the customers. Therefore the effects for the single customer by the coordination should be positive. The same dimensions have to be taken into account when coordinating customers. In this case for the TPL coordination of customers we will divide them into three larger groups. The first one would be physical and technological dimensions the second is social (including trust) and communication and the third one is knowledge. We see the economic part more as an output in this case and the legal dimension writing agreement, etc more of a prerequisite.

2.2.3 Activity coordination

For a relationship to exist, a certain coordination of activities is necessary. A coordination of activities often gives rise to economies of scale and scope and enlarges the knowledge and skills, which in turn creates competitive advantage for the TPL firm.

The coordination between different types of activities is often based on similarity or complementary. Richardson (1972, 889) called products or services making use of the same capabilities – knowledge, experience and skills - for similar activities. Activities are according to Richardson (1972) seen as complementary when representing different phases of a process of production and require some way or another to be coordinated. These activities might include not only manufacturing of a specific product and its components but also activities of R&D and marketing and have to coordinate both qualitatively and quantitatively. He further develops complementary activities into closer complementary activities, when the coordination is made to match specific but dissimilar activities. This requires a close co-operation between firms and a reason for development of complex networks. (ibid 1972, 892)

Similarities might lead to the sharing of resources giving economies of scope or scale while complementarities in activities might lead to a sequential

use or differences in times periods. The resource units might be shared between several different activity chains and the activity chains can be either within the firm or between firms.

The possibilities to coordinate activities are dependent whether they are similar or complementary but also on the activity chains and the activity structures. (Dubois 1994) The activity structures for the end products can be analyzed from the perspective of different dependencies such as sequence, volume, technical connections, time and location. (Dubois 1994) The sequence factor is here interpreted as resources being used sequentially by different activities, which implies closer complementary activities. Increased volumes of the same or different activities might develop economies of scale or scope and can increase frequencies. If the actors' activities are technically connected and adapted, the coordination would be more efficient. Combining actors' activities in time seem to be another factor of necessity for coordination. Finally, the fact that the different activities are performed close in location would decrease the time for transportation and reduce risk for damages and delays.

To our understanding coordination of the activities, activity chains and structure can be analyzed in terms of degree of similarity and complementary. These can be divided into the dimensions of sequence, technical connection, time and location. Except for the time dimensions these dimensions tie into the physical and technical dimension in this paper. Therefore we need to add the time dimension.

2.2.4 Relationships dynamics

Finally, relationships go through different stages in their development, which is similar to a lifecycle. These stages are formulated as awareness, formation, closer cooperation, extension and maintenance and then finally looser cooperation and dissolution. (Dwyer, Schurr & Oh 1986; Liljegren 1988; Hertz 1993) Studies of logistics alliances show that similar changes of increasing integration and commitment seem to take place in logistics alliances between the TPL and its customers. Over time the relationship deepens and the number of activities outsourced increase. (Bowersox & Dougerthy 1989; Bagchi & Virum 1998) From this we can understand that coordination with and of customers will differ and have to change over time.

Therefore we can expect a continuous change in what way the activities of customers can be coordinated because of the tendency to continue integration and add more activities, once a relationship started. The time dimension seems to be important both for the short term and for the long term development.

The physical and technological dimensions, the social and communication dimensions and the knowledge dimension of the relationships can all three be different determinants for creating efficiency and effectiveness in the customer coordination. Trust is especially important for the development of the relationship. These dimensions are of basic importance for the development of the relationships in the network and should therefore be taken into account when coordinating customers of TPL firms.

However, in order to create effectiveness over time it is not enough to study the customer but we also have to include the customer's customer which is part of the TPL coordination as well. As the relationship to the customer's customer change over time, the ways to coordinate will change as well.

Therefore time, short term and long term, is an important factor to include when discussing coordination. Time as a dimension is also included in the underlying dimensions of the discussion of similarities and complementarities by Richardson (1972). Therefore the physical and technical dimensions, social exchange, knowledge and time are seen as dimensions of basic importance for coordination of the relationships between firms. The physical/technical dimensions are closely tied to the coordination dimensions of sequence, location, and volume. Since we will study coordination in a network of relationships rather than a relationship to a single customer we will call them the network related dimensions.

Before we come back to these dimensions we turn into other possible factors of importance for the coordination of customers of the TPL firm. We will first discuss the characteristics of the product and then turn to different types of marketing and logistics strategies.

2.3 Product related characteristics

A specifically important determinant for the understanding of the customer demands would be tied to the characteristics of the product.

Such characteristics of importance would be product lifecycle, the value of the product, the complexity of the product, demand variations and fluctuation (over the year, the month and the day) and special handling such as temperature control and dangerous goods. (Gattorna & Walters 1996)

These five characteristics play an important role for the attitudes of management and employees, to the products and how the products are managed and handled.

For instance for a product with a short lifecycle a quick access of the product to final customer is vital and costs of lost sales are high which will reflect their demands on inventory management. (Fischer 1997) Demand

fluctuation and demand uncertainty therefore seem to be of high relevance when coordinating customers and cost savings. Specifically in the case when products have different seasons therefore can complement each other. These factors can be seen as product contextual characteristics.

The value of the product is the next characteristics that might be of importance when coordinating customers since high value and low value goods have different demands on resources and control systems. Also the safety and location of the warehouse and importance of selecting and adapting to certain means of transportation becomes different depending on the value of the goods. The complexity of the product is another important factor since a complex product demands specific knowledge and understanding by the employees working with them.

Finally, conditions specific characteristics for the product like handling and treatment of products are other vital factors that have to be taken into account for the coordination between customers. The conditions demanding specific handling often makes it necessary for the TPL firm to invest in specific equipment of warehouse design, etc. As a result of this many TPL firms specialize in certain products where the handling is of specific importance like frozen goods (Hertz & Alfredsson-Macquet 2003).

These characteristics seem to be of main importance for understanding and creating knowledge of the product and the demands of the customer. These would also be important dimensions to take into consideration when selecting a TPL firm. (Andersson 1995)

Product related characteristics are important and the four specifically important characteristics would be the contextual specific characteristics, the value and the complexity of product and the demand specific conditions. These characteristics are underlying what we mean with the knowledge about the product. We differentiate between the knowledge about the product and knowledge about the relationship. We will take both these factors into consideration when discussing the customer coordination.

2.4 Strategy related dimensions

The marketing and logistics strategy of the TPL customers is another issue that can be expected to influence the demands customers have on the TPL firms. These demands will be expected to have effects not only on the type of activities to be performed but also the way the TPL customers want them to be performed, thereby influencing the activity chains. This might influence the possibilities for TPL firms to coordinate different customers in an effective way.

Cost efficiency or high customer responsiveness are two main types of marketing and logistics strategies (Fischer 1997; Harland 1999). The two strategies will create different priorities for their logistics solutions.

While the cost efficiency means focus on low cost and little adaptation to customers demands in order to get economies of scale, the customer responsiveness strategy will put higher emphasis on specific customers needs often involving higher communication and transportation costs. Would the different logistics strategies of the customers actually play a role for the possibilities of the TPL firm to coordinate customers? Would the TPL firm prefer customers with the same strategy as itself?

Other more specific types of strategies discussed in supply chain management literature involve the choice between postponement or speculation strategies. (Pagh & Cooper 1998; Van Hoek 1999) Postponement is a concept used in the distribution literature since 1960s which says that the cost of risk and uncertainty are tied to the differentiation (form, place and time) of goods that occurs during manufacturing and logistics operations. If manufacturing and logistics operations can be postponed until final customer commitment are obtained, the risk and uncertainty of these operations can be fully eliminated. (Bucklin 1960) The concept of postponement can be used for manufacturing and logistics operations. (Pagh & Cooper 1998)

Speculation is seen as the opposite to postponement, where changes in the form, time and place are made as early as possible in the supply chain to reduce costs. Van Hoek (1999) showed that postponement is an important tool to create customer responsiveness when globalizing.

The concepts of postponement and speculation are often tied to marketing orientation and the selection of marketing strategies of pull or push and to the question of decentralization or concentration of the work in the chain. These concepts also tie into the strategies of customer responsiveness and cost efficiency. Through postponement the planning can be more accurate and Forrester effect reduced (Towill & Cullen 1999) but it also the makes it possible to have a higher responsiveness to the single customer.

TPL firms can also be segmenting themselves as being skilled in problem solving, and creating more value added services or offering more basic constellation of TPL services. (Hammarkvist et al. 1984; Berglund, Laarhoven, Sharman & Wandel 1999; Hertz & Alfredsson-Macquet 2003) The strategy is different if the TPL firm is working close to a small number of customers selling advanced customer adapted systems than making use of a more standardized combination. This would lead to the next interesting strategic choice of the degree of high or low general and /or customer adapted problem solving ability. (Hammarkvist et al. 1984) Even though the degree of customer adaptation in the problem solving level would be related to the

responsiveness strategy adding the level of general ability brings in another dimension to the issue of combining strategies. An interesting question is if the coordination of activities with high customer adaptation is different for TPL firms with low or high general problem solving ability?

Therefore cost efficiency or customer responsiveness, speculation or postponement and the choice of high or low problem solving ability might not only influence the niche of the TPL firm but also the coordination possibilities between customers. Therefore we use them as basic factors for marketing and logistics strategy dimensions the focus of the strategy, the decentralization/centralization and problem solving level.

Summarizing, the TPL firms need to coordinate their customers' activities to develop, create new knowledge and gain scale and scope economies and at the same time developing and keeping the balance of satisfied customers. The issue here is to find out how to accomplish this coordination in an effective and efficient way, which also includes taking related organizations into consideration. We will discuss network related dimensions, product related characteristics and strategy as main variables for coordination.

We have discussed the network related dimensions of the physical/technical dimension, social/communication, time and knowledge. As for product related characteristics we have the dimensions of contextually specific, conditions and treatment needed, value and complexity of the product. Finally we have strategies including different dimensions such as cost efficiency or customer responsiveness, strategy for postponement or speculation and high or low problem solving ability could be used as important variables of importance for customer coordination for TPL firms based on strategy.

Earlier studies have shown that coordination often is based on similarity and complementarity. We want to apply these to the coordinating of other network characteristics as well as product characteristics and strategy issues to find out to what extent they use similarity or complementarity as a main tool when coordinating customers.

We want to know how TPL firms combine their customers so that they can develop, gain know-how, skills and economies of scale and scope. In this we have to consider both the differences in customer solutions, the different needs of customers and the related organizations involved and the time it takes before the degree of commitment is developed with the different parties.

3 Perspective of the study

The empirical study is longitudinal with focus on four different types of transport and logistics firms and at least two of their customers and in each of

the cases also some customers' customers and two suppliers. In total it includes 17 personal interviews over a period of two years 2001-2003. However, in some cases the customers turned out to be customers of more than one of the logistics firms or being suppliers to other customers.

The TPL firms were very different in size ranging from large multinationals to a medium sized TPL firm. Furthermore, they were also different in their background. Two had developed from being transport and logistics firms, one was an integrator and the fourth was developing from department of a manufacturing firm. Figure1 simplifies the perspective of this study.

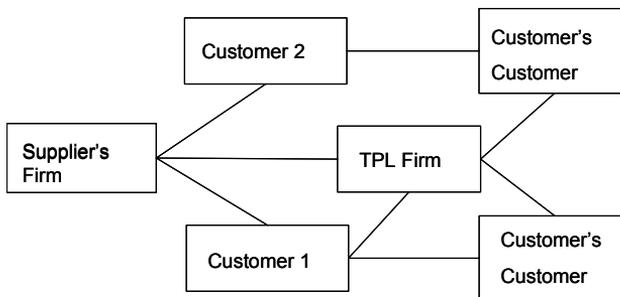


Figure 1: Perspective of the study

We have made the interviews both with TPL firms and with industrial companies being their customers, their customers' customers and suppliers to TPL's customers. There was a need to study several different levels in each of the companies in order to find out if the coordination and adaptation is taking place differently on different levels. The purpose is to study how TPL firms coordinate their customers in order to develop competitive services it is important to understand how activities involved in the services are coordinated both from the customers and the TPL firm perspective (see Figure 1).

4 The empirical evidence

We summarize our empirical study of all the four TPL firms, their customers and customers' customer and suppliers by following the different dimensions of the theoretical part. Therefore this empirical part is divided into network related dimensions, product related characteristics and strategic dimension.

Further we have seen that the task of coordination is very dynamic since customer and customers' customers change their demands continuously.

4.1 Network related dimensions

The same customer's customer, the same suppliers, direct connection in the chain, and finally same IT and warehouses as a prerequisite for customers coordination of the TPL firm appeared to be most frequent ways for coordination of network related dimensions. The four different dimensions of physical and technical, social and communication, time and knowledge will be discussed under these headings.

4.1.1 Same customers' customer

Coordinating by having the same customers' customers was one of the most important ways of the TPL firms in the cases to create competitive advantage (see Figure 2). If the customers' customers are the same they will both advantage the same geographical location and knowledge about the demands, routines and problems of those firms. The TPL firm is also able to combine the volumes of the different customers thereby gain higher capacity utilization. Organized in the right way there seemed to be advantages not only for the TPL firms but also for the customers and customers' customers. Delivering a fixed time of the day, which relieved the customers' customer from arrivals of several trucks, was one way to create combined advantages.

An example of specific interest was one of the TPL firms that coordinated the activities of a number of smaller customers having the same large customer. The TPL firm set up a special warehouse for these TPL customers, which all had similar products. These products were imported and transported directly to TPL warehouse. The small suppliers to a big customer that demanded frequent and national distribution, the suppliers were able to coordinate their volumes and increase frequency through the TPL firm. In this example the TPL firm handles a wide variety of logistics activities for the customers including storing the products, re-packing, combining consignments from several suppliers to be delivered to the specific store, distributing the goods, invoicing based on the customers' customer's demands and specifications, making special deliveries on demand, delivering warehouse data and statistics. By coordinating customers' customers the TPL firms also got to know the employees of the firms involved, and could therefore economize both on the contacts and administration (see Figure 2). The TPL firm developed a special IT system for the communication, ordering, invoicing, etc between the TPL customers and the customers' customer. The customers' customer only had to place one order even though they were buying from several different suppliers. The small TPL customers are actually

partly competitors that have realized that without the service of a TPL they cannot compete with other larger suppliers.

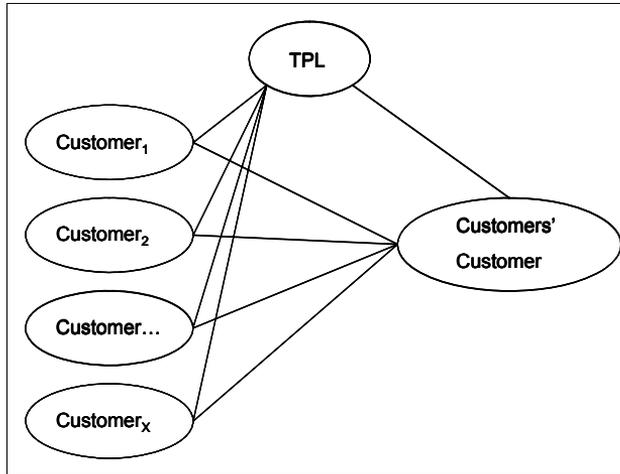


Figure 2: Coordinating based on the same customers' customer

The advantage for the customers and customers' customer in this case is manifold. The TPL firms not only get a valuable knowledge about their customers' behaviour, demands, problems, general context and business logic of the firm but also of the customers' customer. Further, this relationship and firm oriented knowledge further gives complementary information to the product related characteristics.

4.1.2 Direct connection in the chain

In another of the cases TPL firm co-ordinates the activities of two of their customers linking them together, since one of them is the supplier of computer hardware and the other one is this supplier's customer (see Figure 3). When one of the hardware seller's customers is placing an order, the TPL is putting the customized computer together, install the software and deliver it to the final customer, still in the same warehouse. This means that there is a change of ownership without physical transportation between the supplier and buyer. The fact that TPL has both the supplier and buyer as customers is the base for the creation of efficiency (see Figure 3). While coordinating the activities of both the supplier and this supplier's customer TPL can also easily adapt to the demands of the supplier's customer. As in the case of same customers customer it is vital that the TPL firm will not leak sensitive information between the supplier and buyer. Therefore trust between the TPL firm and its

customers as well as well designed communication systems and well-trained personnel are necessary. Sensitive information can be the prices offered to other customers, costs of buying the products and the suppliers to the suppliers. Even the specific assembly costs of TPL could actually be sensitive, since they are used as a base for business calculations. In this case the situation might be problematic if there are several competing firms in the same warehouse.

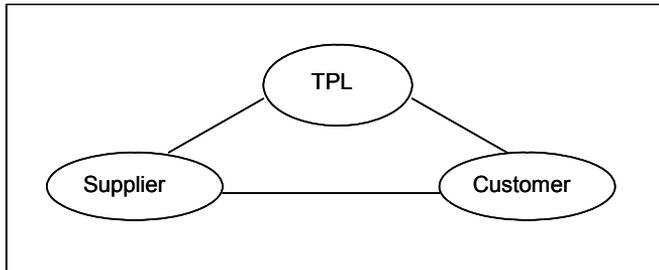


Figure 3: Coordination based on having both supplier and buyer as customer

4.1.3 Same supplier

In another case we have found that the TPL firm is able to co-ordinate the activities of the customers since they all have the same supplier. This is something that came out of the discussion with the TPL firms rather than their customers' customers. The specific supplier of the TPL customers then becomes an important actor for the TPL firm. The TPL firm and the supplier can learn from each other and develop a more efficient way to handle the flow (see Figure 4).

They can adapt physically and technically to what the customer want either a high or low frequency or a special set time for deliveries. You might also have enough to fill a whole unit, which could reduce the costs. Depending on the size of the supplier the TPL firm could fill different roles. If the customers of the TPL firm buying from this supplier are small, the TPL firms could create competitive advantage having on line connection, splitting invoices and making specific adaptation to their other customers. In the case when a supplier was established in another country the knowledge about the country and the international network was another factor that was used for coordination.

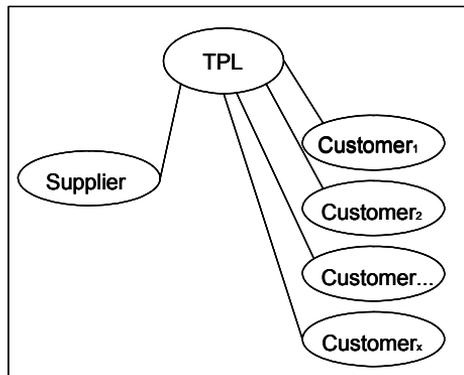


Figure 4: Coordination based on TPL customers having the same supplier

4.1.4 Coordination of information and communication system (ICT) and warehouse

For the TPL firm developing an advanced IT system, that could be used by many customers, was an important way of coordinating customers demands on information and communication as well as developing know how for the firm. The activities were easier if the personnel could use one system and did not have to learn and switch between different systems. However, many customers required their own IT system to be used by TPL firm, which reduced the possibilities for coordination. In this case trust seemed to be an important barrier for increased coordination.

As technology advanced the risks, costs and benefits of connecting different systems and applying the TPL firm's system have changed. This has in turn changed the attitudes of some customers. Furthermore, an advanced IT system of the TPL firm was often a prerequisite also for coordinating the customers and customers' customer and suppliers.

Another way of coordinating is to share the same warehouse. Customers frequently wanted the TPL firm to take over their existing warehouse and add other customers into it because of change in needs. The complementary customers in the warehouse often had to be accepted by the first customer. In this case the coordination between customers was a prerequisite for getting the customer in the first place and the customer demand to have part of the benefits.

4.2 Product related characteristics

The same product characteristics were important for coordination. Customer wanted to be sure that the TPL firm had the knowledge and understanding of its products. Some customers even asked for references of the TPL firms from other customers in the same business. In some cases this was a prerequisite before outsourcing to the TPL firm.

To be able to communicate and to create the amount of trust needed for an exchange, it was necessary that the TPL firm understood the conditions of the products of their customer. The TPL took part in internal meetings held at the TPL customers and presented statistics about volumes and discussed quality of the TPL business. The TPL firm even got information on demands, behavior and perceived customer satisfaction that the customers did not have.

By handling several TPL customers with similar product characteristics, the demands on speed, the investments in the warehouse and the set up of the distribution systems of the TPL firm would be similar and know how of the products could be developed over time. Examples were computer products, automotive spare parts, liqueur and spirits, groceries, engineering firms, etc.

All the firms made use of this type of product related coordination. These characteristics were very often based on value, special handling and/or complexity.

Engineering firms were examples of having a need of high frequency and speed in deliveries over a specific region, which often implied to set up a network of drop points, etc for the use of service technicians. In order to manage this TPL firms had to have established relationships to suppliers or agents delivering these services in different countries. In some cases the existing agents was not suitable for the purpose so they had to find new partners.

