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DISTRIBUTION LOGISTICS SERVICE CAPABILITY AND PERFORMANCE ASSESSMENT

– Case study



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DISTRIBUTION LOGISTICS SERVICE CAPABILITY AND PERFORMANCE ASSESSMENT

The aim of this study is to evaluate the importance of logistics services and the service capabilities of logistics service providers contracted by the case company. Logistics service providers have been compelled to expand their businesses globally to be able to respond to the demand on the market. In addition, various kinds of logistics services are requested by customers. It is therefore challenging for the logistics companies to optimize their services to the expected level of service quality.

The study is made for a case company that is a global leader of sustainable power solutions for marine and oil and gas industry customers. Its logistics operations are complex due to the widespread network of suppliers and factories, vast amount of goods constantly being transported internationally, and goods being large and heavy units. This research is focusing on the case company's outbound deliveries to customers.

The results of the research show that there are service quality gaps in certain logistics service items provided by logistics service providers. Often the reason for the service quality gap is poor communication of service expectations, which results in that service provider's service performance is experienced being on low level by logistics service user.

The text has been sanitized. Chapters 4.3, 4.4, 5, 6 and appendices have been removed from published version. Please contact the author of the thesis for further information.

KEYWORDS:

Logistics service provider (LSP), logistics performance, performance assessment, service capability, distribution logistics

OPINNÄYTETYÖ (YAMK) | TIIVISTELMÄ

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JAKELULOGISTIIKAN PALVELUKYKY JA SUORITUSKYVYN ARVIOINTI

Tutkimuksen tavoitteena on arvioida logistiikkapalvelujen tärkeys ja kohdeyrityksen sopimuksellisten logistiikkapalvelujen tarjoajien palvelukyky. Logistiikkapalvelujen tarjoajat ovat olleet pakotettuja laajentamaan liiketoimintaansa globaalisti pystyäkseen vastaamaan kysyntään markkinoilla. Sen lisäksi asiakkaat vaativat kasvavassa määrin erilaisia logistiikkapalveluja. Siksi logistiikkayritysten on haasteellista optimoida palvelujen laatu odotetulle tasolle.

Tutkimus on tehty kohdeyritykselle, joka on johtava globaali kestävien voimaratkaisujen toimittaja meriteollisuudelle ja öljy- ja kaasuteollisuudelle. Yrityksen logistiset toiminnot ovat monimutkaiset johtuen laajasta toimittaja- ja tehdasverkostosta, suuresta ja jatkuvasta kansainvälisestä tavaravirrasta ja suurikokoisista ja painavista kuljetettavista tuotteista. Tämä tutkimus keskittyy yrityksen asiakastoimitusten logistiikkaan.

Tutkimuksen tulokset osoittavat että tietyissä logistiikkayritysten tarjoamissa palveluissa laatu ei yllä odotetulle tasolle. Usein syynä siihen on että palvelun laatuodotuksia ei kommunikoida tarpeeksi hyvin logistiikkayritykselle. Se vuorostaan johtaa siihen että palvelun käyttäjä kokee palvelun tarjoajan palvelusuorituksen olevan huonolla tasolla.

Tekstiä on muokattu. Luvut 4.3, 4.4, 5, 6 ja liitteet on poistettu julkaistusta versiosta. Mikäli haluat lisätietoa ota yhteys opinnäytetyön tekijään.

ASIASANAT:

Logistiikkapalvelujen tarjoaja, logistiikan suorituskyky, suoritusarviointi, palvelukyky, jakelulogistiikka

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LIST OF ABBREVIATIONS (OR) SYMBOLS

LSP	Logistics Service Provider (Rushton & Walker 2007)
SLA	Service Level Agreement (Rushton & Walker 2007)
3PL	Third-party logistics company
4PL	Fourth-party logistics company

1 INTRODUCTION

The first chapter of the thesis is a short introduction to the topic. Research background is followed by research problems and objectives in the subchapters. The structure of the thesis will be clarified in the fourth subchapter.

1.1 Research background

The importance of logistics has increased in the past two decades due to risen cost awareness of manufacturing and distribution, and the fact that companies have expanded their businesses globally. This has resulted in that logistics service providers (LSPs) have been compelled to expand their service range to be able to respond to the demand on the market. In addition to service of different modes of transportation, e.g. sea, road, air and rail transportations, there are numeral other requirements that customer company may need. These services can include packing, labelling, reverse logistics and package sequencing to name a few. (Rushton & Walker 2007, 1-5) To realize the benefits of the logistics concept, it's essential to cover the logistics logic from suppliers to final customers. Donald Waters (2010, 3) states that "*Logistics management is essentially an integrative process that seeks to optimize the flows of materials and supplies through the organization and its operations to the customer.*" To realize the benefits of the logistics concept, it's essential to cover the logistics logic upstream to suppliers and downstream to final customers. (Waters 2010, 4) This thesis is a study about the service capabilities and performance of logistics service providers (LSPs) contracted by the case company for the downstream logistics of its products.