Further some of the larger TPL firms were organized into specific niches based on the product characteristics. In these cases value of the product could be one important dimension. A specific and important service offered TPL customers was security of the products. By storing products of several suppliers in the same warehouse, the TPL could use the same security system (including three different levels of security as well as special employee training) for customers of high value products. Since the TPL customers' products were located in the same warehouse, the TPL firm also had the possibility to use the same people and developing know-how of the products being useful for all of them. In other cases the handling was an important issue for coordination. Grocery or frozen goods, etc not only needed a special type of warehouse and equipment but also the special knowledge of handling these products.

The complexity of products like computers meant that customers wanted to ensure that the TPL firm understood how these products should be treated and put together. This was specifically mentioned as important when TPL firm had taken on the assembly such as installing programs to computers on customer order.

Another product related characteristic, that seemed to cause many problems but also was a base for coordination between products, was demand fluctuation. There seemed to be different types of reasons for demand fluctuation causing the need of coordination.

One reason was based on the customer's lack of knowledge about their future demand, which was caused by either a high product uncertainty or poor communication between the firms. Several TPL customers could not specify their needs, volumes and the number of movements, etc which had direct effects on the TPL firm capacity planning, and need of handling equipment and warehouse space. This was specifically critical when it was a key customer. The forecast reliability of the TPL customers was important both for the possibilities to coordinate and for the development.

Some customers missed out totally, which was very costly. One customer thought there was a decline coming and assigned a TPL on those premises. Instead they had a high volume growth.

Another cause of demand fluctuation was seasonal variance. Through a coordination of firms with complementary seasonal variance the TPL firm could create a competitive advantage by establishing a more stable operation over the year. Coordinating these customers in a warehouse would mean a possibility to co-utilize the warehouse space, the equipment and the personnel etc. over seasons.

4.3 Strategic issues

The basic strategy of the firms, the customer philosophy and culture all were important dimensions for coordination. These three factors seemed to be interdependent and reflect each other. Often the TPL firm or its customers expressed the differences in strategy as a difference in cultural or philosophy rather than strategy. Close cooperation and coordination were seen to be difficult when cultures of the firms were different.

In one case the TPL firm had problems with one of their customer, since the customers demanded low cost services, while TPL strategy was stressing high quality in service and skills. The different aspects in the relationship ended in dissolution, where the TPL's customer broke the contract. TPL did not cry over this loss, instead they felt relieved. "If they would not had left, we would

probably have kicked them out!" With many other TPL customers they had a well functioning relationship since both partners were working on development and long-term advantages for both parties, instead of focusing on price. This specific TPL firm said that the culture between TPL and that customer was too different. The possibilities to coordinate were very low because of this difference.

The outsourcing strategy was another factor that played a role for customer coordination. In one case the TPL customer wanted to outsource its whole warehouse operation and distribution. The TPL customer wanted the TPL to act as one of its fully owned operations and to continue as part of the firm. TPL was to take over systems, rules, communication and personnel and keep it as a separate business. This way TPL had less possibility to coordinate physical activities with other TPL customers, since few resources could be shared. However, the knowledge of that customers business and know how about the products could be used as a base for coordination with other customers. Over time the demand on separation gradually changed but still the majority of the business and its resources were to be separated.

In another case, the TPL customer in the same industry demanded coordination of its activities with other TPL customers preferably in the same industry with the similar philosophy in order to be able to gain economies of scale and scope as well as knowledge. This TPL customer actually contributed more to a possible future development of the TPL than to take over the whole logistics operation of a customer. Therefore the fully outsourced business might not be as interesting as the customer who does not demand total separation.

The problems of strategy and culture also involved the TPL firm, its customer and supplier of the customer. There was a conflict between a TPL firm and the customer's supplier when the supplier did not want the customers appointed TPL firm to handle its goods. The reason was that the supplier had a new strategy which included managing logistics for its customers. This actually collided with outsourcing strategy of its customers.

Another issue was the coordination of firms using postponement and/or speculation strategies and the possibilities to combine these strategies in an effective way.

In one case TPL customer, for which the TPL handled the logistics of spare parts was acquired by a competitor. The acquiring firm used speculation for the spare parts while the other firm used postponement. For the speculation strategy TPL had to set up new systems since the demands on costs, forecasts and speed of delivery were different. The speculation strategy had to be combined with a return system where distributors could send back the spare parts not needed. For the postponement system awaiting customer demand

such as a return system was not needed but well instead speedy deliveries and restricted time limits. The power and control were also very different in the two systems. The combination of strategies became a really big problem since customer as well as distributors not only operated in totally different way but also had very different attitudes and expectations. Therefore the expected coordination between these two customers did not work out.

4.4 Summarizing

We have divided the different dimensions of co-ordination into network related dimensions, product related dimensions and strategic issues. The most important network dimensions included same customer, direct connection in the chain and same supplier. As to characteristics we saw product related characteristics concerning value, handling and demand fluctuation as being of basic importance. The strategic dimensions, mentioned by TPL as important, were not only general strategy but also philosophy, culture and degree of outsourcing. Finally we saw some problems when coordinating differences of customer strategies i.e. postponement and speculation strategies.

The next part will analyse and discuss what have seen as important ways of coordinating customers for the TPL firms.

5 Discussion

In this part we will discuss the different ways in which coordination is made by TPL firms and how these can be interpreted theoretically. Further, we continue by analyzing how the dimensions can be combined and if and how they actually influence the effectiveness and efficiency of TPL firms.

We will use similarities and complementarities as a base for differentiating between the different ways of coordinating and discuss the different dimensions within these. In the end we will take a more holistic view on how a TPL firm might be able to combine the dimensions of complementarities and similarities and how development over time might influence the coordination.

5.1 Dimensions and similarities

5.1.1 Network related dimensions and similarity

In the empirical study important ways of coordinating for the TPL firms were found to be when customers were having the same customers' customer or the same supplier. These are both based on similarity. The coordination in both cases is network related and is based on physical/technical, social/communication, knowledge, and time dimensions of relationships and networks. (Håkansson & Snehota 1995; Hertz 2002) These two cases of coordination not only offer a possibility to combine activity chains of several customers but also to involve a large number of activities of the TPL firm. Thereby they present several different ways of creating competitive advantage.

Similarities in the physical and technical dimension are mainly based on the volume and location factors and possibilities to gain economies of scale and scope. (Richardson 1972; Dubois 1994). When these similarities exist they give the advantages of consolidating goods to the same place. Indirectly this also makes it possible for the TPL firm to have a representation at these specific locations and create bases for higher contribution from the traffics to /from these destinations.

However, these ways of coordinating also offer a better customer service to the customers' customer. Combining the volumes of several customers to customers' customers, means that the deliveries can be more frequent and adapted to customer demands.

Social exchange including communication is another dimension of high relevance in these cases. Social exchange and trust is seen as a very important factor for the relationship to the customer (Maltz & Ellram 1997; Håkansson & Snehota 1995). The possibilities to create a close contact with customers' customer or customers' supplier increase with the number and size of customers that the TPL firm represents. The closer contacts in turn mean higher adaptation between the firms, higher trust and possibilities to offer more services to these firms. Trust was specifically important in the case when TPL customers were competitors. Without a deep trust between them and TPL the customers could not be sure that sensitive information would not leak between the firms.

By coordinating the customers' customer and the customers' supplier the TPL firm is able to specialize on a certain category of customers but also develop a deep knowledge of the customers' customer and in the second case the supplier and their demands on customer service. (Ford et al. 2001) In many

cases, this knowledge was lacking by customers. Thereby TPL firm could actually add extra value and increase the customer satisfaction. Coordination could here be a tool to retain the customers over time and increase the dependency between the TPL firm and their customers.

The time dimension was an important prerequisite. If the different deliveries of the customers were not available at the same time the gains of the economies of scale and scope would not be present. (Dubois 1994) However, the more of the same customers' customers the frequencies of the deliveries can increase and the risk be reduced.

In our study we saw that coordination was often made for many small firms being TPL customers in relation to their much bigger customer or supplier. In these cases the advantages for the customer of consolidation, communication, deeper knowledge, etc. were more extensive. Furthermore, for these small firms and the TPL firm it was possible to gain economies of scale also by having a direct on line communication with the big firm, centralized invoicing and then split to each customer via the TPL firm. This would give both a better service and lower costs both for the customer and for the customers' customer and for the supplier.

The customers' awareness of the benefits of coordination was mainly present in the case of the same customer's customers. In one case a big customer of the TPL firm saw coordinating with other customers as an important prerequisite for outsourcing. In other cases it was a recommendation for the TPL firm to get the order. On the other hand, in another case the customer demanded that the TPL firm should not coordinate physically/technically with other customers since it wanted the warehouse to be as a part of its own organisation. It seems, however, that both customer satisfaction and the development of the relationship might improve if customers were aware of the benefits of the coordination between customers.

In the case of the same suppliers the major advantages would be gained by the TPL customers' supplier rather than by the customers. Further since the terms of delivery often make the supplier responsible for the costs the pressure and interest from customers are lower. In this case awareness is needed from the TPL firm to show the advantage for its customers and for the suppliers.

In order to gain competitive advantage the similarities regarding communication and IT systems were important for the TPL firms. Making use of the IT system of the TPL firm as well as having compatibility between TPL firm and the customer was critical. This way the TPL knowledge is more advanced relationship with the customer closer and the switching costs for the customer higher. It is also an important prerequisite for other types of coordination.

The same customers' customer and suppliers can be seen as making use of a combination of similarities and the network related dimensions. In these relationships often the physical/technical, social/communication, knowledge and time are involved in creating strength of the cooperation. There also seems to be an interaction in these ways of coordinating. As for the TPL firms, they gain economies of scale and scope by volume and location as well as increased customer satisfaction and possibilities for future business with these customers customer and suppliers.

5.2 Products related characteristics and similarities

In the empirical part the similar product related characteristics was a very important factor for coordination between customers.

By having customers from the same product area the TPL firm can learn, not only about the product characteristics but also about how the attitudes and conditions of the business. The logic of the industry and competences about the market situation of the customer can be extremely important when serving a customer. Typical products demanding special logistics knowledge have been developed for computer products, grocery products, automotive industry, white goods or brown goods, etc.

Similarities in product values, product lifecycles and industry logic are some of the underlying factors for creating effectiveness. This would lead to a possibility to train personnel in how to handle the products. The TPL firm becomes a specialist with deep knowledge about specific products. Often this is a reason of the customers to select a specific TPL firm. Therefore developing knowledge of a specific product field or niche seems to be an important way for many TPLs to grow and increase their profitability in a growing industry (Berglund, Sharman, de Ven & Wandel 1999; Hertz, Alfredsson & Maquet 2002).

5.3 Similarities in philosophy, culture and strategy

When discussing similarities in strategy the importance for coordination seems to be indirect via the TPL firm and its strategy.

Whether the TPL customer is focusing on low costs or high customer service and responsiveness will be reflected in the philosophy and culture of the TPL customer's personnel. The attitudes towards the products, customers and suppliers are very different if the TPL customer sees itself as a cost hunter looking for cost efficiency or adapting and developing to the customer

demands by having a logistics strategy of customer responsiveness. (Hammarkvist et al. 1982; Fischer 1997; Harland 1999)

In the empirical study the problem arose when a TPL customer got cost hunter or cost efficiency while the TPL firm itself focused on high responsiveness strategy including high quality, service and high prices. Then there were differences in philosophy and culture between the TPL firm and its customer. In the study this even lead to dissolution of customer relationship. By settling only for customers of specific strategies the TPL firm will the get a strong focus on customer responsiveness and will not coordinate both customers with cost efficiency and customer responsiveness strategy. However an important question is whether the TPL firm does this consciously.

The consciousness about the marketing and logistics strategies of the TPL customers ought to be high for the TPL firms since they take active part in the TPL customer service by delivering and sometimes packaging and assembling the products. The way the TPL customer wants to manage and adapt to their customers has to be reflected by TPL services and activities.

Even though TPL firms were aware of the problems that differences in culture might cause, they almost never refused firms to become customers on that ground. Therefore TPL firms have a mix of customers with all different types of strategies at least in the short run. This implies that some firms get a much higher service than they asked for and others are not really satisfied with the service they get.

The postponement strategy is frequently seen as a part of a general customer responsiveness strategy as it often includes the final customer adaptation. Therefore a similar problem with differences in strategy was revealed in the study. A postponement strategy (Pagh & Cooper 1998) demands a specific customer and product knowledge of the TPL firm as well as a highly frequent and fast delivery service. In the study a combination of deliveries to the same customers' customers from one customer using speculation strategy and one with postponement strategy caused problems and confusion concerning coordination of deliveries. Therefore a similarity in either postponement or speculation strategy seem to be preferable especially when combined with serving the same customers.

Finally, similarities in the strategy of customer when outsourcing to the TPL firm influenced the possibilities to coordinate customers for the TPL firm. As in one of the empirical cases, the TPL customer wanted the outsourced logistics activities to be handled separately and that TPL should act as one wholly owned distribution center among several in that specific firm. This meant that the gains of scale and scope economies were limited as customer physical/technical coordination became impossible. In other case the degree of outsourcing were tied to the possibilities to coordinate with similar

activities of other customers. Therefore it is a question both of the way it is outsourced and similarities in activities outsourced.

5.4 Dimensions based on complementarities

Richardson (1972) saw both similarities and complementarities as important but there were much less of coordination based on complementarity than similarity in our study. Now we turn to some of the most important ways of coordinating by complementarities.

5.4.1 Customer complementarities and the supply chain

Direct connection i.e. when both the supplier and the buyer are customers to the TPL firm, is one of the most interesting based on complementarity.

It includes a direct physical/technical connection between the customers of different positions in the supply chain. Many costs of coordination can be reduced by the fact that the TPL firm is handling both customer and suppliers in the same warehouse. The cost of transportation might be reduced to almost nothing. Activities can be performed in sequence, which gives possibilities to higher adaptation and rationalization. (Richardson 1972).

Doing these activities in sequence in the same warehouse makes, however, the social and communication dimension especially important since customers and suppliers will have to trust the TPL firm that they will not leak information about prices or costs between them.

Since TPL firm will have control of the logistics from the supplier to the customer and to the customers' customer the communication about what activities it performs and to whom they are charged should be very clear and distinct.

Direct connection will probably be an increasingly important phenomenon since it ties the existing TPL customers to each other and may give the TPL a role as an integrator of the supply chain. Therefore this might be an important way for the TPL firms wanting to become more advanced and integrated in the whole supply chains.

5.4.2 Complementarities in demand fluctuation, product related characteristics and strategy related issues

Making use of differences in demand fluctuation is actually a common way to coordinate customers based on complementarity. The important dimensions of coordination here are the physical/technical and time. In this specific case time is the overriding dimension that makes it possible to coordinate the activities physically/technically of the customers. (Dubois 1994) The TPL firm can create cost advantage by sharing the resources in the warehouse and/or transport network between different products over seasons, over the week, etc. This way the amplitudes in capacity utilization can be evened out.

Uncertainty in demand for a specific product and its market might be another important base for coordination with time dimension in focus. If the TPL firm has its dominating business in products of a high demand uncertainty there might be a need to stabilise the business by adding more functional business with a lower uncertainty in demand. This is related to coordination of strategies based on complementarity, since firms with high differences in demand uncertainty of their products are expected to have different strategies. (Fischer 1997) Products of high uncertainty in demand are best suitable for use of the customer's responsiveness strategy and for the functional products a more cost efficiency strategy would be better.

This is a contradiction to what we mentioned earlier about the advantage of combining similar strategies to the same customers. However, in this case the combination of the different strategies is used on a more general level in order to gain a higher stability and reduce risk in business in on the whole. Some TPL firms seem to have solved this by separating different business areas and covering several niches.

5.5 Summarizing and combining the dimensions

Similarities were used much more often as a base for coordination. The different dimensions are also interacting. Similarities in network related dimensions like knowledge and understanding of customers business through the relationship are often connected to the product, its value and handling. Likewise the similarities in the product related and strategy related dimensions are interacting since certain customers have specific product that are likely to use either cost efficiency or customer responsiveness strategies. Indirectly all three dimensions can be interrelated.

Coordination based on similarities with the same customer and suppliers would enhance the social exchange and increase the trust. It would also lead to

gains of economies of scale and scope; develop specialized skills and a deeper knowledge in specific product areas. This can be a base for specialization and the formation of a niche, which was the case for some of the firms in the empirical study. (Hertz & Alfredsson-Macquet 2002) Another important way of coordinating for the TPL firm was by using the same IT systems for several customers thereby also making it possible to create a more advanced know how and include more customer activities.

Complementarity in coordination is less frequently used by TPL firms. The dimensions of importance for complementarity were direct connection between TPL customers and their suppliers, combining different demand fluctuations and different uncertainty of demand. Often complementarity made it possible to share the same TPL resources in sequence or in time. As for combining different strategies a higher stability for the business on the whole could be the result of combining the strategies. (See Figure 5)

To what extent can we combine similarities in certain dimensions with complementarities in other dimensions? As we can see in figure 4 in some cases both similarities and complementarities can be used for the same dimensions simultaneously but on different levels. An example is the strategy where similarity was important towards the same customers' customers while coordination based complementarity in strategies were important for the business as a whole.

	Similarities	Complementarities
Network related dimensions	Same customers' customer Same suppliers Advanced comp IT systems Similar demand	Direct connection in the supply chain
Product related characteristics	Same products Similar value Similar handling Similar complexity	Demand fluctuation over seasons, weeks, etc.
Strategy related	Same philosophy/culture and basic strategy Same strategy-postponement or speculation to the same customers' customer Degree and ways of outsourcing	Different basic strategies

Figure 5: Profiles of different customers for customer coordination

A combination of the similarities and complementarities (see Figure 5) are needed in order to create efficiency and effectiveness and making use of the resources in the best way as well as offering the competitive services.

5.6 Dynamics of relationships and the coordination of customers activities

Customers, customers' customers and suppliers change over time both in relationships, networks, products and strategies. This implies that the possibilities to coordinate change over time and that the TPL firm must strive for a continuous change towards a higher efficiency and effectiveness.

A general reflection is that much of the coordination of TPL customers is made *ex post* rather than *ex ante*. This means that the TPL firm acquires the customer first and then *ex post* see how coordination can be made. The reason for *ex post* coordination could be either a lack of knowledge about the customers when forming the relationship or that the TPL firm does not want to refuse a potential customer. This way to act is both positive and negative for the TPL firm since the opportunities to coordination are not really utilized. A low degree of coordination would lead to a lower profitability and competitive advantage. On the other hand since the development of a relationship often changes gradually, as trust, understanding and commitment increase, an increased commitment between the TPL firm and its customers would be expected over time as well. (Håkansson & Snehota 1995; Bagchi & Virum 1998) This is also what happened in many cases. Fast growing customers or customers redefining their businesses were other reasons for continuous improvement of the TPL firm.

Finally, we have seen that new alliances, acquisitions and mergers are restructuring the markets both of TPL firms and of their customers and customers' customers. In several cases we also found that these caused a change in the strategy of the customer as to what to outsource and to whom. Furthermore, these changes also continuously cause constraints and opportunities on the coordination between their customers.

6 Conclusions and continued research

TPL industry is a relatively new and expanding business, which offers many different services and alternative solutions. Our purpose was to study how TPL firms coordinate their customers in order to offer competitive services and what the important factors are influencing efficiency and effectiveness.

What we found was that making use of similarities in coordinating network related dimensions as well as product related characteristics dimensions dominated. The same customers' customer or supplier, and same or similar products in terms of value and handling were some important ways to coordinate customers. Strategy related dimensions were more indirect since they were often expressed in terms of differences in culture or philosophy between the TPL firm and its customers. However, the TPL firms were only in a few cases aware of the effects of difference in customer strategies on their services towards the same customers' customers. The three different bases for coordination were interacting, since the dimensions in the relationships to the customer were influenced by and influenced the product related characteristics, and the strategy was related to the product characteristics.

In spite of the fact that customer coordination is vital for competitive advantage of the TPL firms much of the coordination is actually analyzed ex post i.e. after customer agreement is written and the prices set. Many dimensions are not actually taken into account by TPL when taking on a new customer or marketing its services to new customers. Others have to be developed over time as the relationships and activities performed change.

A reflection is that many of the dimensions are used as simple rules of thumb making the benefits visible both for the TPL firm and the TPL customer.

The way the logistics firms manage to coordinate and select their customers as well as integrate their different logistics solutions is basic not only for their own but also for their customers' and sometimes even for their customers' customer survival. Since coordination between customers is vital for effectiveness it should be of interest to TPL customers to take the existing customers of the TPL into consideration in the selection process. This has shown to be specifically true for smaller firms with large customers or suppliers.

However, if TPL makes the wrong decision and take on a customer with a strategy that does not fit the TPL organization, it can actually be very expensive since dissolving integrated relationships is difficult and time-demanding. Complementary questions are to what extent the TPL customers actually are aware of the need to coordinate different TPL customers' solutions in order for TPL to be effective and how will this affect marketing and sales of TPL?

Additional research has to be done on how TPL firms create their competitive advantage over time. An interesting question is how should the marketing and sales functions of TPL take the coordination into account? Another question of interest would be how TPL can facilitate the integration of a whole supply chain by taking on several firms in the chain as customers.

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THE IMPLEMENTATION PROCESS OF AN ADVANCED TPL SOLUTION - CASE STUDY

Krister Lång, Jyrki Ristinen and Juha Ruotsalainen

Abstract

This paper presents an empirical case study of an implementation project involving one of the biggest Logistics Service Providers in the world and the Customer, which is a global company. The paper describes and comments upon the implementation process - starting from the implementation negotiations and ending in future development discussions. It also provides a summary of lessons learned in the project. Furthermore, the pros and cons of each stage are discussed in this paper.

1 Background

The purpose of this paper is to a) describe the process leading up to an outsourcing decision involving the transfer of a wide area of functions from the customer to the Logistics Service Provider (“LSP”), b) the implementation process, c) lessons learned from this case and finally d) thoughts about the future development. The paper will comment on the different stages roughly according to the following timeline (Figure 1).

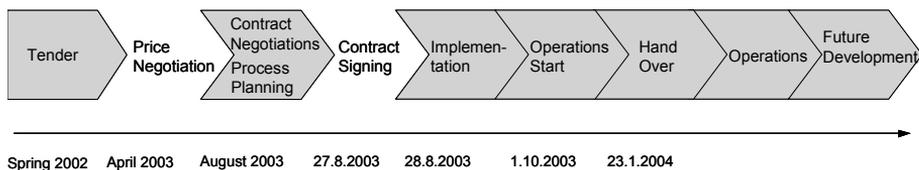


Figure 1: Timeline

2 The reasons behind the outsourcing

The main reason for the outsourcing decision was the customers desire to be able to focus on its core business. At the same time the customer also wanted to achieve cost savings by transferring fixed costs into variable, reducing the amount of personnel and have a better ability to handle volume fluctuations. Through these measures the customer can also concentrate more efficiently on developing the core processes.

The customer also wanted a strong and global LSP (Logistics Service Provider) to help to develop their logistics further. Also possible changes in the production environment - production in other countries than Finland - supported the choice of partner.

3 The logistics service provider and the customer

In this study the LSP is one of the biggest logistic services providers in the world and a world market leader in some areas. Many of its customers have well known global brands, whereby a worldwide presence is essential.

The LSP's main business sectors of interest are:

- Telecommunication and Electronics
- Automotive and Other Spare parts
- Fashion
- Industrial.

The Customer in this study has grown steadily and it is a global player with subsidiaries in 11 countries. It operates within the Telecommunication and Electronics sector.

4 First contacts

The first contact was taken by the customer. The main idea was that they wanted to redesign their existing logistics processes. Through this idea outsourcing was considered a viable option.

5 Background information for pricing and process design

During the start of the negotiations the LSP had an opportunity to make process studies in the customers' factory. This was essential, as the pricing and the preliminary process design was based on this information.

Because the customer is a listed company, everything had to be carried out very discreetly. The LSP could not for example ask a lot of questions from the employees who performed the actual work at the customer's premises. LSP's presence at the customer's premises during the later stages of the negotiation was also sporadic, as they had to avoid drawing attention to their selves and to questions rising among the customer's employees and other interest groups. The low profile was also in the interest of the LSP, as dangerous rumours are easily started, which can cause a lot of uncertainty amongst the customers employees and make the negotiations a lot harder to complete.

Already at this stage of the outsourcing process, both parties have to have a certain trust with each other as the information about the present operations is very valuable for the customer and therefore sensitive. The LSP is also providing know-how about alternative solutions.

All background information and calculations used had to be on an elementary level, realistic and transparent to both to the LSP and the customer. In this case the LSP received all information they asked for. The problem was that the LSP did not always know the right questions to ask because of the lack of understanding the customer's logistic processes. All information received was realistic and of good quality. After many negotiations and checking of accurate information enough, information was received from the customer to present them a realistic price offer.

6 The business case

The presented solution was that the LSP would offer the following services to the customer:

- In plant material receiving
 - The LSP will receive, register and shelve all goods and material coming from the customer's factory.
- In plant packing of final product
 - The LSP will take care of the packing of the finished goods in the customer's factory.
- Shipping and terminal functions
 - The LSP will handle all terminal and customer service functions.
- Raw material consignment stock
 - The LSP reserves a mutually agreed amount of pallet places for the customer's consignment material and also handles the physical operations from and to consignment stock.

This meant that the LSP would take over all logistic functions of the customer, excluding transportation management. The customer will still

negotiate its own transportation agreements with different transportation companies and the LSP is obligated to use them. All other purchasing of Third Party services (packing materials, pallets, etc.) is to be controlled, purchased and invoiced by the LSP.

The agreed solution was to transfer the current operations to the LSP as is and start developing the processes after implementation. It was agreed that the service level must as a minimum stay at the same level that it was when the customer performed the operations in-house. The service level is monitored regularly and reviewed monthly. The main tool for monitoring the service- and quality levels is the customers Balanced Scorecard.

Because the case in question was – by Finnish labour law – considered as a “Business Activity Transfer”, all employees were transferred from the customer to the LSP as “old employees”. On one hand this transfer was valuable for the implementation process. The LSP did not need to use time for training and the expertise was to be found within its own company. On the other hand it will take a lot of time and effort for these employees to realise that they are now working for completely different company – with different culture and with different way of doing things.

7 Price negotiations

The first offer presented did not include any prices. This offer, which took the LSP to the second round of negotiations, was all about the processes.

It was very clear to both parties that the price offered could not be higher than the present cost level of the customer. The most important factor was however the proposed processes and the handling of the operation at minimum the same level of quality as before.

8 Letter of intent and agreement

A Letter of Intent (LOI) was signed at an early stage - actually before the real price negotiations had even started. The reason for this was the rent of the warehouse space. The LSP needed to ensure the availability of the planned location, and it had to sign a rental agreement early in the negotiations. To be able to make such a commitment to a big investment, the LSP needed to secure the partnership.

By the LOI both parties agreed on the following things:

1. The Parties will sign a deal with each other,
2. The roles and responsibilities will be defined in a future contract,

3. The customers present logistics costs,
4. Milestones and targets on the way to the contract signing,
5. Compensation proceedings,
6. Temporary staff commitment during the start-up phase.

In the LOI it was clearly stated that if no major obstacles were to appear, the contract would be signed in case of the parties agreeing on the pricing.

9 Implementation, operations start and hand over

No processes could be redesigned before the business transfer. This was due to the classified status of the outsourcing project. Therefore the customer's processes were transferred unaltered to the LSP.

The physical implementation started a month before the hand over. The agreed schedule did not allow much time to set up all infrastructure and other functions needed for the operations.

The implementation team included an Implementation Project Manager and some of the customer's staff that were to be transferred to the LSP. Because of the small size of the project team, the project was assisted by corporate functions such as Human Resources and Legal.

Due to lack of time, there were no large procurement processes to be used for creating the infrastructure. The most important factor when choosing a supplier was the schedule in which they could deliver the equipment needed, e.g. IT/IS-equipment, office furniture, warehouse equipment (forklifts, pallet jacks), work clothing, etc.

The most time consuming part was the transfer of the customer's staff to the LSP's organisation. Because of different collective labour agreements at the customer and the LSP, the LSP did not have the necessary expertise in this industry sector. The signing of the contracts took therefore a long time.

Also after the contracts were signed, the new employees still needed a lot of attention. Because the LSP had not yet been able to hire a warehouse manager for this location it was up to the Implementation Manager to answer and react to the employees' questions and problems. Unfortunately this caused a lot of misunderstandings and ignorance amongst the new employees. A lot of practical issues - health care and HR-issues (payday, holiday pay, recreational activities provided by employer etc.) were not dealt with in an efficient manner and created some frustration.

Although there were some challenging issues during the implementation month, every critical component was in place in time for transferring the operations to the LSP.

According to the customer the implementation was a success, because all required quality and service level targets were met. The down time of the operations due to the transfer was only half a day. And most important of all: there were no end customer complaints.

10 Status after ten months of operation

The LSP has had severe profitability problems with this operation. The pricing was based on the forecasted Net Sales for 2004. Unfortunately the activity level turned out to be much lower than foreseen. This led to a situation where the LSP had too much staff resources – anticipating the promised volumes. The main reason for the downside was that not all functions agreed upon were outsourced from the beginning. This was due to internal resistance within the customer's operation. Some of the processes were moved much later, which created a delay in invoicing from the LSP.

Fortunately the partnership between the customer and the LSP has worked as intended and as both parties had decided to build stable long term cooperation also the crisis was handled in a proper way.

The main decision was to accelerate the development and improvement of all major processes. More resources were provided by both parties. Also the continuous monitoring of the Key Performance Indexes (KPI's) and cost levels was to be prioritized higher.

11 Status after three years of operation

The operations are running smoothly on a high and consistent quality level. Both parties have built upon the trust created at an early stage of the cooperation. A number of process changes have been mutually agreed and carried out. A big improvement were the adjustments made in the customer's software, which had a positive effect on both efficiency and resourcing.

Due to changes in the infrastructure, the operations were forced to move to a new building, which actually is an extension to the customer's production facility. The layout of the warehouse is now better suited for the operations, as it was planned and build according to the LSP's specifications. There are also some other possibilities for savings because of leaner processes. The downside is that the rental cost has increased substantially, which creates a new profitability problem for the LSP. The overall situation is – as described in the process descriptions agreed – handled by regular Management meetings, which include participation by Senior Management.

12 Future development

After the implementation was completed and the operations handed over to operations management, the processes were thoroughly analysed. This was done because the future success depends on the LSP's ability to get more efficient processes and therefore cost reductions.

One very important issue is the possibility to manage more customers at the same location. This would obviously lead to more flexibility and also less fixed costs to be carried by each party involved. At the moment there are three different customers operated at the warehouse in question. This number should be further increased.

Other steps in creating a cost effective and efficient logistics centre with consistent high quality are:

- Constant monitoring of the operational quality levels
- Visibility of the whole flow from the raw material supplier to the end customer and thereby
- Better management of the whole supply chain
- Continuous and shared development of operations
- Use of the same concept for multiple customers.

The demand from the customers to reduce costs over time is constantly growing. There is also a challenge to provide help in all kinds of logistics matters. These requirements are not conflicting with the above points.

At all times this cooperation is based on the depth and trust of the partnership. The only way to reach exceptional results and a true win-win situation is an open dialogue. Both parties must understand that they are in this together. Many times this kind of cooperation has – rightly so – been compared to a marriage. There are hard times and good times. And a divorce would be the worst outcome.

13 Findings and lessons learned

Gathering information for the process design: the LSP should have been more proactive and efficient during this stage – the information needed should be known well in advanced. The information should also be on a very practical and pragmatic level in order to be useful.

Confidentiality: A mutual confidentiality agreement should be signed at an early stage. This gives both parties more freedom.

Consultancy and transfer of know-how: It must be made clear in a vast project like this, that the LSP will – in order to secure its core know-how – not

input sensitive information before the confidentiality agreement and the LOI has been signed.

Securing the location: This can be very challenging and risky, as the landlords usually want a firm and a long commitment at an early stage of the negotiations. This issue can be addressed in the LOI.

Implementation planning: The most important stage after the deal has been made! Enough and plenty of resources must be made available in order to succeed. It is also a question of trust – if the LSP fails with the implementation, it will take a very long time to restore the customers confidence.

Implementation bonus: One way of supporting a successful start up is by introducing a bonus for the people involved. This would be paid out e.g. four months after the transfer, if all quality and performance levels previously agreed have been met.

Transfer of personnel: Another very important area, which should have high priority and sufficient resources. As always first impression counts, and therefore, it is crucial that the people to be transferred are the first to be informed of the new set up. Their planned future roles and responsibilities should also be mentioned already at this stage. All issues concerning work agreements, benefits and responsibility should be dealt efficiently. At the same time the new personnel should also be introduced to the LSP's company, organisation, values, etc.

The agreement: Should preferably be provided by the LSP, which usually has standard wordings for different situations. These have already been used and approved many times and therefore it is not necessary to rewrite everything each time. The LSP has also the necessary knowledge of the issues that need to be addressed in a complex agreement of this sort. It saves a lot of time during the negotiating phase.

The LSP's organisation: In addition to allowing enough time for the implementation manager, it is very important to get the upcoming warehouse or operations manager in place. This person can then take care of the day to day operations, while the implementation manager can concentrate on the process and transfer issues.

Commitment of the management: C-level management should always be involved in strategically important outsourcing cases. This provides the operational level a possibility to escalate issues when needed. This level should also meet at regular intervals and function as a permanent steering group.

STRATEGIC PARTNERSHIP IN LOGISTICS: GOALS AND CRITERIA

Matti Miettunen and Pia Jämsä

Abstract

The objective of this paper is to give an overview of goals and criteria for logistic partner in international business through partnership between logistic providers and buyers. The goals are identified but the used criteria are not yet settled. The evaluation is based on Webster's model of business relations which examines relationships between partners and circumstances. Logistic partnership was approached from two viewpoints: close cooperation with centralised functions, and vertical integration based decentralised ownership in logistics. Important findings are that the logistic service buyers try to centralise their logistic operations and in the other hand to minimise the amount of partners. Logistics service providers aim for partnership and improved profitability, as with long-term cooperation or with alliances forecasting is facilitated in business operation. The overall criteria are inchoate but they are developing into detailed and precise.

1 Introduction

This paper has primary purpose on examining goals and criteria for TPL (Third Party Logistics) partnership in logistics organisations. The aim is to survey partnerships between service providers and buyers. Strategic logistic partnership is referred in this paper as

- Long term plan (more than 3 years)
- More than one outsourced operation with limited volume, as partnership may only concentrate on one operation if the volume is large enough or it has a strategic value for buyer.
- It allows partners to concentrate on core competence.
- It shares the risk and gives advantages between partners.

In this paper joint ventures and vertical integration based ownership is excluded. Since goals and criteria have a special value when dealing with logistic service provider as partner, the paper starts with an overview of partnership and presents a model of strategic partnership. Later it focuses on partnership in logistics.

1.1 Background

Transportation operations have primary purposes on cost saving, and logistics service providers often seek for solution with effects on reducing costs but still fulfilling the delivery accuracy requirements. The aim is to maximise own profitability with high and regular volumes and price. In transportation operations volumes and frequencies play a key role.

Single logistic operations have often decentralised organisation, which causes lack of coordination. By integrating the logistic operation a company may gain remarkable cost savings. (Bowersox & Daugherty 1987) However, this concentration is commended for internal logistics, as the solution has limits and is far from the real problem – lack of coordination. External logistics integration, such as outsourcing and logistics alliance, concentrates on assumption that the logistic operations are build upon corporate borders. (Stock et al. 1999)

Fast changes in business environment such as growing competition, changing customer requirements, and higher cost levels have made companies to seek for different options in order to be successful and to encourage change. (Bagchi & Virum 1998) Globally, companies are outsourcing widely. Since partners are used for rationalising the business and raising standards in competition, outsourcing process opens the door for closer cooperation. (Bagchi & Virum 1998) In traditional logistic services (e.g. forwarding, transportation, material and inventory management) the profitability is low. (Berglund 2000) It has been forecasted that European logistic services will be more centralised in the future than they are today. (Cooper & Peters 1990; Peters & Jockel 1998) Therefore, M&A's are common in the field, and few logistics companies will rule the market. At the moment there is still a wide amount of providers in the market. (Gordon 2003)

2 Methodological considerations

2.1 Research design

This paper concentrates on buyer's goals and criteria in logistics partnerships and their goods flow in international business. Since logistics service buyers were required to operate at certain volume, medium sized companies rather than small sized companies were required in this study. These companies are considered as strategic logistics partners. There is also a market area requirement for selected logistics service providers. In this study they are operating in the European market area and specialising in Nordic transportation within the area.

The study is empirical by nature. The approach is normative as the results are used in management's decision making. It is based on case survey but each case is analysed also by using case comparison method. Each case company is surveyed with interviews. Interview themes were sent beforehand to interviewees.

All in-depth interviews were recorded and notes were taken during the procedure. Interview themes are arranged according to research questions, which made it easier to understand repeated phenomenon. Therefore, theory and practice were easily linked together. After the first interviews, all interviewees received detailed questions for their second interviews. This was to correct single misunderstandings in analysis from the first round. Interviews were made with logistics management in companies.

Research questions were approached from two points of view: first, from logistics service provider's point of view, and second, from the buyer's (or customer's) point of view. By combining these views both vertical and horizontal information was gathered. As the main idea of this study was to clarify the criteria of how to choose logistics partner, interviews were directed mainly for logistics service buyers. Case companies were chosen among buyers that have business in both domestic and international market. The main criteria were to have regular goods flow and that the companies operate with medium or large scale volume. It was assumed that these companies had a logistics strategy and logistics organisation. Also trading area played important role as both export and import views were searched, and therefore, different business area was required.

The companies were selected from Finnish Talouselämä's list of 500 biggest Finnish companies. In addition, the company details were checked with Finnish Exporter's list (2002). Details of logistics managers were

checked with one logistics service provider's data and with Finnish Logistics Association's members list of 2002. Companies in this study represent logistics service buyers in Finnish chemical, forest, packing, and food industry.

As the amount of case companies is limited and case concentration is on Finnish large-scale industry, it also sets limits for generalisations of this study. Already when comparing with Small and Medium sized companies the results may differ greatly. However, the data is adequate and comprehensive enough to understand the phenomenon. Still, it may not be sufficient for extended conclusions. Evaluation and frequency of data is adequate. If the same interviewees were asked the same questions, the answers would probably follow the guidelines of this study.

The population of this study was kept independent, as case companies were also chosen by the fact that they do not have partnerships with each other. As partnership is two divided, it would be valuable to use the same questions with logistic providers' and buyers' partners. It is assumed that both customers' and industry's requirements and aims in logistics service providing will arise in interviews.

2.2 Case company descriptions

Company A is the leading haulier of liquid chemicals in Scandinavia and the Baltic region. Turnover (2002) was 110 M€ and the company has 800 employees. Company has staked greatly on organisational and acquisitive growth. Customers are liquid chemicals manufacturers and consumers. The biggest end-user segment is paper and bulk industry, and partly main customer groups are in chemical (flammable solvent) industry.

Company B is an integrated paper, packaging and forest products company producing publication and fine papers, packaging boards and wood products. Company's turnover was 12.8 M€ (2002) and it has over 42,500 employees in 40 countries. It produces 15 million tons of paper and cartons in a calendar year. In this study the company represents a typical export company with high volumes. The product amount is high but price per ton is reasonable low. Company has both defined logistics strategy and detailed criteria for partnership.

Company C main business is manufacturing, distribution, sale and marketing of environmental friendly polyolefin plastics, namely polyethylene (PE) and polypropylene (PP). Its customers are international plastic manufacturers to whom it supplies raw material and technology. It produces (2002) 3.5Mt plastic raw material in a calendar year, and has 5,100 employees.

In this study it represents a pan-European group with immense logistics operations within geographically limited region. Finnish logistics operations had been a part of another Group, but because of an acquisition there have been remarkable changes.

Company D is Finland's leading enterprise concentrating on coffee, seasonings and ethnic foods. It was founded in 1876, when a family opened their company importing and wholesaling colonial products in Helsinki. It is still a family company with 463 employees and turnover of 177.7 M€. In this study it represents a wholesaler and retailer business whose logistic management is important for competitiveness.

Company E is one of the world's largest packaging companies with focus and expertise in paper, plastic, films and molded fiber. Its turnover was 2.2 M€ (2002) and it is a global leader in its area. There are two corner stones in its strategy: global network for providing globally, and technology pallet for providing customised packaging solutions. In this study it is a representative for international group with several different market regions.

3 Definition of Strategic partnership

Business is based on market governance. In perfect market situation buyer and seller meet where the market is. However, in reality, there seldom exists a perfect market. The modern economics highlights also the different aspects of decision-making. Each party may have different relations in negotiations because of the differences in size, lack of information, or irrational choices. Webster (1992) and Cox (1996) have examined these relationships of partners and circumstances. Figure 1 shows these relations as tentative mapping of the relationship. Arrows point the possible directions of cooperation.

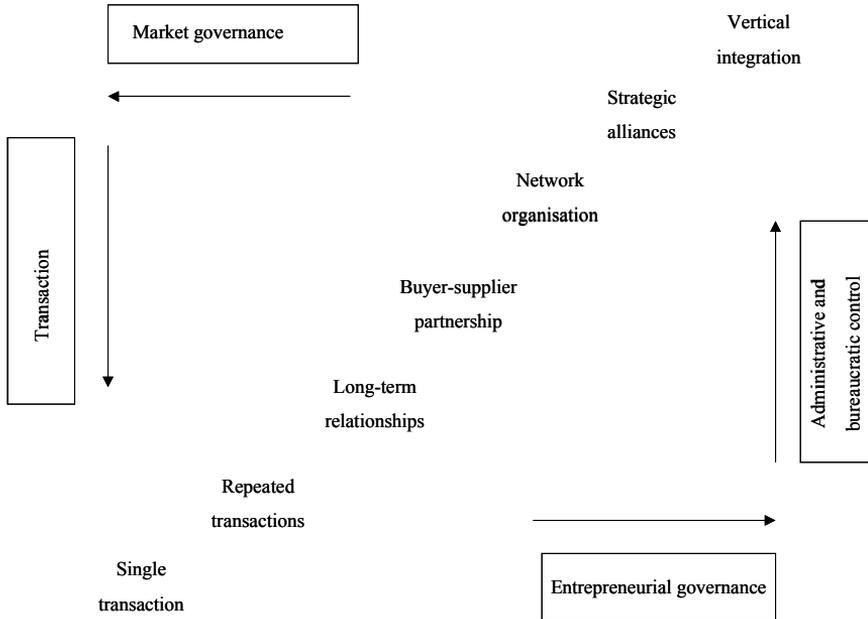


Figure 1: A tentative mapping of buyer-supplier relationship

When going up from the left into right side corner, it reduces the effect of market governance and raises the effects of own choices. Companies tend to minimise the cost of transaction and production (including administrative cost) by choosing the right business relationship model suitable for each situation. Still, each modification requires time when the resistance to change is met, not only inside the company but within partners that prefer the old relationship model. The more complicated production or product there is, the more likely these companies strive towards more integrated business relationship. Still, relationship based on single business operation is very common, and it can be impugned, if there even is a relationship (Webster 1992).

In long-term business relationship, partners have collaborated with each other for a longer time period. If partners do not share any joint ventures or production, the relation is comparable to arm's length relations. In this model there is no remarkable information sharing, neither there will be any dependencies nor future commitments. Price is often an issue in negotiations, and provider is relatively easy to substitute. (Dyer, Cho & Chu 1998; Webster 1992) With cooperation the main driver is shared interest. In partnership, the main recognised factors are information sharing, joint goals, and shared risks as well as incomes. Also the services are differentiated and tailored according to customer wishes. (Dyer et al. 1998) In vertical integration the governance of market is eliminated from cooperation (Seppälä 2001).

Partnership requires same kind of expectations from both sides. For example Choy and Lee (2002) divide these criteria into three groups: 1) Technical know-how evaluation, 2) Quality evaluation, and 3) Organisation profile. Criteria when choosing a partner will move on towards detailed and precise evaluation. (Carter, Carter & Swan 2000) Partnership that does not cooperate can be cut off or substitute with a new partner. In close cooperation, partners share information, risks and profits, and either fail together or succeed. (Lambert, Emmelhainz & Gardner 1996; Bowersox 1990) All in all, the line between partnership and strategic partnership is fluctuating. (Webster 1992 vs. Bowersox 1990)

4 Logistics partnership

4.1 Outsourcing

Outsourcing in logistics often seeks for economies of scale. To combine a flow of goods from several buyers, logistic provider may gain remarkable cost savings in supply chain. Companies often seek savings for invested capital in inventory. In rare situation warehousing and distribution is forwarder's core business. Therefore, capital in logistics operations can easily be minimised by outsourcing. Service provider may centralise its operations with several buyers. Capital can be minimised if using postponement and distribute just when needed. In addition, merge in transit solutions are favourable. Therefore, logistics provider has a mission in coordinating and scheduling the flow of raw material in order for assembly to take place as promised. (Fredholm 2000)

Outsourcing has several advantages of partnering. It allows companies to concentrate on core competence, and to elaborate further. (Choy & Lee 2002) It allows service provider to balance its load and profit in order to serve more than one customer. Outsourcing is recommended when focusing on manufacturing industry. There exists a wide amount of operations which outsiders can manage cost-effectively and faster. (Lankford & Parsa 1999) Relationship models of outsourcing are partnership or strategic alliances. They are depended on three resources: technology, information and relationship network. (Lieb & Randall 1999)

There are earlier researches about effects on logistics outsourcing. They point out savings in cost, on capital in logistics systems, and on inventory. However, a percentual share differs between segments and geographical location. (Harrington 2000) Still, logistics partners are criticised for poor

information and data collection. This makes an interesting aspect for future goals to focus on e-business. According to Gap Gemini and Ernst & Young (Drickamer 2003) the most outsourced logistics operations in US were:

- a) Outbound transportation
- b) Warehousing
- c) Inbound logistics
- d) Freight bill auditing and payment.

4.2 Typical relationship metrics

Logistics partnership can be seen as a relationship between two supply chain players sharing advantages and disadvantages within agreed time period. Time period is seen at least three years. A typical definition of this relationship includes also joint activities, trust, fairness, commitment and flexibility. Bowersox (1990) argue that there exist five critical metrics in partnership. These are

- i. Selective matching
- ii. Information sharing
- iii. Definition of roles
- iv. Ground rules
- v. Exit provisions.

There are also other critical success factors quoted by other researcher. (See Appendix 1) The most common metrics is transparency in information sharing but each definition includes at least one metrics. As a requirement for logistics partnership, an entity of more than one outsourced operation can be listed. Still the amount of operations is not as important as cooperation in narrow and deep focus. Partnership may exist with only one outsourced operation. (Lieb, Millen & Wassenhove 1993)

One of the main ideas in successful partnership is cooperation between people. Joint interest is not the only golden factor but chemistry between personnel in both companies. In the last resort, they are people who make things work. Therefore, it can be assumed that if cooperation goes smoothly, also communication is in state. In the other word, if information is transparent, also the communication has qualification for success.

There are different criteria also in operational level. According to D'Este and Meyrick (1989) these are:

- a) Routing
- b) Costs
- c) Service operations.

Menon, McGinnis and Ackerman (1998) list the criteria differently. According to them, the criteria are either perceived service level or common capability. Service level directs to operations and is therefore seen more important than capability. There are other studies that show different detailed criteria, but most of the surveys highlight a price criterion. This is not a surprising fact as it is obvious that a buyer seeks cost-efficiency. Also, distribution criterion is listed, but it is mentioned partly with different names. However, the service criterion is based on liability, flexibility and fast reaction.

4.3 Criteria in alliance process

The process of choosing the right partners in an alliance consists of different phases. First, the criteria should be clear and measurable in order to decide whether a partnership is to be successful or to fail. Second, in order to manage the process well, each goal for both partners must be considered. Several investigations show that partnership brings remarkable cost savings and service level improvement. This can be explained with transparency in operations, forecasting of inventory levels and minimising of safety stock levels. (Drickhamer 2003) Often customer's changing production solutions require flexibility and fast reaction from logistics partner. Therefore, it can be seen that logistics have changed from cost into competitive edge.

Supply chain management is more than transportation of goods. Information management is a part of it. Inventory management is often replaced with efficient information management. (Wilson 2000) Development therefore brings new requirements for logistic information management (Harrington 2000). Drickhamer (2003) highlights that better service level, lower costs, and supply chain transparency (visibility) are key indicators when evaluating supply chain. Transparency covers shipment visibility, order visibility, inventory visibility and wide network of supplier, distributor and forwarder. This makes operation predictability as key competitive factor if there are no such harmful indicators as incapability of information technology or lack of standards. E-business therefore sets logistics providers into new situation as dispatch size diminishes into single orders, the amount of orders raises remarkable, and delivery cost need minimising. In addition, supply chain needs coordination in growing business through Internet. Logistics solutions must adapt into business, and not the other way around. (Shah 2000)

Ryder Integrated Logistics (US) set up partnership contract with IBM and Andersen Consulting in order to combine skill and knowledge into its operations, which would have taken several years. By combining 3PL

provider, information management professionals and business consultant, the result is 4PL solution that will serve customers a whole supply chain management with only one business partner. (Bade & Mueller 1999)

Several multinational corporate, especially US corporate, are looking for one distribution channel model for their European business. All goods flows would happen through European Distribution Center (EDC). (Foster 2000) Many experts question the strategy's functionality in Europe. As the geographical locations differ to each country and European Union's expansion will highlight logistics differences among member countries, the suggestion is that companies would have more than one logistics partner. Besides cultural differences, earlier experiences, company size and corporate structure have an influence when choosing a logistics partner. National culture and culture heritage have effect on corporate strategy and problem solving skills.

4.4 Risk of failure

If partnership fails companies tend to look for new criteria and metrics to re-evaluate the situation. According to Dacin and Hitt (1997) from 50 to 60 % of partnerships tend to fail. Also, Parks and Ungson (1997) argue that 50 % of logistics partnerships tend to fail. Both of the arguments state that the common reason for failure comes from cultural differences or is incompatible with organisations. Failure process is time consuming.

Casual - busy scheduled- process in selecting logistics partner manages in rare situations. The most common reasons for failure are lack of commitment in management level, undefined goals, lack of control, and different levels of commitment from both sides. (Bowersox 1990) All in all communication is seen important in every phase of the process. If both players have defined detailed goals of partnership the risk of failure gets smaller. Still, when loosing control of own logistics operation buyers consider it as a threat. They might think that service level will deteriorate. Also, the buyer's personnel might sabotage outsourcing process as they feel threatened. However, if logistics provider has made wrong cost calculations, it might lead into a lack of motivation. Therefore, both players should agree also on process for separation.

5 Goals and Criteria of strategic partnership in case companies

5.1 Logistics strategy

According to the empirical data, each company has a clear logistics strategy, which is well adapted in operative level. Strategy was mainly pointed out in quality of customer service and customer satisfaction, but location was mentioned logistically important. Logistics was not seen as core business, and all interviewees named logistics as supporting operation for business strategy. Gattorna & Walters (1996) also refers it to often outsourced operation with cost savings and smaller amount of invested capital. Also the change in fixed cost into flexible cost was considered important.

Logistics was considered as transport pipeline from manufacturer until the end user's warehouse. Outsourcing began with international business operations, mainly with transportation, forwarding and warehousing. Therefore, outsourcing with strategic level was not found within the case companies. Even though they have considered outsourcing of their core business and achieving core competence. Logistics was not considered as burden, but clear competitive advantage when setting new requirements for frequency, quality and flexibility.

Operations were centralised to a few logistics service providers. It is found that the idea of centralising is moving towards bigger entities and into fewer partners. The main goal is to have reasonable large entity in operation. Therefore, the amount of logistics providers is rather few (2 – 4) than only one. Both buyers and suppliers have agreed with this. Their contracts are made in yearly level with third party logistics providers that have modern equipments and vehicles.

5.2 Cost saving

Logistics alliance is often considered as cost saving operation, as it has effects on both inbound and outbound logistics. Partners can be expected to provide larger entities to smaller amount of service buyers, and therefore, operations can be expected to be flexible and effective. It was found that cost savings have been considered before within inbound logistics such as marketing and manufacturing strategies, and now within logistics.

With outsourcing, logistics service buyer is considered to gain flexible operation structure. Therefore, organisation can easily be changed into

effective entity. If interviewees have had decentralised strategy, cost savings will most likely effect on middle management. However, with outsourcing it is possible that buyer's entire logistics department will be under construction. It can be assumed that when companies tend to outsource, their performance index will rise in any case.

5.3 New solutions

Logistics is expected to bring new solutions and aspects into business. With logistics partnership companies may concentrate on developing their core business. Long term contracts and open communication play key role in the way to improved business. This was found in technological solutions and interfaces especially in customised information technology. Even though IT-investments are high remarkable surplus can be achieved in a long term. Besides, faster and impeccable operations occur only between partners. According to interviews companies are willing to buy solutions directly from logistics provider and therefore, eliminate the amount of middlemen and agents. Each middleman has been able to sell services with their own name, while service providers provide the service.

5.4 Advantages with logistics service providers

The customer stability through contracts was considered as the main advantage in partnership. Therefore, future can be forecasted better and investments have clear arguments. In addition, economies of scale are important, and they are captured especially in transportation and warehousing. In Europe there are a limited amount of large scale logistics companies, and companies are familiar with their competitors. Well-known logistics partner becomes a reference customer, which logistics provider utilises with marketing. They are considered as door opener.

According to logistics provider, logistics partnership once started is a long-term relationship and therefore, it is considered as unbreakable. Partnership starts with minimum cost level, as profitability becomes easily higher when service level becomes higher. Common idea is that logistics partnership gain better profitability and wider service level than traditional forwarding and transportation business.

5.5 Case comparison

Acquisitions and industry concentration into bigger units may speed up the processes of outsourcing and partnership. Change generally forces reconsideration of business. The bigger the entity, the higher the pressure there is for restructuring. In the other hand, joint venture and vertical integration are consciously minimised, whilst cost saving in them is seen massive.

Figure 2 shows interviewed companies' location in relationship portfolio. (Webster 1992; Seppälä 2001) Each thick circle presents one interviewed company. Thick arrows present the movement from earlier situation towards current situation. Horizontal and vertical arrows act as X and Y -axis pointing out the effect of market and company's potential inner impact, the amount of transactions, and changes in administrative control. Each thicker arrow shows the location point of earlier and current situation for case companies.

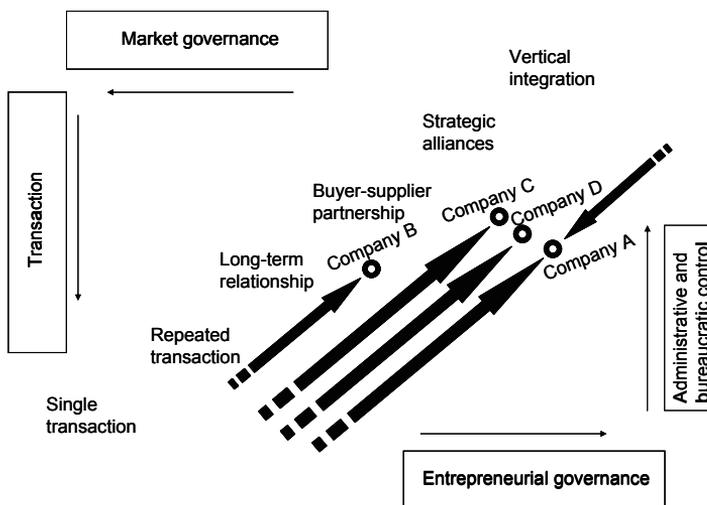


Figure 2: Case comparison in buyer-supplier relationship portfolio according to Webster 1992.

The arrow in Case of Company A shows that the movement towards current location is two divided. First, company has given up its ownership on logistics companies, at least great deal of it. This is a strategic make-or-buy decision. The arrow from vertical integration towards strategic alliance covers this decision. Second, the arrow from repeated transactions towards strategic alliance is a tactic decision with operative business. Both of these approaches seem to head for same result, strategic alliances. The change from vertical integration into strategic alliance started in 1999 – 2002 while the change from

repeated transactions started gradually in the beginning of 1990. Still, Company A highlighted long-term cooperation but on the other hand cooperation was not highly customised. Therefore, company is located between strategic alliance and buyer-supplier partnership.

The case Company B has centralised its logistics operations. The amount of logistics providers has decreased greatly during the last six years. There is still a pressure in decreasing the amount of providers. In Webster's portfolio company is moving from repeated transaction towards long-term relationship. The movement towards repeated transaction started in the end of 1990's. The company aim is to head for long-term relationships. Currently pricing is a relevant factor when choosing logistics provider, since logistics provider's purpose is to minimise costs and their quality is followed through company's own quality control. Then suppliers do not gain advantages of shared goals.

In the case Company C, outsourcing of the entire outbound logistics was accelerated when acquisition was completed. As operation strategy was under construction, also questions in logistics arisen. There had not been a great deal of coordination within logistics, which had led into decentralised logistics operations. In portfolio model company is moving from repeated transaction towards strategic alliance. Outbound logistics is currently centralised with one provider. With this provider it is required that capacity is divided with other transportation companies. The partner was chosen in cooperation with multinational consulting group. The process of strategic logistics alliance started during 2002.

Case Company D had more characteristic of strategic alliance than other companies in this study. All logistics operations were outsourced. Mutual goals, long-term cooperation, and dimensions of alliance were highlighted. Besides, company has cooperation with partners in operation's development and innovation. Each partner gets advantages in mutual goals (win-win). Linking the end users into the supply chain creates network organisation features into partnership. In the portfolio, company is located between strategic alliance and network organisation. It is heading for this location from repeated transaction. However, if company is too dependent on partner, the partnership is considered inferior. Company D's process to move towards strategic alliance within logistics started in the end of 1990's and was finalised during 2002.

5.6 Summary of case comparison

In this study the case companies have different locations in the portfolio. One of the companies was abandoning vertical integration, at least in a greater

scale. Other companies did not have any ownership or interest companies. One interviewee described that his workload had eased greatly due to selling the ownership of marital transporting company. Price comparison had become easier, and the criteria set for service level and flexibility are now the same for each provider. According to this case company it can be presumed that operations that are not core business will be outsourced in a long term.

The aim for partnership seem to have two different strengths: first, will to centralise with few amount of service providers, and second, will to concentrate only on core business securing the competition in the market area. These facts were observed from interviews.

All case companies were heading towards strategic logistics partnership. Also, logistics providers had objectives of minimising single business actions. According to interviewees, relationships are in inchoation toward long-term strategic business relationship. According to the cases in this study it can be said that if logistics entities are large scale entities, the customer relationships will base on long term.

5.7 Process

Logistics partnership sets up new challenges for service providers. Criteria in purchasing differ between the sizes of each logistics entity. According to logistics service providers, the process of choosing strategic partner is a long term process with participants from both buyer's and seller's side. Still, each process is different depending on companies. According to interviewees, the top management was highly involved during the process. This also supports the idea of outsourcing being a strategic choice (Bagchi & Virum 1998).

In large scale, companies' aim is to minimise the amount of partners, and to centralise tasks for those who have specialised in them, and to seek for synergy mainly through costs. In Finland, the partnership process is yet undefined. In some companies, top management is not even concerned with it. Therefore, responsibility of logistics processes and agreements are in logistics department. Still, decision making is shifted from middle management to top management. According to service provider, their customer group is companies with massive structure changes. If the whole company is under structure changes, also the logistics needs are overhauled carefully and seriously. Therefore, it is easier to accomplish totally new solutions with corrected price. This came up with an interview were after company acquisition logistics operations were outsourced. Even if a need for outsourcing and logistics partnership existed before acquisition, the process accelerated it. But if a company already has a logistics partner, a cheap price

offered for same operation will normally not be accelerated in the process of changing partner. Sufficient price difference is approximately 15 % when replacing is in question.

If logistics partner has quality problems, the doorstep to replace him or her is very low. However, loyalty towards service provider brings advantages for longer period. Total costs are beneficial, because with long-term partnership the cost of replacing a partner will not arise. Not all the companies agreed how the process of logistics partnership begins. However, it is agreed that the final logistics partner has direct effect on service metrics. It shows what to measure, and gives ideal and the lowest acceptable values.

There have been both positive and negative experiences with partnership. One logistics manager highlighted the long-term cooperation. However, service providers see differently the advantages of sharing everything; more pessimistic way. According to them, logistics managers try only to minimise their own costs, and logistics providers can only assure that the result is reasonable. Also, the same defects were notified according to surveys in US. (Cottrill 2002) Logistics provider in this study understood the strategic meaning of logistics partner, and the advantages of long-term cooperation. It can be said that service provider often looks at the entire process: when partnership is reached, operations outside the agreement will arise slowly but definitely. Therefore, a customer may be valuable also as reference: door opener to new customers.

5.8 Criteria

There are two types of criteria used in this study. First, there are hard criteria and second, there are soft criteria. Hard criteria are easily measured and often referred as technical criteria. To draw line with these criteria is based on literature but partly also on subjectively. Often partner's background is checked including their ownership. Also, their future plans and economical assets are important. Many interviewees pointed out partner's size and volume. If partner is relatively small, it was seen that it cannot then provide with adequate service, or it might not be capable of developing its operations. However, large scale partner might be too dictating, and they can be even as a threat for the future.

The limits set for partner's size reflects to company's own size. A large scale company does not see a large scale logistics provider as a threat and in the other way around small scale companies are seen as relatively small. Still, small scale buyers see large scale providers as threat as they might drive the negotiations. Important criteria are the quality of technical solution, or

capacity. Also transport vehicles need to be adequate for buyers needs: relatively modern, clean and in good condition. Also, frequency or dispatch density is extremely important criteria, as it measures how often goods are dispatched. Therefore, in negotiation each subcontractor and tracking system for goods is also negotiated. Often delivery times are strict from buyer's side, and then routes are requested to be direct.

If partnership process is finalised, the price details will be examined carefully. The amounts of variable and fixed cost are defined. Often buyer's goal is to have all cost as variable. (Bradley 1994) Service provider seeks for constant and forecasted cash flow. Still, the whole picture is the determining factor in pricing. Warehousing or distribution might be more expensive in the upcoming solution than in current one, but as mentioned in the end it is the entity that counts.

Cooperation in information technology was pointed out in all interviews. The ideal situation is when partners' interface is easily connected to each other. Therefore, there is lots of effort put into technical solution. However, these do not work correctly in all situations, and these kinds of situations are quoted expensive. Track and trace solutions got special focus on these solutions. Still, there has been remarkable improvement in information technology. Internet applications are seen easy solution instead of ungraceful EDI solutions. Transparency in information is considered very important.

Partnership's presumptions concern single unit level. Key Account Manager is buyer's trusted person with operative questions. He or she needs to have enough substitutes so that the cooperation is secured. This person is often seen as one of buyer's people taking care of buyer's interests. There are different metrics in partnership. When negotiating, it is agreed what and how to measure. Reaction time is often notified, when goods are shipped. Also, partner's carriage capacity need to be sufficient not only regularly but in rush hour. Safety indicators are carefully followed; meaning carriage damages and operation quality. Companies' quality management concerns also subcontractor network. Therefore, quality is well audited.

Reference customers are not required but they are helpful when making contracts, especially if reference customer has same type of logistics solution than the buyer has. Buyers benefit if the supplier knows the special features of its field. Therefore interviewees didn't point out any threat if a supplier would serve also competitors. A common believe is that confidential information would not get into wrong hands in any case. Besides, buyers often quote and cooperate with competitors in win-win situations.

Normally, partnership contract is from three to five years, as normal transportation contract lasts only a year. With long-term contract, investments are covered and partnership is fostered. According to interviewees, long-term

contracts are rarely made. Still, partnership was seen as long-term cooperation and contracts were renewed yearly. Basically, with short-term contract (1-2 years) price and service level is secured. Even though, contract is for shorter period, cooperation normally continues with the same partner. Doorstep in replacing a partner is relatively high. Main reasons are in resistance to change when changes are required in information technology, new contact persons, or starting over negotiations. In Finnish market, partnership was highlighted. Cooperation with known person was considered more important than fulfilling lawyer's detailed contracts. Mutual trust came up with long-term partnership and in pricing.

6 Concluding remarks

This study analyses export and import companies' criteria and goals of choosing logistics partner or logistics alliance. The purpose is to understand the different types of logistics partners, and goals of strategic logistics partner. Theory is based on outsourcing, and partnership is discussed as a phenomenon. Logistics has special features, and therefore, they are criticized. Partnership models are analysed based on Webster's model of partnership relations. Also, other models were introduced.

Interviewed companies have acknowledged their need to focus on core business, while other business areas are easily outsourced. Also changing competition and need for growth have directed companies to outsource their logistics according to Berglund (2000). When outsourcing, buyers have centralised logistics operations with even fewer providers. Development has driven towards Foster & Mueller (1990), Lieb (1992) and Lieb & Randall (1996) ideas of outsourcing with specialised companies. Centralising has been a start for logistics partnership according to Bagchi & Virum (1998).

Interviewees seek effectiveness, flexibility and cost savings with logistics partnership. Logistics services providers seek long-term business relationships and commitment with partnership. Then, business is easier to forecast, and investments have a secure basis. Advantages tend to arise from supplier's effectiveness, organisation loping, and capital saving when outsourcing. The purpose is often to affect on changing fixed costs into flexible cost. These results are agreed with Choy & Lee (2002). Also, economies of scale are achieved, as agreed with LaLonde & Cooper (1989) and Morphy (2000).

Partnership is achieved with careful negotiations, with limited amount of service providers. Bowersox (1990) also emphasises selective matching for the selection process. Most of the companies chose their partners by themselves without outside business consulting. Only one interviewed company had used

business consulting company's help in partner selection. Logistics partners are mainly chosen using the same criteria as choosing other business partners. There did not arise any particular criteria for only logistics partners. Only transportation equipment and international network of logistics providers differ from normal process. Still, partner is assumed to have stable economy, adequate size and liable ownership as in other partnerships. Partner is seen as liable, flexible and human professional providing the whole supply chain services. In addition, vehicles are required to be modern, and information technology to be available. Success is measured regularly with agreed criteria, where cost is one metric. Logistics cost present remarkable cost for companies. Instead of integrating inner logistics, companies seek for optimised outbound logistics and the whole supply chain.

All in all, the process to choose logistics partner is yet seeking for its track. Criteria are yet not common, and they cannot be measured with absolute metrics. Flexibility in process may be a factor to consider in the future. But when the criteria are definite, it is easier to define and select suitable partners. Also, undefined criteria are important to understand. If cooperation goes smoothly with single working level, then the cooperation is easier also with partner level. Communication is facile and operation becomes flexible. Often, logistics provider is required to have earlier experiences with same type of customers, preferably as reference customers. When companies have agreed with partnership, the measured metrics are agreed at the same time. They can be measured daily with operative level, or monthly in management level. Therefore, criteria concerns both partners' personnel and supplier's network. A professional buyer knows that supply chain is as strong as its weakest link.

Growth and profitability were listed as future challenges. Information technology requirements focus mainly on service providers, who have to build bridges between buyer's and supplier's technology. On the other hand, technological cooperation tends to gain remarkable achievement in cost efficiency and customer changes. Contracts typically include centralised warehousing, transportation and work-in-process within inventory. When investments are remarkable, then also the partnership is seen as long term strategic choices. If partnership is successful, the service provider can raise the amount of goods flow, and can get its profitability on higher level.

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Appendix 1: Critical success factors for partnership

Success factor	Ellram 1995	Gardner et al. 1994	Lambert et al. 1999	Bowersox 1990	Bagchi et al. 1998	Total
Information transparency	X		X	X	X	4
People		X		X	X	3
Sharing of risk and advantage	X	X	X			3
Partner's background				X	X	2
Long-term	X	X			X	3
Measurable evidence			X		X	2
Defined tasks		X		X		2
Trust		X	X			2
Value added services					X	1
Continuous improvement					X	1
Operational rules				X		1
Terms of expiration				X		1
Commitment		X				1
Flexibility		X				1
Communication					X	1

MERGERS AND ACQUISITIONS AMONG TPL PROVIDERS: CASE STUDY EVIDENCE ON DEAL MOTIVES AND OUTCOMES

Lotta Häkkinen

Abstract

New challenges and opportunities in the contemporary business environment have triggered a wave of mergers and acquisitions (M&A) in numerous industries as companies have sought ways to enhance their capabilities. This development has also affected the organizational structure of companies in industries, where maximizing organizational learning and flexibility have become critical organizing imperatives rather than economizing on transaction costs. This paper presents case study findings on several M&A deals completed by a single pan-European logistics service provider (LSP). Results illustrate the importance of resource complementary and supplementary when examining the motives and value creation effects of M&A in the logistics service sector. Research implications suggest that M&A driven growth may generate a rapid increase in revenues due to e.g. network effects. However, this positive effect may prove challenging to replicate in the development of profitability.

1 Introduction

During the past decade, several industries have been reshaped as a result of technological and social developments, which have led to high interconnectedness of organizational systems and people. The trends of globalization, market liberalization and technologic development have forced companies to re-examine their operations in order to answer to these challenges and growing customer expectations. These new challenges and opportunities have triggered a wave of mergers and acquisitions (M&A) within a number of industries as companies have sought efficient ways to

enhance their business capabilities and to restructure themselves to better adapt to the new business environment. This evolution has also raised projections on the need for companies to adapt their organizational structure towards netlike forms to respond to the requirements of information and knowledge as central drivers. These organizational networks include horizontal corporations, which are organized as networks rather than vertical bureaucracies, and are characterized by decentralization, autonomy, and coordination of business components. (Castells 1998; Achrol & Kotler 1999) As many others, the logistics service sector has been affected by these trends, which can be seen, for example, in the increased amount of M&A and alliances in the industry and the formation of horizontal networks (Hertz 1993; Ludvigsen 2000; Lemoine & Dagnæs 2003). For example, alliances have become pervasive in the airline industry (Vaara, Kleymann & Seristö 2004).

The purpose of this paper is to describe and explain the M&A driven growth and development of one case company representing the logistics service sector. The case represents a sector which has grown substantially during the past decade and has been showing early signs of consolidation. For the past five years, the case company has pursued a growth strategy primarily combining M&A and organic growth, but also by forming horizontal alliances and joint-ventures. The study aims at answering three research questions: 1) how are M&A perceived as a part of company growth strategy as opposed to other methods of expansion in the examined sector, 2) what are the main M&A motives in the examined sector, and 3) how are these motives related to M&A outcomes. The paper rests primarily on the gathered primary and secondary empirical evidence in relation to both the case organization and the service sector as a whole.

This introduction is followed by a presentation of the recent development in the logistics service sector in terms of industry consolidation and company growth strategies. This development is then elaborated through the presentation of a case study covering a number of related M&A performed by a single logistics service provider (LSP). The case study findings are then compared and contrasted with literature, and the paper ends with concluding remarks and some suggested avenues for further research.

2 Research environment: M&A trends in the logistics service sector

Regardless of the industry in question, consolidation has been shown to follow a similar pattern. According to the analysis of Deans, Kroeger and Zeisel (2002), industry development progresses through four phases which differ in terms of e.g. the magnitude and type of M&A activity. An industry will take

on average 25 years to pass through the four stages, after which it will continue to defend its gained position in the final phase. This so-called consolidation curve can be used to explain the logic behind changes in M&A, alliance, and divestiture activity in different industries. According to recent studies (e.g. Merger endgames... 2002; Berglund, van Laarhoven, Sharman & Wandel 1999), the logistics service sector is currently in the accumulation or scale phase and is gradually reaching the initial stages of maturity. In the accumulation phase, markets become less fragmented and size begins to matter. Rapid non-organic growth is driven by two main motives: to reduce costs through greater economies of scale and to prevent hostile takeovers. When reaching the subsequent focus phase, M&A will typically involve the selective exchange of business units to strengthen core competencies and mega-mergers become rarer (Deans, Kroeger & Zeisel 2002; Merger endgames...2002).

M&A activity in the logistics service sector has accelerated dramatically during the past five years. (Lieb & Hickey 2002; European deal survey... 2000, 2001, 2002). This can be seen e.g. by examining the development of foreign ownership in certain markets. In regional markets in the outskirts of Europe, such as in Finland, in the beginning of the 1980s 80-90 % of LSPs were domestically owned; currently the clear majority of operating companies is under foreign ownership. Although the recent past has experienced a downturn in the number and magnitude of completed deals, in a long term perspective, the number of completed transactions is still high and the number has actually been picking up since late 2002 (European deal survey... 2002; Logistics industry report 2003, 2004; Mid-year logistics report 2003). During the most vigorous years of M&A activity, a number of mega-mergers were completed. In the land transportation dominant European market, especially formerly state-owned postal companies made good use of the situation and currently dominate a number of transportation and logistics segments in Europe. However, buyers are currently less willing to gain market share at the expense of profits. Instead, deals focus more on profitable companies that serve selected markets, as buying large competitors to gain scale would cause an overlap in service offerings and operational synergies would be limited. (Mid-year logistics report 2002, Logistics industry report 2003, 2004)

During these years, the logistics service sector has been going through tough times. With the simultaneous trends of increasing customer expectations (Lieb & Hickey 2002) and customers reducing the number of service providers due to vendor consolidation (Logistics industry report 2003), there has been increasing demands for integrated cross-border logistics solutions (van Hoek 2000). At present, the number of deals driven by purely financial motives is quite low amounting to 6 % in Europe during 2000/2001. Thus, the

majority of deals are related. (European deal survey... 2001) Currently the main rationales behind M&A activity in the sector are to expand the geographical reach, to enhance the current service portfolio, and to acquire specific capabilities or knowledge outside current core competencies (e.g. 4PL related) (cf. Lieb & Hickey 2002; European deal survey... 2002). When adding the motives behind past mega-mergers, a connection can be seen between these four types with the strategic fit framework by Shelton (1988, see also Salter & Weinhold 1979) (see Figure 1).

M&A motives in the LSP sector				
	Mega-mergers	Geographical expansion	Filling gap in service portfolio	Acquiring new capabilities
Objectives	Gaining scale economies and operational synergies, 'going global'	Creating a more comprehensive geographic portfolio, but focusing on core markets	Creating a more comprehensive service portfolio, but focusing on core competencies	Moving into new capability areas
Examples	<ul style="list-style-type: none"> • Exel & Mark VII • Deutsche Post & AEI, ETD, Danzas, DHL 	<ul style="list-style-type: none"> • Fiege & Kalf • Hays & Dun Urgente 	<ul style="list-style-type: none"> • BTL & Air Contact Cargo 	<ul style="list-style-type: none"> • GeoLogistics (3 LSPs, an investment company, a consultancy group)
Strategic fit	Identical	Related supplementary	Related complementary	Unrelated

Figure 1: Overview of M&A types in the logistics service sector and linkage to strategic fits between target and acquirer firms

Probably to most common motive behind contemporary M&A deals in the LSP sector has been connected to geographical reach. For example in Europe, approximately half of all transactions in the industry are currently cross-border deals growing almost three times as fast as domestic deals in 2000 (European deal survey... 2000, 2001, 2002). Cross-border M&A in Europe are expected to increasingly focus on CEE and new EU member countries, which offer promising economic growth perspectives (European deal survey... 2002). Also, a large number of deals are aimed at enhancing the service portfolio in order to provide a more comprehensive service package to existing customers. Buyers are therefore still looking for acquisition targets to fill service gaps also in terms of capabilities, not only in terms of geographical reach. (Mid-year logistics report 2003) Due to competitive pressure, many LSPs have also broadened their service portfolios to include e.g. contract manufacturing,

financial services, and purchasing support to their clients. (Lieb & Hickey 2002) For example, the number of acquired IT service and consultancy companies has increased in past years, but still represents quite a small percentage of all completed deals. These types of deals are often related to gaining new capabilities and service offerings (European deal survey... 2001), or building 4PL companies (cf. industry convergence M&A, see Bower 2001).

It should be noted, that apart from M&A, LSP companies have also used other types of contractual agreements to reach to above mentioned objectives in recent years. For example, case studies reveal that LSPs typically use more than one expansion mode to gain geographic coverage (e.g. Hertz 1993; Ludvigsen 2001; Lemoine & Dagnæs 2003). A number of studies have aimed e.g. at finding the determinants of each entry mode. Building on eclectic theory (see e.g. Dunning 2001), Lemoine (2004) proposes that the reinforcement of core markets and core competencies will typically be achieved using greenfield operations or wholly owned subsidiaries. M&A are preferred in highly competitive markets with low environmental and cultural uncertainties, but they can also be driven by the need to develop new core competencies or to follow the requirements of large customers. Non-equity modes, such as partnerships and strategic alliances, are favored in more turbulent and unfamiliar environments. (Lemoine 2004; Lemoine & Dagnæs 2003)

Recent signs concerning M&A activity in the industry would thus seem to fit the characteristics of the focus phase: the era of mega-mergers has more or less come to an end and M&A activity is becoming more selective by nature. This is supported by the results of a recent survey of a number of CEOs from large logistics providers. While M&A are still an important part of the companies' growth strategy, it is projected that revenue growth in the upcoming years will largely come from organic development. This seems to indicate that as M&A activity is currently living a downturn while companies are focusing on the post-acquisition integration of past targets. (Lieb & Hickey 2002) The study by Stone (2001) on UK-based logistics service provides presents similar results. When comparing these trends to Figure 1, it can be proposed that while the motives pictured in the middle of the figure are currently dominant, fewer deals will represent mega-mergers in the future and capability-seeking deals will become more frequent.

3 Research approach and data collection

The empirical part of this paper presents an embedded case study (Yin 1989) from the logistics service sector. The case represents an industry which has

grown substantially during the past decade and has been showing early signs of consolidation. The case company can be described as a pan-European freight forwarding and logistics service provider. It has grown rapidly during the past fifteen years and especially during the late 1990s and early 2000s and currently governs an extensive decentralized network. The company has been chosen based on its versatile growth strategy, in which M&A have played a key role but which also has involved organic growth and a number of horizontal alliances and joint-ventures. During the years 1999-2002, the case organization acquired over ten European freight forwarders and LSPs.

For this study, both qualitative and quantitative data concerning these completed deals was gathered covering both pre-acquisition and the post-acquisition information on each deal. Data was collected from several types of sources in order to enhance understanding by examining the research object from various perspectives. This study mainly builds on primary data gained from an in-depth interview with a key informant representing senior management in the case company. The informant was chosen based on his broad knowledge on company actions and conducted M&A deals during the period under examination. (e.g. Cowles, Kiecker & Little 2002; Kumar, Stern & Anderson 1993) In addition, a number of industry reports published by independent consultancies were examined in order to get information on both the industry and case company backgrounds. A vast amount of PR-material (e.g. press releases, annual reports, presentations produced by the case company) was also covered relating to overall company strategy and features of individual deals. The collected data has been analyzed primarily using the principals of pattern-matching and explanation-building (Yin 1981).

4 Case study findings

4.1 Company growth strategy

The case company's strategy is to become a leading niche player in key industries by serving both large multinational companies as well as small and medium sized enterprises. Therefore, it has built a network which can deal with a small number of shipments from a large number of customers, but which can also provide tailor-made services to dedicated customer. The core service offerings of the case company consist of international freight forwarding, public storage, shared user distribution centers and dedicated logistics services. Thus, the portfolio ranges from standardized commodity

type services to more complex and customer specific services, such as supply chain management or multi-site inventory management. The company states its strengths to be its extensive network, with which it can provide services to pan-European customers, and local entrepreneurship, which is enforced by the company's decentralized structure.

Company management has pursued this strategy through organic growth and selective M&A. During the past years, M&A has been an important part of the growth strategy. Despite this, the company does not typically target specific companies. Rather, it constantly surveys a number of potential acquisition targets meeting certain requirements, and deals can be sometimes be circumstantial. The general M&A strategy is to build a complete pan-European network through acquisitions. This particularly applies to market entry in European countries where the companies is not yet present. This has led to a number of acquisitions in e.g. CEE countries during past years. The company has preferred M&A over greenfield investment in such areas, because this rapidly provides the acquirer with a fixed setup and financially motivated management in the target market. The company also has been interested in completing its service portfolio through M&A in countries, where it is already reasonably established. The focus has primarily been on air and sea freight activities. However, in principal the case company prefers to grow organically in market segments where it is already established in order to avoid overlaps. Outside Europe, the company has expanded solely through exclusive partnerships as its own volumes are insufficient to maintain fully-owned operations.

4.2 Selected M&A cases

From all the M&A deals completed by the case company during 1999-2002, five case deals were selected for closer examination in this paper. These deals have been chosen in order to illustrate the variety of M&A types but also to profile general trends in M&A activity. Table 1 summarizes the background of each of the selected cases.

Table 1: Cross-case comparison of selected M&A deals

Case	Alpha	Beta	Gamma	Delta	Epsilon
Target size *	< 1%	~ 5%	< 1%	~ 5%	1 - 5%
Acquirer's market presence	New	Existing	Existing, but limited	Existing	Existing
Target's service portfolio	Logistics services and freight forwarding	European shared-user logistics services Not part of target's core business	Logistics services and freight forwarding	Local transport and distribution	Logistics services and freight forwarding
Integration	Independent company, but linked to the network	Operates more or less autonomously, but is linked to the network Some restructuring	Operations integrated with existing ones	Fully integrated, currently no separate locations Some activities have been discontinued (app. 50 %)	Operates more or less autonomously Some restructuring
Target's strengths to joint entry	Geographical market entry Strong in air freight and logistics services	Filled a strategic gap in the company's service portfolio	Good combination of logistics services, strong in air freight Interesting geographical location	Local distribution in a significant market	Specific customer relationship
Acquirer's strengths to joint entry	Financial support Some marketing & logistics knowledge	Int. freight forwarding network	Managerial, financial & IS support	-	-
Outcome	Extremely positive	Extremely positive	Very positive	Medium to negative	Mixed

* Target company's turnover in proportion to that of the acquiring company (%)

All of the acquired companies were relatively small in terms of their turnover as compared to that of the acquiring company (see Table 1). In terms of personnel, the target companies each employed between 30 and 450 people. In other respects, the cases differed in various aspects, which can be noted from the following brief case descriptions.

Case Alpha

Case Alpha represents a typically market entry acquisition (cf. supplementary fit in Figure 1). The deal was motivated largely by the geographical location of the target, but also by its capabilities in air freight services. The acquisition comprised of one of the leading businesses in logistics and international freight forwarding and an airfreight forwarding business with a number two position in the target market. The acquired company was loosely integrated to the acquiring organization; integration consisted mainly of the transfer of financial procedures to the target (cf. Shrivastava, 1986, procedural integration). The acquirer also gave financial support to the target and redeployed some of its marketing knowledge in order to strengthen the target's ability to serve pan-European customers. For example, the acquirer assisted the target in launching the construction work of a new 'state of the art' transportation terminal, which is considered to be the biggest foreign investments in the area.

Apart from these actions, the acquired organization has remained relatively autonomous. It has gained from active support, but chiefly from the new linkage to the whole network and related services, which it can now offer to its customers. The potential related to this network position has not yet been fully realized as local customers do not yet acknowledge or require all the offerings available. This situation is likely to change as the economy develops in the market in question. Company management describes the outcome of the deal to be extremely positive.

Case Beta

Deal Beta, in turn, is primarily related to the third M&A type pictured in Figure 1 (complementary fit). The deal comprised of a number of shared-user distribution facilities and related resources, which were acquired from a company, which no longer considered logistics activity to belong to its core business. The target directly filled a strategic gap in the acquirer's service portfolio and did not create any overlaps with the acquirer's operations; rather, it has complemented them. Due to the acquisition, the case organization is able to provide a wider array of services to a large base of its existing customers regardless of their own geographical location. The target has continued to operate autonomously, although some restructuring has been done to the acquired facilities.

Through the deal, the acquirer has strengthened its position as a provider of higher value-added logistics services. This service market has continued to grow despite recent years of economic recession in Europe, while more

traditional logistics services, i.e. groupage activities, have been more seriously affected by this development. Also the location of the acquired facilities can be seen as optimal due to its proximity to major European industrial areas. One new distribution center has been opened in the region; partly to support further growth potential, partly to replace previously rented accommodations. This is also perceived in the case company as a highly successful deal.

Case Gamma

Case Gamma can be seen as a variation of the two previously presented deals combining both geographical and service-related aims. At the time of the deal, the case organization was already present in the national market of the target, but its presence was not extensive and its service portfolio was not complete. Therefore, the deal was driven by the prospect of gaining new customers and providing enhanced services to existing ones. As the acquirer had existing operations in the market, overlaps were integrated. When comparing the post-acquisition management actions of deals Gamma and Alpha, it should be noted that target Gamma received a lot more managerial, financial, and information systems support and knowledge redeployment from the acquirer than target Alpha did. This was largely due to organizational factors (e.g. personnel skills) rather than the M&A objectives and required post-acquisition measures.

Case Delta

Deals Alpha, Beta and Gamma profile the general M&A strategy of the case organization and the objectives concerning these deals have been more or less met. Deals Delta and Epsilon, on the other hand, represent rather unique deal types with more mixed outcomes.

Deal Delta involved the acquisition of transport-oriented company located in a region where the case organization was already well established and which significantly contributed to the company's turnover. The rationale was to improve the organization's local distribution resources in this key market area despite the fact that the case company aims at primarily outsourcing local transport. The target market offered limited availability to find local partners, but at the same time local customers preferred service providers that can also handle domestic transport.

The target was fully integrated into the acquirer, which involved substantial restructuring and divestitures of the target's operations (involving app. 50 % personnel layoffs). Despite major post-acquisition actions, the deal has not

succeeded in meeting its expectations. The restructuring process in the post-acquisition phase was mainly the responsibility of the target company management, and would have probably required more involvement from the acquirer's management. Thus, the deal had 'complementary' motives, but also involved 'identical' features (cf. Figure 1).

Case Epsilon

Finally, deal Epsilon was driven by the prospect of acquiring a certain customer account through the deal, rather than gaining certain proprietary resources of the target. Thus, post-acquisition integration was minimal. The target consisted of one single location, which concentrated in managing the operations and goods flows of this client. The services offered by the target mainly comprised of traditional transport, which was of no specific interest to the acquirer, as it was already well established in the market in question.

The customer relationship was successfully transferred, but subsequent development has moved these customer-specific activities away from the original target facilities to other network locations. Due to this still ongoing reorganization process, the current outcome of the deal could be described as mixed; the deal has contributed to the case company's relationship with one of its biggest customers, but this contribution has not generated easily quantifiable financial results, at least not to date.

5 Discussion

When comparing the empirical findings to the common motives in the industry (Figure 1), it can be seen that the case company has primarily followed an M&A strategy related to complementary and supplementary fits. None of the deals were directly related to motives common in mega-mergers or cases of identical fit. This may just portray the strategy of certain medium-sized niche player in the logistics service sector, but it also may depict the current industry trend. None of the of the deals purely represented capability M&A either, which entails the movement to new, unrelated, capability areas (cf. Shelton 1988). Deal Beta featured similar qualities, but though the M&A brought a number of new customers to the acquirer from the target company, the received service capabilities can hardly be seen as unrelated.

During the period under examination, the geographical focus of supplementary deals had been towards CEE countries in particular, where good flows are likely to develop in the future. Outside Europe, geographical connections were formed using alliances. This supports the research results of

Lemoine and Dagnæs (2003) who find that the reinforcement of core markets (i.e. in this case, Europe) and capabilities is commonly done using equity-based modes such as acquisitions, while in the process of entering more unfamiliar markets and gathering new capabilities modes such as alliances are preferred. In terms of complementary services, the focus had been on filling gaps in air and sea freight in certain geographical areas, but as a whole the trend has also been to develop the company's competencies in offering different types of value-added logistics services in addition to traditional freight forwarding.

As can be seen from Table 1, most of the examined deals, with the exception of deal Delta, did not involve high levels of integration. Though the acquisition targets have legally become under the governance of the case organization, several of them continue to operate relatively autonomously, but at the same time benefiting from being linked to an extensive network. Thus, the interdependencies between network members can be described as pooled, rather than as reciprocal; each adds its own tangible and intangible resources (e.g. area or service specific capabilities) to the network. Knowledge is diversified, though some generic knowledge can be transferred from the acquirer to target organizations, and joint learning and knowledge creation is not pursued systematically.

The benefits of creating such a decentralized network through M&A are visible in Figure 2, which presents the development of certain financial figures in the case organization. Figures representing the development of company turnover are indexed to figures from the first half of 1999. The company's operating profit and represented as percentages. The figure also shows in which half year period each of the presented acquisitions has been included in the company's consolidated accounts.

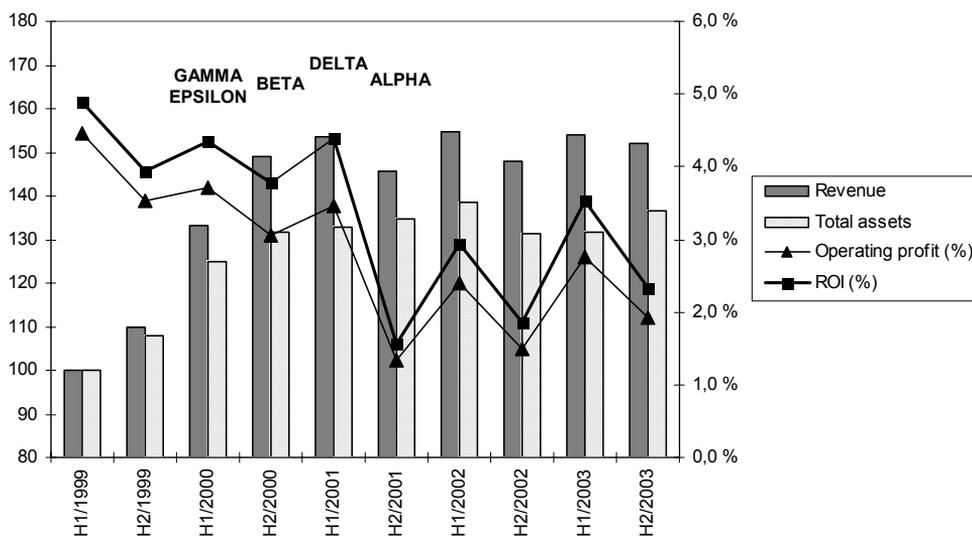


Figure 2: Development of revenue, total assets, operating profit and return on investment (ROI) in the case company (revenue / total assets in first half 1999 = 100)

As can be seen from the above figure, company turnover has increased remarkably during the first half of the period under examination. The completed acquisitions have contributed to this growth significantly. For example, in 2000 acquisition related growth increased the turnover by 20% (organic growth contributing for 15%) and in 2001 by 5% (respective figure for organic growth 1%). However, this revenue growth can partly be explained by economic growth during this period.

Although revenue has grown substantially, the development of operating profit and return on investment has been rather the opposite (see Figure 2). During this time the company has added on to its assets through building an equity-based European network. Despite recent figures, network related benefits (see e.g. Stabell & Fjeldstad 1998; Lazzarini, Chaddad & Cook 2001; Katz & Shapiro 1994) may take effect in their full potential with a time delay. At the moment, customers that have been linked to the network through M&A are not using the possibilities of the network to their full extent. However, as volumes in these areas grow and customer requirements increase, network effects may become more visible.

None of the examined cases portray traditional arguments linked to horizontal M&A relating to market power gains, operational synergy motives and identical fit (see e.g. Birkinshaw, Bresman & Håkanson 2000; Scherer & Ross 1990). Deal Delta had some overlapping features but neither the M&A motives nor the actual outcome supports this argumentation. Rather, the case

findings argue in favor of revenue-based rather than cost-based synergies (cf. Capron 1999), where by adding additional geographical locations and capabilities through M&A, the case organization has succeeded in improving customer service possibilities for its whole customer network. This has rarely involved any resource redeployment from the target to the acquiring company, and redeployment in the other direction has been typically limited to procedural integration (cf. Shrivastava 1986) and managerial skill transfer (Haspeslagh & Jemison 1991). Thus, the need for eliminating overlaps and consequently causing organization disruption has been quite minimal. An interesting exception to this is case Delta, which involved full integration and substantial divestitures. Also when comparing this case to all the M&A deals performed by the case organization during the examined period (including those not explicitly described in this paper), it can be seen as rather unique both regarding the tight post-acquisition integration and the clearly negative outcome.

In general, the extent of taken integrative actions has also depended on organizational factors in addition to matters of strategic fit. Pablo (1994) actually argues that when making integration decisions, managers will weight organizational task needs more heavily than other characteristic (e.g. strategic task needs).

6 Conclusions

Despite the recent downturn, M&A activity is still exceeding long-term historic levels and continues to reshape several industries. This paper has aimed at describing and explaining the development of one case company from the logistics service sector, which has grown through completing a large amount of relative small, related M&A during a short period of time. This growth has been accompanied by organic growth and the forming of horizontal alliances and joint-ventures.

The study underlines the importance of resource complementary and supplementary when examining the motives and value creation effects of contemporary M&A in the industry under examination. Managerial implications suggest that M&A driven growth may generate a rapid increase in revenues due to e.g. network effects common in industries relying on mediating technology such as in the communication or transportation sectors (cf. Katz & Shapiro 1994). However, this positive effect is challenging to replicate in the development of profitability due to problems in integrating overlapping resource and delays in realizing the full potential of the created network.

Therefore, it would be interesting to continue research in other industries using case studies to compare the effects of similar M&A strategies in different environments. Another avenue for further research would be to examine learning effects in post-integration management through longitudinal case studies.

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EVOLUTION OF SERVICES, RELATIONSHIPS AND TECHNOLOGIES IN CONTAINER TRANSPORT

Anu H. Bask, Jari Juga and Jouni Laine

Abstract

This paper focuses on container transport business, outlining current trends and future prospects around three central elements: (1) service offerings, (2) transport chain management, and (3) enabling technologies. The assumption is that different types of logistics service should be linked with different forms of transport chain management and supporting technologies. Emerging issues such as connectivity, flexibility, service divergence, collaboration and coordination offer new opportunities for cross-disciplinary analysis on conceptual as well as on operational and technical levels. The obstacles to smooth and efficient container transport are also examined.

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1 Introduction

Since the introduction of containers in the 1950's, a significant growth of unitised cargo transport has taken place in international trade. In Finnish foreign trade, too, container transports have increased at a rapid rate. Today Finland's container transports amount to slightly over one million TEU (twenty-foot equivalent units), including export and import operations. The top five container ports are Helsinki, Kotka, Rauma, Hamina and Pori. Most containers are transported by feeder traffic to other European ports and then

reloaded for ocean transport. Much of the containerised cargoes consist of forest industry products, notably paper and board, to overseas markets.

The advantages of the container are best seen in intermodal transport, where standardised cargo units offer good opportunities for developing services that consist of modular, flexible and interlinked elements. e.g. tracking and tracing capabilities, global positioning systems and electronic data interchange are transforming the transport industry into a higher technology business with advanced information management systems and special skill demands for personnel. At the same time, the service expectations of customers are growing and affect the way services can be produced in an efficient manner.

Research on intermodal transport has mainly focused on technical issues, such as cargo handling technologies, vehicles, information and communication technologies, and infrastructure networks. Some studies look at the technical and organizational interfaces of different transport modes and companies involved in intermodal transport operations. However, to achieve the goal of seamless and efficient intermodal operations, research is needed examining intermodal transport in the broader context of industrial logistics, third party logistics and supply chain management (SCM).

By definition, intermodal transport involves the movement of goods that use successively several modes of transport without handling of the goods themselves in changing modes. The goods shall be transported in unbroken unit loads from sending point to receiving point; ISO-containers, swap bodies, semi-trailers and specially designed freight containers of corresponding size are regarded as load units; the unit loads must change between transport modes at least once between sending point and receiving point; and the shipper shall only need one contract between the consignor and the consignee (e.g. Woxenius 1998).

In this study we will describe the trends in intermodal transport with a particular focus on container service offerings, transport chain management and enabling technologies addressed from the perspective of different actors in the intermodal transport chain. The obstacles to smooth and efficient container transport will be examined, and areas for future development will be identified. The study attempts to create a general view of the evolution of intermodal transport chains by mixing available literature and the interview material to achieve this purpose. Interviews were carried out among container transport industry specialists in Finland to find out about the current state and future development opportunities in container transport (see Bask & Laine 2000).

2 Conceptual underpinnings

This chapter discusses some theoretical tools for analysing the logistics function of containerised, intermodal transportation. While many features can be found that are specific to intermodal transport industry, we also think that attention should be given to the common elements in the interface areas where the biggest challenges for the competitiveness of supply chains are found. In this paper, three such elements of intermodal container transport services will be examined: diverging service offerings, transport chain coordination and enabling technologies. These elements play an important role in present-day SCM and form the basis for developing intermodal transport solutions to the demands of future business.

2.1 Diverging service offerings

By its very nature, the intermodal transport chain consists of services (land transportation, port operations, sea transport etc.) that can be linked together. However, the generic transport service (moving goods from point A to B) hardly offers the potential for differentiation unless add-ins like logistics services, information management and other special services can be included in the service package.

From the customer's perspective, the demands on intermodal transport are no different from those on unimodal transport. The value of the service is based on the capability of the intermodal operator to satisfy the need of the customer (i.e. the shipper and/or the recipient), measured by service attributes such as delivery time, frequency, reliability, information exchange, flexibility, etc. In addition, the transport operator's service scope and geographic coverage (whether internally produced or networked) play an important role when assessing the value of the service. Moreover, the quality of the relationship between the service provider and the customer should be included in the overall service evaluation.

In logistics, it has been observed that service divergence and channel separation impose new demands on supply chain integration (e.g. Apte & Vepsäläinen 1993; Mäkelin & Vepsäläinen 1990; see also Bask & Juga 2000, Bask & Juga 2001). Typically, some of the service processes are tightly coordinated, while others are loosely integrated and routinely managed. Efficient service strategies are based on a good match between service processes and delivery channel. An analysis framework showing the divergence of service processes is shown in Figure 1, especially focusing on

the evolution of service processes in the container transport business environment.

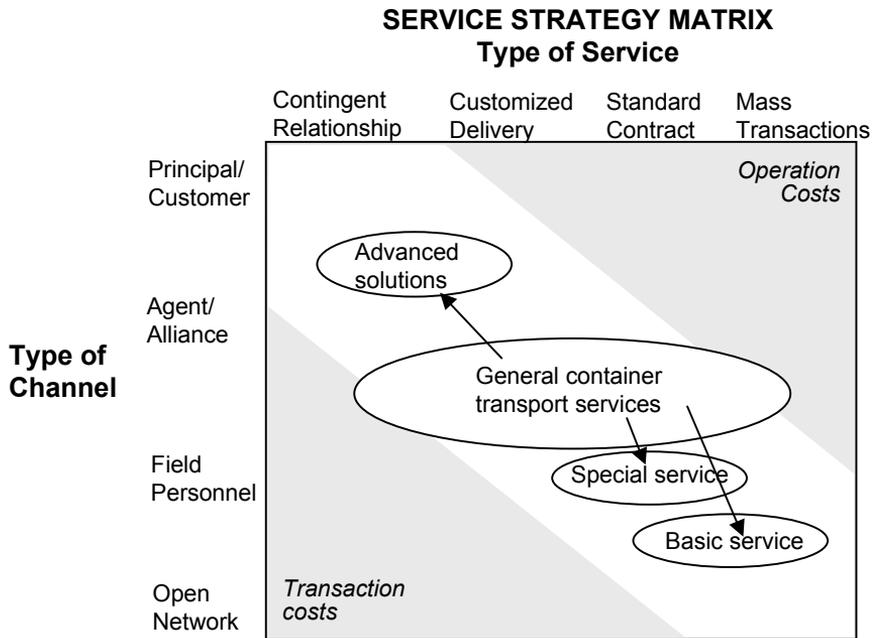


Figure 1: Evolution of container transport services (adapted from Bask & Laine 2000)

Finnish industry started using sea freight containers during the period of growing export activity in the 1960's. Later when standardised ISO-containers were established, the opportunities to harmonise the processes were significantly increased. The services can be described as basic container transport operations that were delivered in somewhat complex manner. Every transaction required considerable effort on either side, service provider's and service buyer's, in terms of ordering, payments etc. A close interaction was needed, even though the services were standard mass services by their nature. Service buyers, the manufacturers, often had the responsibility (although forwarding companies also had a role) for coordinating the activities in the transport chain. While service offerings typically included various activities of the total chain, a door-to-door service was a complex system to accomplish. The service providers offered the part of service that they owned themselves. The pricing of the services was quite rough.

Today, the container transport service offerings can be described as generic (basic) services, and it is hard to find real differences between services in the market from the customer point of view. However, the service providers are

taking more coordination responsibility for the various activities in the transport chain. The customers are willing to give even greater responsibility to the service providers. In addition, the willingness to buy door-to-door services is growing. The service providers underline customer focus and may offer customised services tailored for each customer, combined with customer-specific pricing. Increasing customisation has led to high costs as customer contact strategies have not been differentiated; instead, the various service offerings are handled by service personnel in a relatively uniform manner. To offer special services (e.g. refrigerated transports, dangerous cargoes, etc.) and advanced solutions (e.g. project deliveries) in an efficient manner, the processes and service channels should be differentiated from the basic service concept.

2.2 Transport chain management

Transport chain management can be examined from two perspectives: transport chain coordination and service production. Coordination normally refers to planning and control activities or concerted efforts within and between organisations. According to Chopra & Meindl (2001), supply chain coordination involves actions in all stages of the chain that together increase total supply chain profits. Coordination requires each stage of the chain to take into account the impact its actions have on other stages. In transport, it should be possible to coordinate customer service, cost structures, freights and fees charged and total delivery time through the whole chain in door-to-door deliveries. The target is to satisfy customer needs and attract new business by offering services in the right place, at right price.

With regard to service production, the challenge is to respond to long-term and short-term fluctuations and achieve high capacity utilisation by advanced allocation of technology investments (Laine 1998). As the container transport chain consists of several services and often also several parties, the main problem areas are still found in company interfaces. The operators in transport chains have opted to co-operate with a relatively small number of partners due to high investment needs while streamlining the processes between companies. The solutions have been customised, not aimed for general use in the whole container transport industry. This type of focused collaboration is normally supported by pipeline specific investments in ICT (information and communications technology) and other equipment such as special containers, cargo handling equipment etc.

Holmström (1995) has presented a general division to low efficiency and high efficiency logistics operations. Typical of low efficiency operations is the

decoupling of dependent activities (control point of view) and the accumulation of needs (communication point of view). As a result, surge and amplification effects create uncertainty and lead to inefficient allocation of resources and high commitment. High efficiency operations synchronise dependent services and needs are directly communicated.

In transport business, the nature of the goods transported and the situational context obviously affect the way operational efficiencies can be accomplished. The forest industry, for instance, generates large transport volumes and relatively predictable flows that are best controlled by integrated systems and direct communications. Special transports or project deliveries are typically managed on a case-by-case basis, and efficiency is achieved if the supply chain can be quickly and flexibly constituted from interlocking systems and modular service elements.

Earlier it was common that a considerable part of the transportation services was produced in-house, with shippers taking much of the responsibility for coordinating various transportation-related activities. Nevertheless, forwarding companies always had a big role in organizing transport to geographically distant locations. Besides administrative work like billing and transport documentation, the coordinating role of the forwarding companies has been to combine individual activities (produced by several companies) into an entity that fulfils the customer's transport needs. Moreover, third-party logistics companies (3PL, TPL) have extended their services from physical operations to logistics management and supply chain coordination and, more recently, fourth party logistics companies (4PL) have taken the role of integrators that manage and coordinate the supply chain activities (see Figure 2).

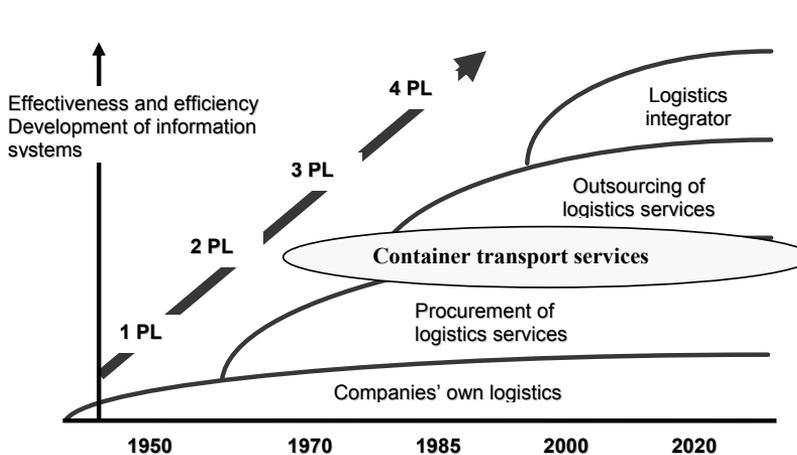


Figure 2: Stages of service provider development and the container transport business

The opportunities for efficient transport chain management are constantly being improved, but there are also challenges remaining in the various areas of coordination and service production. The roles of the organisations are not fully developed and the technologies do not effectively support all operations, especially as regards special deliveries and advanced solutions. The service providers focus on producing customised or pipeline-specific solutions and the efforts to develop general standards and connectivity are lacking. To further improve the efficiency of special and advanced transports in particular, the service processes should be supported by modular systems and standardised interfaces. New types of service providers, such as the 4PLs, are in a key position for advancing the development in the container transport business.

2.3 Enabling technologies

Enabling technologies include physical movement and terminal handling technologies as well as the information and communication technologies required for coordination. As shown in Figure 3, the cargo handling revolution in the 1960s and 70s increased the amount of mechanised work in ports and terminals. In the 1980's, the focus shifted from physical handling to information processing and communications (see e.g. Ojala 1991). In the coming decades, the imminent service revolution will likely affect the way these technologies are deployed in cargo handling and transport operations.

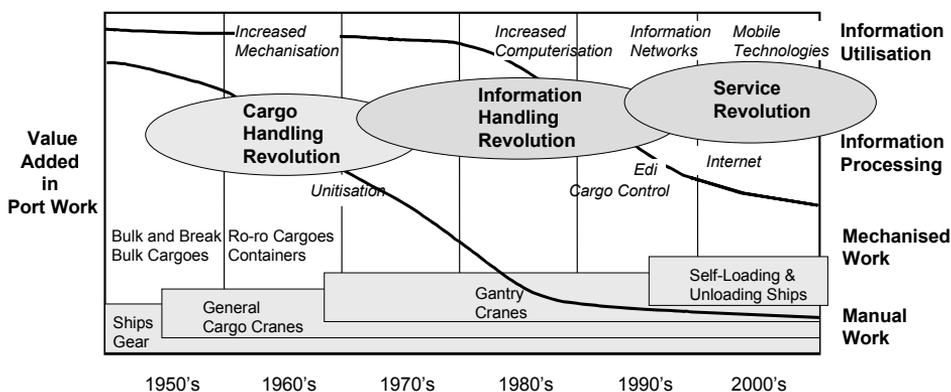


Figure 3: Developments in port work (Source: Adapted from Ojala 1991; Wijnolst et al. 1994)

In the development of physical cargo handling performance of seaborne cargoes two periods of major change can be distinguished. The first period is related to the development of the modern general cargo ship. Despite modern

cranes on shore and on board, as well as wide hatches, rectangular holds etc., the handling performance has levelled off. The second period of change started with the introduction of the container; and the resulting improvements in ship design, gantry cranes on board and on shore, efficient terminals etc., led to a phenomenal increase in productivity. However, 30 years after this worldwide breakthrough, the productivity in the ship-to-terminal interface has levelled off again. In order to make short-sea shipping of unit-loads competitive, a third wave of change is required, based on very fast self-loading and unloading unit-load ship-terminal systems (Wijnolst et al. 1994).

When the standardised container units were established the prerequisites for developing mechanised transportation and handling equipment were also created. In an early stage no computerised information systems were available, but such systems began to expand around the same time when the unitised cargo transportation achieved popularity in the transportation industry. This allowed industrialisation of transportation and led to significant increase in productivity. In general, however, the information systems were developed to support individual functions of the company. Later the emphasis in developing Enterprise Resource Planning (ERP) systems (where same information is available for all functions within the company) improved the internal integration of the company.

The present equipment and systems for physical movements are standardised, widely used and allow relatively flexible allocation of capacity - containers can be moved flexibly between transport pipelines. However in certain connection points (especially in the truck loading and customer terminals) further development of physical transfer of containers is still required. Containers are able to carry different kinds of cargo combined in one unit, although the package sizes could be improved to better fit into the container. Unfortunately, in many cases the information systems cannot adapt to the varying information related to the different cargoes without special arrangements or previously agreed procedures. The information systems are integrated within organisations, but the challenge still remains to achieve linkages outside the company's boundaries. Another problem area is that the information flows are "pipeline-specific", i.e. information sharing is difficult due to different routines (work practices, manuals etc), communication standards and information systems. The objective should be to create general standards for data and information transmissions.

Concerning information management and communications, it is perhaps misleading to talk about an information revolution since there are several stages in an ongoing process that have affected the development in the transport sector. First, an important step was taken when computer-to-computer data interchange was introduced using standardised formats such as

EDIFACT or Tradacoms. In the transport sector, where large amounts of transactional data are transferred over long distances, electronic data interchange (EDI) has produced significant improvements in administrative efficiency and data reliability. Another important involves the development of extended enterprise applications, virtual private networks (VPNs), value added networks (VANs) and other internet-based applications that are used to share business information and operations with suppliers, vendors, partners, customers and other businesses. These solutions are normally based on the development of standards and protocols for specific purposes and environments, often involving alliances between software developers and their customers to develop platforms for specific applications.

As standards for electronic information have been established it is possible to exchange business information from previously incompatible computer systems. One of the earlier modes of electronic information exchange is electronic data interchange (EDI), or “electronic inter-company transfer of business documents in a standard format” (Gattorna & Walters 1996). EDI is commonly used among large companies for exchanging orders and invoices, and the scope of applications is increasing (Pawar & Driva 2000). However, the main focus today is on the Internet, intranet and extranet technologies. The path of evolution is toward technologies that enable sharing of information in supply chain. However, internet-based systems alone do not solve the problem as long as they are only front-end applications without connectivity to operational or back office systems. Normally this requires standard interfaces, integrated software packages or time-consuming integration work.

3 Development of container transport services in Finland: some empirical evidence

Based on interviews with major Finnish container transport operators (Bask & Laine 2000), this chapter discusses features of container transport services in Finland, with a special interest in the development of services, transport chain coordination and the technologies used in container transport management. An attempt was made to distinguish between basic container transports and special transports to see if there actually is any differentiation between these two types of container transport. The interviews included both structured and open questions. The number of companies (14) and interviews (27) included in the study gives a fairly representative sample of the container transport industry in Finland, but the results are naturally illustrative and not statistically generalisable.

3.1 Service offerings in container transport

All the companies included in the study offer both basic (standard) container transport services and special transport services. The latter includes such services as temperature-controlled transports, dangerous goods transports (IMO containers), special stuffing and stripping, etc. Most of the companies offer container transports on a door-to-door basis; however, there was a considerable variation in the proportion of the total business that consisted of door-to-door transports and more limited transport services. It was found that the proportion of door-to-door services had generally increased during the last decades.

The service providers expect the customers to be willing to buy container transport services on a door-to-door basis also in the future. It also seems that the chances are good for further extending co-operation between the service providers and the customers, i.e. even offering transportation services from the production line to the end customer. This type of co-operation requires a good understanding of the customers' processes and an increase in information sharing, as well as advanced information systems. The expectations concerning the development port-to-port or terminal-to-terminal container transports are slightly negative. The differences in the expected development of standard and special container transport services are not very big (see Figure 4).

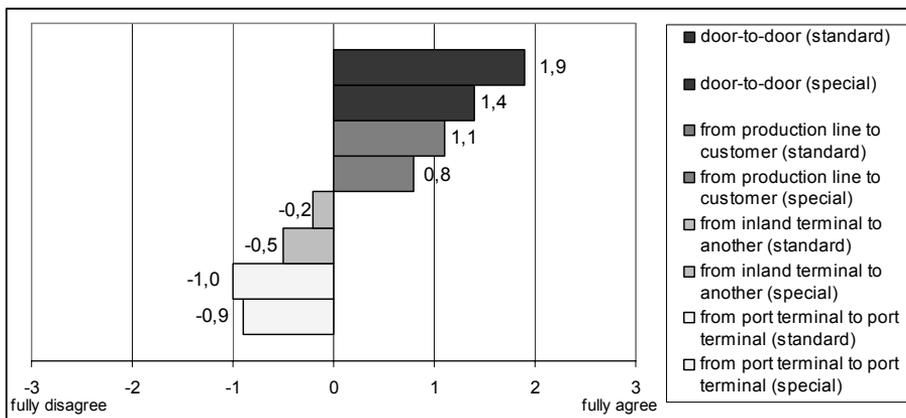


Figure 4: The focus of container transports in the future

The companies brought up the need for an overall efficiency improvement in container transport services. As the conditions for further growth of containerised transport, the companies emphasised capacity-related questions, especially the availability of containers which tends to cause problems because

of the imbalanced transport flows to and from Finland. However, also service flexibility and reliability were mentioned, as well as the number and frequency of sea transport connections. Efficiency and flexibility in container transport is critical to secure the interests of shippers as well as transport operators.

In the service management literature, much emphasis is given on the ability to tailor services to the needs of individual customers or customer segments. However, customised services should not come at the cost of operational efficiency; rather it should be possible to combine coordination and responsiveness as is happening in the manufacturing industries where mass-customisation strategies are increasing popularity. The opportunities for exploiting mass-customisation strategies in the service sector are more limited due to intangibility and non-storability of services, but positive examples can also be found in the service industries. In the case of transport and logistics, for example, a creative use of hub-and-spoke systems, transshipments, vendor-managed logistics and cross-docking arrangements have proved to offer many advantages comparable to manufacturing redesign strategies.

While aiming to increase efficiency transport companies may distinguish traditional general service offerings into different types of door-to-door transport services to their customers. In *basic container transport service* use is made of standard containers and the services/chains do not include special arrangements or extensive planning during the transportation process. In *special transport service* a need exists for special arrangements during the door-to-door transport and these arrangements can be related to one or several stages of the chain (reefer unit – electricity required, open-top or open-side units - special location in the ship's cargo hold required, IMCO units – dedicated storage area and special documentation, terminal - special packaging requirements of the products, etc.). *Advanced solutions* include e.g. higher-level involvement in customer processes or offering of total solution to container transports. Efficient transport systems should be able to utilise the physical interoperability of containers and combine it with advanced management practices and technological tools to support the various service demands in a modern door-to-door transport environment.

3.2 Service production and coordination

Service production in container transport chains can be based on three general models: ownership, subcontracting and market-oriented networks. For the intermodal service provider, the *ownership model* means that various activities in the chain (land transport, sea transport, terminal handling, port operations, stuffing and stripping, etc.) are produced in-house. The *subcontracting model*

means that the services are acquired from selected service providers using long-term contracts while the *market-oriented model* means that the services are acquired more flexibly from the market on a case-by-case basis. The subcontracting and market-oriented models imply that there is a growing specialisation of service providers and the shippers can contact them directly or use lead logistics providers and integrators to compile the whole service package.

The intermodal operators in Finland consider the subcontracting and market-oriented models as offering the superior results in terms of service efficiency and flexibility (Figure 5). By contrast, the ownership model is considered inefficient and also somewhat inflexible. This can be seen as an indication that the lead logistics provider or integrator model will continue to grow, at least from the service providers' point of view. The directors in the interviewed companies viewed strategic reasons, technology development and demand-related questions (market sizes, demand variations) as the most important factors guiding the make-buy decisions.

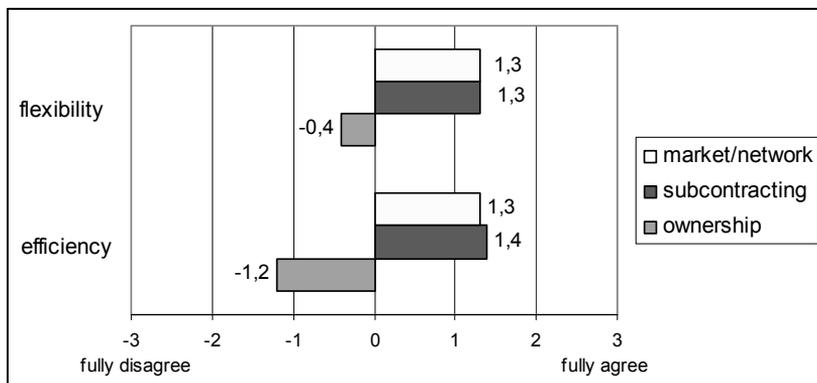


Figure 5: Efficient relocation of services in container transport chains

Considering the increasing use of specialised service providers for intermodal transport chain activities, the focus in coordination will be on *connectivity*, i.e. how efficiently different interfaces and processes in the chain are organised. The interfaces are found not only between companies but also between different services in the chain. Efficiency calls for modularisation in the production of the varying services to secure easy access to reliable, flexible and fast container transport chains. An illustration of the efficient connectivity strategies is shown in Figure 6, where different service types are linked with the type of technology solutions for the physical movement of containers. Based on the expert interviews, it can be noted that the efficient services line up on the diagonal of the analysis framework. Also, it can be

noted that the existing services largely cover the range from standard to special services, but the top left corner seems to be lacking the kind of services required for advanced solutions in project transports, for instance.

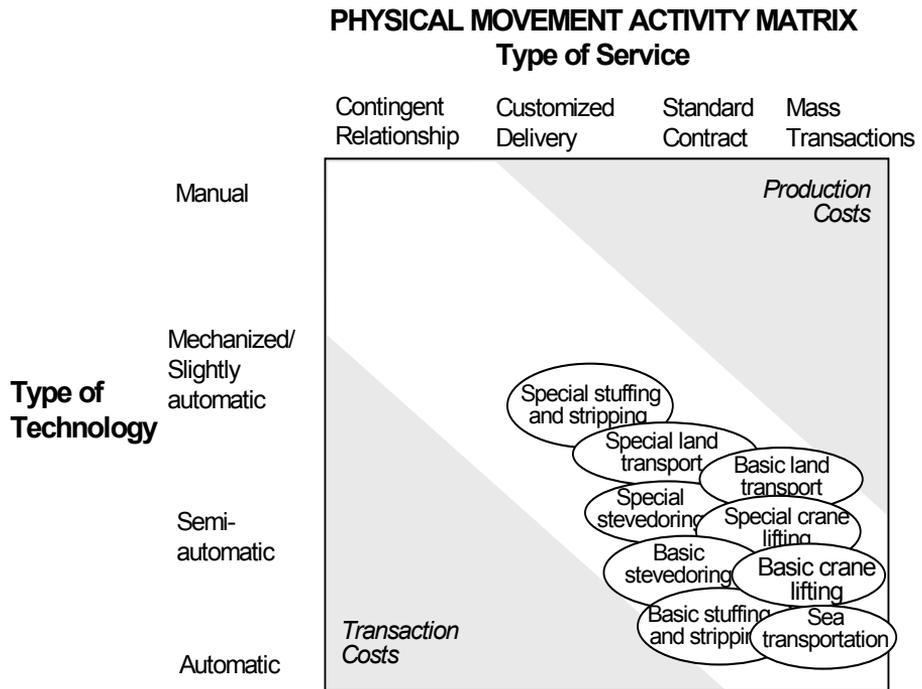


Figure 6: Efficient relocation of services in container transport chains

There are several improvement areas for coordination that were identified in the interviews. Besides information management and collaboration between transport chain partners, also various aspects of standardisation were named as challenges for efficient coordination. Standardisation and modularisation in container transport chains means that autonomous services have accessibility and connectivity to each other. This is a prerequisite for offering effective and efficient types of door-to-door transport services. Besides basic services, also special services and advanced solutions can be produced more efficiently if there are standardised platforms upon which customised solutions can be built on a partly automated or even on a manual basis. Down on the fundament, it is standardisation that drives customisation also in the service industries.

3.3 Technological tools supporting container transports

The companies use both direct and indirect channels to sell their services to shippers. Stevedoring companies and port organizations, for instance, typically do not have a direct contact to the shipper but sell their services to forwarders or transport companies. All the companies share the opinion that the shippers will increasingly concentrate their transports to fewer companies who will then have to provide the complete service themselves or use subcontractors.

To find out about technology utilisation in the ordering process, the companies were asked to indicate the extent to which their orders are being transmitted by different technologies (Figure 7). Phone ordering and fax or e-mail orders are by far the most popular means for standard and special transports alike. It is also common that these two methods are used for the same order – e.g. special transportation is first ordered by phone and then confirmed by fax. The confirmation is then made to eliminate mistakes and misunderstandings. Electronic data interchange (EDI) and internet-based ordering have not yet gained wide acceptance in the container transport business.

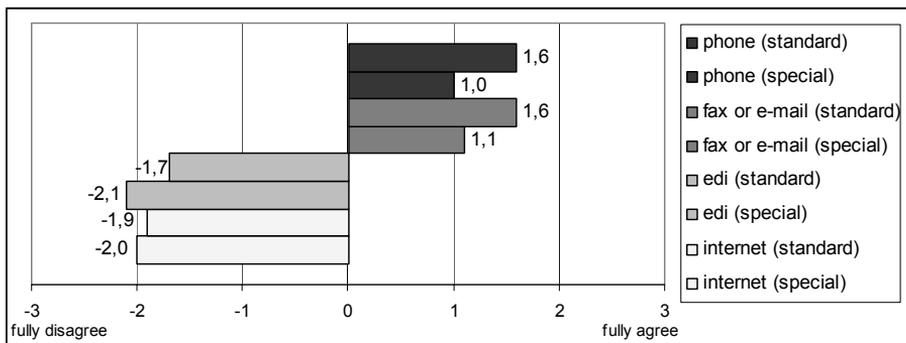


Figure 7: The alternative means for ordering standard and special container transport services

Fax and e-mail are also widely used for the transfer of information after the order (Figure 8). Especially fax is seen as an established and easy-to-use, "light" technology with inexpensive investments. The use of EDI and automatic/internet-based technologies vary greatly. Some companies experience significant use of the internet, while others do not use it at all. This may reflect the immature development stage of the internet technologies. In the case of EDI the explanation may be the investment barrier together with the tight cooperation requirement between the parties.

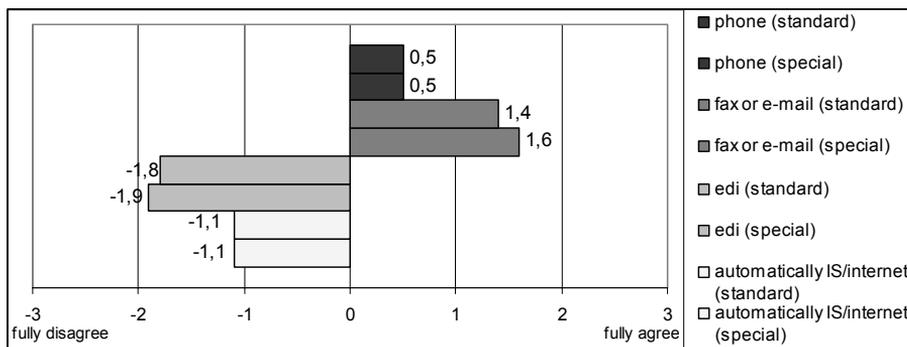


Figure 8: Transfer of information after ordering of standard and special container transport services

The transfer of invoices is also divided into four alternative groups: by mail, by fax or e-mail, by EDI or through the internet. Most companies use ordinary mail in both service types. Some companies use EDI for transferring invoices, but in general electronic invoicing is not commonly in use among the end customers or the companies involved in the transport chain. Container identification and tracking/tracing capabilities are recognised as an important technology, but the usability is still not quite on par with the expectations (Figure 9).

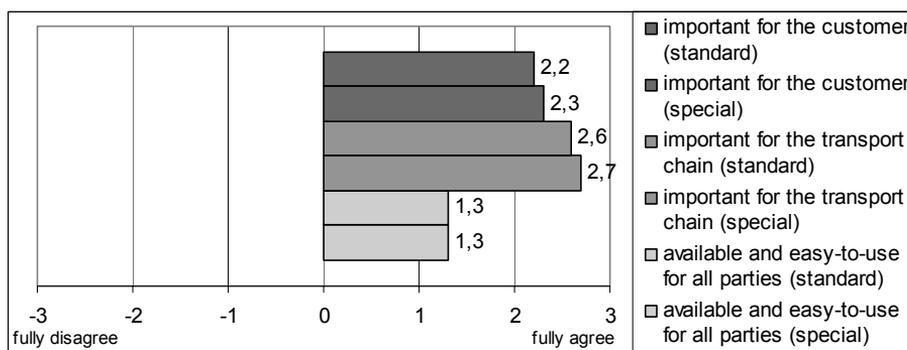


Figure 9: Importance and usability of container tracking/tracing technologies

In the light of the interviews not much has changed during the last decades. In most cases the information and documents are still conveyed by traditional means (telephone, fax, mail). There are, however, changes in the market and the widespread use of electronic data interchange (orders, invoices, etc) maybe not so far away in the future. The importance of new ICT applications is recognized but not readily available or affordable to date. Nevertheless, the companies see information sharing and the development of transport chain

visibility as one of the main challenges in their coming development. To what extent this development is heading for dedicated solutions and proprietary standards or open standards and technology platforms is currently difficult to predict from the company interviews.

4 Development challenges

Through open question the interviewees were asked what they found most important development needs in the container transports. Then answers were analysed and classified based on their match with three main topics; services, transport chain coordination, IT and physical movement technologies. The results show that several problem areas are found in all of these three areas (see table 1). Based on the answers some subgroups were also identified.

Regarding container transport services several interviewees brought up the need for efficiency improvement in container transport services. More precisely, some interviewees mentioned efficiency improvement needs in chain level e.g. increase in overall efficiency and shortening total transport chain cycle time. Some other interviewees focused on efficiency needs in some part of the transport chain e.g. shorten the ships' port times, achieve more effective use of port cranes, increase the speed and frequency of rail transport, offer faster terminal operations, and decrease the number of ports. Moreover, there is a need to increase reliability for example in domestic transport and port operations. From a capacity utilisation perspective, there is a need to improve the availability of special containers and land transport. There is also a need to increase overall flexibility, and adjust the pricing according to the various services of the full service package.

Ten interviewees mentioned several aspects in information management as important improvement areas in transport chain coordination. Most important aspect is development in sharing and utilisation of information among members in container transport chains. This development requires common standards that can be used more commonly in transport sector in overall. Cooperation and standardisation are also important aspects in improving transport chain coordination.

There are three main improvement areas concerning technologies that are information systems, tracking and tracing, and transport technology. In information systems the overall focus is on to improve electronic information exchange and automatism. In transport technology focus is on interfaces in the transport chain.

Table 1: Main Future Development Needs in Container Transport Chains*

Services	No	Example
Efficiency (8)	1	Increase in overall efficiency
	1	Shortening of total transport chain cycle times
	1	Constant flow of containers
	1	Shortening of ships port times
	1	Faster crane lifting operations
	1	Development of rail transport speed, frequency reliability and service concepts
	1	Decrease in number of ports in general, fewer liner shipping ports
	1	Faster terminal operations
Reliability (2)	1	Development of reliability in domestic transports
	1	Decrease of failures in port operators activities
Capacity (2)	1	Better availability of special containers
	1	Better availability of land transportation
Flexibility (2)	1	Increase of flexibility in general
	1	Development in customs operations
Pricing	1	Right pricing in land transportation operations
Coordination		
Information management (10)	4	Development of information sharing and utilisation among chain members
	1	Availability of pre-information
	1	Development of information management in general
	1	Faster feedback of capacity requests from shipping companies
	1	Easier finding of adequate equipment for land transport
	1	Better time matching between transport vehicles and containers
	1	Development of information sharing between port operators and others
Cooperation (7)	2	Development in cooperation among chain members
	2	More efficient combining of return loads
	1	Easier finding of different service operators in the container transport market
	1	Development in matching of opening hours in the chain (8 h vs. 24 h)
	1	Better total optimisation of routes
Standardisation (6)	1	Development of generic standard for information sharing
	1	Development of currently unclear EU standards
	1	Standardisation of information that is shared among chain members
	1	Development in container standards, decrease in number of types of containers
	1	Development of packages to be more optimal to container sizes
	1	Simplification of routines in the chain

Technologies		
Information systems (4)	1	Development in communication systems, decrease in use of telephone
	1	Automatisation of information sharing in the chain
	1	Development of IS systems for total route optimisation of the chain
	1	Development of electronic information exchange among chain members
Track and trace (4)	2	Better availability of real time information among members in the chain
	1	Enabling of tracking and tracing from computers
	1	Better utilisation of tracking and tracing in the chain
Transport technology (3)	1	Development of stuffing and stripping capabilities
	1	Development of lifting capabilities of containers to road vehicles
	1	Development of port operations

*) Figures in parenthesis refer to number of responses by experts in interviews

To conclude, container transport modularity starts from the divergence of service offerings, and modularity comes from different types of service modules (or processes) included in a specific type of service. Future is positive, the containerised cargo volumes are growing offering benefits from economies of scale. At the same time the container services (required and offered) continue to differentiate. Also, the selection of container types is expanding.

5 Future outlook

What will the intermodal container transport business look like in the future? We cannot give a definite answer, but based on the observed evolutionary patterns and the expert interviews we try to make some scenarios related to the services, management and technologies of container transport chains in the future. The key points related to the three areas are shown in Figure 10.

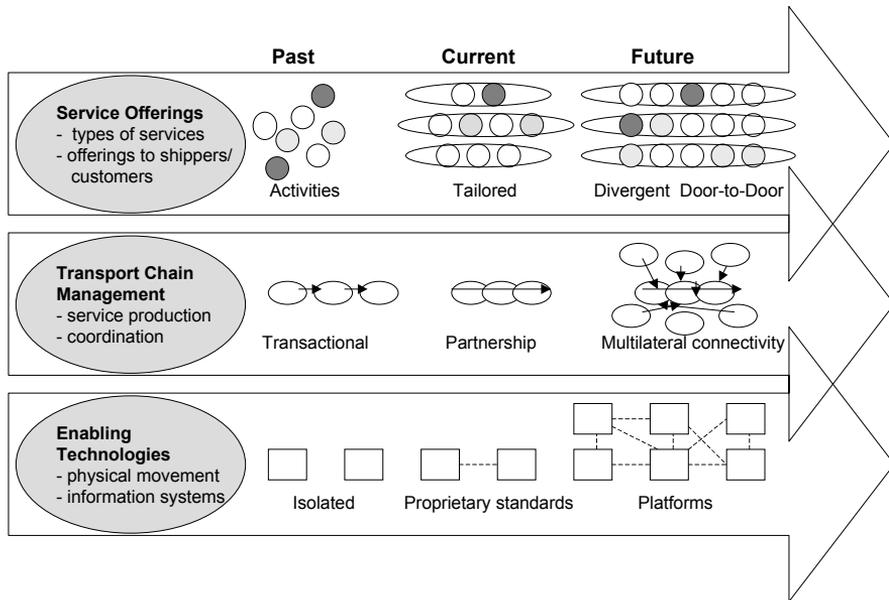


Figure 10: Evolution of container transport: services, management, and technologies

In principle the transportation services should directly respond to the services required in the markets. The path in service offerings has been from separate activities to tailored solutions and in the future services will be offered on an increasingly divergent door-to-door basis. This will mean that also coordination mechanisms and probably also the technologies will be more differentiated to match the service offerings. Basic container transport will be the main operation mode also in the future, but the coordination mechanisms and technologies should also support special transports and advanced solutions such as containerised project deliveries.

In transport chain management, a shift has occurred from transactional coordination mechanism to partnerships between shippers and the various service providers in the container transport chain. Development efforts have been directed at creating product or customer oriented pipelines that have increased efficiency and some aspects of flexibility. However, we expect to see container transport chains increasingly based on multilateral connectivity that will improve responsiveness and adaptability required for the demands of modern supply chain management. Service production will similarly build on modular elements that can be linked to create service combinations efficiently and flexibly.

Enabling technologies have mostly been used to automate physical handling and information processing in the container transport chain. As a result, efficiency has increased but the interfaces have tended to become dedicated to

each application and therefore costly to maintain and change. To develop truly interoperable systems, the ICT applications should be based on more general standards and protocols, including EDIFACT and increasingly also XML-based exchange of information. From a strategic point of view, this would mean that openness would be substituted for switching costs as a source of competitive advantage in transport operations.

Table 2: Features of intermodal transportation in different times

	Past	Present	Future
Services services within the chain offerings to shippers	Separate services and internal services Basic services Rough estimate pricing	Traditional service offerings: General service Customised services Customer-specific pricing	Mass-customised door-to-door services Service divergence Transparent pricing
Chain management service production coordination	Own operations focus Ownership focused Internal services Difficult connectivity Coordination responsibility: Customers	Tailoring focus Pipeline specific chains Focused collaboration Medium connectivity Coordination responsibility: Customers and providers	Specialised competencies Modularisation of services Networked sourcing Easy connectivity Coordination responsibility: Service providers
Technologies physical movement information technology	Manual work in transport operations General cargo cranes Internal IS Internal standards in information systems Paper based SC interfaces	Mechanised work in transport operations Gantry cranes Actor specific IS Dyadic (customised) information systems Costly SC interfaces	Information processing in transport operations Self-loading ships Technology platforms Standards and Protocols (EDI, XML) Easy cost-efficient SC connectivity

The main findings are summarized in Table 2. Our key point is that the main strength of containerised intermodal transport is the standardised cargo unit that can be handled efficiently practically anywhere in the world. However, as transport is turning into a high technology oriented business, information and communication capabilities are becoming a crucial competitive asset. In the future, efficient transport chains will be based on

coordination mechanisms that enhance network connectivity, using advanced enabling technologies as a supportive element.

Through improved coordination transport chains can be transformed from low to high efficiency operations. However, this should not involve increasing formal coordination; rather, it means that the balance between supply and demand should be achieved primarily by increasing transparency and visibility. In other words, the potential future benefits and especially the opportunities to embrace special transports and advanced solutions more effectively are likely to be found from harmonisation of processes and information, and through multilateral standardisation and connectivity.

There are many benefits to gain from using containerised, intermodal transportation. However, many problems have also been encountered in intermodal transport chains. These are often related with the organisational interfaces and technical incompatibilities between the various companies and systems involved in transport operations. Obviously, standardised cargo units offer good opportunities for developing services that consist of modular, flexible and interlinked elements. To date, however, these attributes are mainly limited to the physical components of the transport chain.

In this paper we have discussed three key issues related to the development of intermodal container transport. While recognising the current trends and results in earlier studies (e.g. Ministry of Transport & Communications 1998; see Appendix I), we have also tried to extend the discussion to newer issues that can be paralleled with emerging trends in logistics and supply chain management. Somewhat related ideas can be found in a recent study by Naula & Ojala (2002) concerning advanced logistics services in the Baltic States. In addition, a similar interest of using logistics and SCM concepts in a traditional transport environment is found in the study by Paixão & Marlow (2003), emphasising agile management practices in port operations.

It has been said that an increasing use of electronic media is the way towards improved supply chain management. However, much work is still needed. There are many unsolved problems regarding incompatibilities of business requirements, the kind of information shared as well as the kind of information systems used. In a wider sense the entity of the services offered for customers, the production or coordination strategies of services, and the enabling technology solutions together will offer a fruitful basis when looking for possible answers.

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Appendix 1: Development trends of intermodal transport (Ministry of Transport & Communications, Finland 1998)

Intermodal transport units	Transport, handling and terminal operations	Tracking & tracing, transport chain coordination
<p>No plans currently exist for a specifically intermodal transport unit. The width of ocean line containers will be unchanged, whereas the lengths will be varied. Container use will increase. The sizes of containers and pallets will become commensurable. The use of transport units outside the transport chain will increase. Trailers will keep their position in regional transport. Transport units will become intelligent (information on cargo, unit and transport methods). New materials may replace old ones as prices are lowered. In closed systems the need for special solutions will continue to exist.</p>	<p>Evolution will lead to increasing concentration of operations (points where transport modes meet and value added services are performed). Intermodal transport growth will lead to development needs in big but also smaller freight centers. Container movement will take place on fast trunk lines, and handling will be concentrated to efficient terminals. Terminals must be able to adapt their operations to changing transport requirements. Growth of container use will allow increasing automation. Large container vessels will dominate ocean transport and turnaround times in ports will be very short. Cargo handling technology will be mounted on the vessel if required. Simultaneous handling of containers will increase operational efficiency. The need for semi-automated systems will be bigger than for complete automation. Container warehousing will be further developed.</p>	<p>Telematics will be a central factor for securing the competitiveness of intermodal transport. Advanced planning & control systems will be needed for integrating the transport chain. The users require advanced tracking and control systems. Identification and positioning of transport units will be developed, as well as cargo detection, climatic control and information transfer capabilities. The development of general solutions is hampered by the lack of global standardisation. Telematics systems must be adapted to various demands, and interoperability will be a necessary prerequisite. There are over 10 million containers owned and operated by a number of different actors in the world; this will require the systems to be operated simultaneously even when different standards are used.</p>

LIST OF AUTHORS

Dr. Lauri M. Ojala is professor of logistics at the Turku School of Economics. His research interests include logistics and transport markets. He has also worked as an expert for several international agencies in The Baltic States and several CIS countries. In 2006-2007, he is in charge of two EU part-funded projects in the Baltic Sea Region with a combined volume of over 4 million €; DaGoB deals with transport of Dangerous Goods (www.dagob.info) and LogOn Baltic deals with logistics and ICT competence in 12 BSR regions (www.logonbaltic.info). He has published in several international journals in the field of logistics and maritime policy, and he is also the European Editor of The International Journal of Physical Distribution and Logistics Management. He can be reached at:

Prof. Lauri Ojala, Turku School of Economics and Business Administration, Rehtorinpellonkatu 3, 20500 Turku.

E-mail: lauri.ojala@tse.fi, Tel: +358 24814243, Fax: +358 24814280

Dan Andersson is assistant professor in Logistics Management at Linköpings Universitet, Sweden. He has a MSc in Industrial Engineering and Management, a Licentiate of Technology in Logistics, and a PhD in Logistics, all from The Institute of Technology at Linköpings Universitet. He can be reached at:

Dr. Dan Andersson, Department of Management and Economics, Linköping University, SE-581 83 Linköping, Sweden.

E-mail: danan@eki.liu.se, Tel. +46 13281521, Fax. +46 13282513

Tapio Naula is a Researcher at the Turku School of Economics, Finland. He has special expertise on logistics matters in the Baltic States, where he has made a career in logistics industry. His research interests include third party logistics, logistics environment and transition economies. He has worked as an expert for the World Bank and UNIDO. He can be reached at:

Researcher Tapio Naula, Turku School of Economics and Business Administration, Rehtorinpellonkatu 3, 20500 Turku.

E-mail: tapio.naula@tse.fi, Tel: +358 2481481, Fax: +358 24814280

Susanne Hertz is a professor in Business Administration specializing in Logistics and Supply chain management at Jönköping International Business School. Her research field includes supply chains integration, dynamics of alliances in supply chains, change processes in supply chains, logistics providers and dynamics of logistics networks and market restructuring of

logistics industry. In her earlier career she has spent over a decade in logistics industry on managing positions mainly in marketing and strategic planning. She can be reached at:

Professor Susanne Hertz, Department of Marketing, Distribution and Industry Dynamics, Stockholm School of Economics, P.O Box 6501, SE-113 83 Stockholm, Sweden.

E-mail: susanne.hertz@hhs.se Tel: +46 87369532, Fax: +46 8334322

Monica Macquet is a Ph.D. Candidate at the Stockholm School of Economics. She is teaching in logistics and sustainable development, as well as environmental management. She has also been assistant leader in an experience exchange group within logistics, SCM and aftermarket, and is now member of the Swedish environmental logistics network. Earlier research projects include the development of a market for recycled products, environmental adaptations in logistics. She can be reached at:

Ph.D. Candidate Monica Macquet, SuRe Sustainability Research Group, Stockholm School of Economics, P.O Box 6501, SE-113 83 Stockholm, Sweden.

E-mail monica.macquet@hhs.se +46 87369569, Fax: +46 8334322

Krister Lång M.Sc. (Pol) has worked for 13 years in the logistics industry. Currently he is the managing director of DHL Exel Supply Chain Finland. He can be reached at:

Director Krister Lång, DHL Solutions Finland, Hakkilankaari 1, 01380 Vantaa, Finland.

E-mail: krister.lang@dhl.com Tel. +358 205333, Fax. +358 205332980.

Jyrki Ristinen (Logistics Engineer) has for many years been working in different companies – both on the customer and the supplier side. Today his main responsibility is managing large and complex implementation projects in DHL Exel Supply Chain Finland. He can be reached at:

Manager Jyrki Ristinen, DHL Solutions Finland, Hakkilankaari 1, 01380 Vantaa, Finland.

E-mail: jyrki.ristinen@dhl.com Tel. +358 205333, Fax. +358 205332980.

Juha Ruotsalainen (Business college graduate) has two decades of experience from a wide range of functions and services in the logistics sector. His present role is Sales Director of DHL Exel Supply Chain Finland. He can be reached at:

Manager Juha Ruotsalainen, DHL Solutions Finland, Hakkilankaari 1, 01380 Vantaa, Finland.

E-mail: juha.ruotsalainen@dhl.com Tel. +358 205333, Fax. +358 205332980.

Matti Miettunen M.Sc. (Econ & Bus Adm) has worked over 20 years in the field of logistics. Last logistics positions were the managing director of Frans Maas Finland Ltd and European Director for Seafreight for the Royal Frans Maas Group. He currently works as the Head of Sales of ID BBN Oy, the multicultural advertising agency. He can be reached at:

Matti Miettunen, Idea Development ID Oy, Aurakatu 3 B, 20100 Turku, Finland.

E-mail: matti.miettunen@idbbn.fi Tel. +358 400 521135, Fax: +358 2 8145 0601.

Pia Jämsä, M.Sc. (Econ. & Bus. Adm.), is a research associate at Turku School of Economics, Finland. In 2005 she enrolled as a PhD student in logistics. Her research interests include reverse logistics and pharmaceutical industry. She can be reached at:

Research Associate Pia Jämsä, Turku School of Economics and Business Administration, Rehtorinpellonkatu 3, 20500 Turku, Finland.

E-mail: pia.jamsa@tse.fi Tel. +358 2481481, Fax. +358 24814280

Lotta Häkkinen, DSc (Econ. & Bus. Adm.), is a researcher at Turku School of Economics, Finland. She has recently completed her doctoral dissertation entitled *Operations integration and value creation in horizontal cross-border acquisitions*. Her research interests include the various impacts that mergers and acquisitions have within companies, as well as firm growth and internationalisation strategies. She can be reached at:

Dr. Lotta Häkkinen, Turku School of Economics and Business Administration, Rehtorinpellonkatu 3, 20500 Turku, Finland.

E-mail: lotta.hakkinen@tse.fi Tel. +358 2481481, Fax. +358 24814280

Anu H. Bask, Lic.Sc. (Econ.), M.Sc. (Geog.), is Head of the Administrative Affairs at the Center for Doctoral Program, Helsinki School of Economics, Finland, and is research associate in logistics at Helsinki School of Economics. She has published in international journals including the International Journal of Logistics Management, the Journal of Business and

Industrial Marketing and International Journal of Logistics: Research and Applications. Her research interests are management of differentiation, integration and co-ordination in supply chains, and the role of logistics services in supply chains. She can be reached at:

Anu H. Bask, Head of the Administrative Affairs, Center for Doctoral Program and Department of Business Technology, Helsinki School of Economics (HSE), Box 1210, FIN - 00100 Helsinki, Finland.

E-mail: anu.bask@hse.fi Tel. +358 505013558, Fax. +358 943138305

Jari Juga is professor of logistics at the University of Oulu, Finland. His research interests include supply chain management, strategic logistics, third party logistics and the development of the logistics service industry. He has published in international journals and in edited books. Juga received his PhD degree from the Turku School of Economics and Business Administration, Finland, and he has also been working at the Norwegian School of Management/BI in Oslo, Norway. He can be reached at:

Prof. Jari Juga, Faculty of Economics and Business Administration, University of Oulu, PL 4600, 90014 University of Oulu, Oulu, Finland.

E-mail: jari.juga@oulu.fi Tel. +358 85531011, Fax. +358 85532906.

Jouni Laine, DSc (Econ.), MSc (Nav. Arch.), is Research Director of the Maritime Sector at the Kymenlaakso University of Applied Sciences/Kotka Maritime Research Centre. Previously he has worked e.g. as a Visiting Scholar at the National University of Singapore, Researcher at the Helsinki School of Economics (HSE), Consultant at SAP Finland and Project Manager at Containerships Ltd. Oy. He participated this project while working at the HSE. His research interests include maritime transport and port operations. He can be reached at:

Research Director Jouni Laine, Kymenlaakso University of Applied Sciences Maritime Department P.O.B. 13, Lehmustie 4, FI-48231 KOTKA, Finland.

E-mail: jouni.laine@kyamk.fi Tel. +358 44 702 8516, Fax. +358 5 220 8555.

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