1.2 Research problem and scope

Many theses are written on the case company, but its downstream logistics to customers and LSP network performance haven't received much theoretical attention. The company works in a multinational project management environment delivering wide product scopes, including a full range from small parcels to heavy haul equipment to customers. Mode of transportation is usually chosen between sea, road or air. Rarely is rail transportation an option because the final destination is commonly a shipyard, and the railway infrastructure seldom provides the opportunity to reach the final destination in an optimized way. The case company's internal and external suppliers, and customers are globally widespread. The logistics system between suppliers, factories and customers is consequently challenging in many ways. Not only the size of the system is puzzling logistics management, but often transportation routes are complex and difficult to manage within a limited time frame given, especially, when it comes to heavy haul equipment such as marine engines, propulsion systems, storage tanks for liquefied natural gas (LNG), and lately in a growing manner different kinds of power generation modules. Therefore, LSPs are important partners and coordinators for the case company that is striving for on-time deliveries from suppliers and consolidation points to its customers. LSPs such as 3PLs are the interface to end customers in the delivery of physical deliverables. It is imperative that the performance of 3PLs is on high level considering e.g. communication and IT system services. Traditionally the price of services is crucial when deciding on contracting a 3PL, but quality should not be endangered by choosing a low cost transportation option. A 3PL is responsible for the actions of its network carriers, warehouse operators, brokers etc. A low price can mean that some party in this chain of logistics companies is not qualified enough to provide good service, adequate equipment or requested overhaul. It is a tricky game for the forwarder to decide on the risk it wants to take jeopardizing quality while aiming for the low price and deal with customer company. To manage risks, the case company enforces a framework agreement with all LSPs that want to offer their services. Yet, the agreements are strategic, and if there are agreed prices the agreements are reviewed only on

annual or biannual basis. The daily operational decisions and transportation bookings are not directly monitored through agreements but they are made based on best options considering price, time and risks.

Considering the status quo described above the problem definitions of this thesis are the following:

- *Which LSP performance areas are important to case company?*
- *How are LSPs performing today with regards to service capabilities valued by logistics experts in the case company?*
- *Is there a gap between the expected service and performance of LSPs?*

1.3 Research objectives

The objective of the thesis is to collect valuable theories for the purpose of sustainable development of interaction between case company and LSPs) to enhance logistics performance. Based on the outcome of the research case company will have a clear picture of development areas that need special attention. Furthermore, the fundamental study evaluating service capabilities and performance of LSPs that is done through this research should give ideas for future development for logistics management.

The main objectives could be further exposed by following questions: Which performance areas are commonly evaluated when assessing LSPs? Which elements of logistics services should be evaluated for the case company? Is the level of service corresponding to the need of the case company? How could service performance of LSPs be enhanced?

1.4 Structure of the thesis

The thesis is divided into a theoretical and an empirical part. Chapters 2 and 3 consist of the theoretical framework that supports chapters 4 and 5 which contain

the empirical research. Results of the empirical study is presented in chapter 6 along with conclusions and recommendations.

Chapter 1 presents background information for the topic, research questions and objectives, and the structure of the thesis. Chapter 2 leads the way from the basic definitions in logistics to outsourced logistics services. LSP performance substance is introduced in chapter 3. It brings into the light the values that are used in the empirical part that follows in the next chapters.

Chapter 4 unveils the status quo in logistics business in the case company. Also the research method is discussed. Chapter 5 is a thorough walkthrough of the actual research and findings. In addition to recommendations, chapter 6 suggests topics for further research. References used in the thesis are listed after chapter 6.

2 ROLE OF LOGISTICS SERVICES IN CUSTOMER DELIVERIES

2.1 Introduction to logistics

The aim of chapter 2 is to introduce business logistics and its role in customer deliveries. It will start with definitions of logistics activities and moving through logistics outsourcing to logistics service quality.

2.1.1 Definition of logistics activities

There are a vast variety of definitions for logistics. A business perspective definition for logistics, which also suits well for the case company in this thesis, is *“the process of planning, implementing, and controlling the efficient, cost effective flow and storage of raw materials, in-process inventory, finished goods and related information from point of origin to point of consumption for the purpose of meeting customer requirements”* (www.logisticsworld.com/logistics.htm). In contradiction to many other definitions it heightens the purpose of meeting customer requirements. Customer requirements, then again, can be further described as logistics activities.

Generally production related logistics activities can be categorized in *supply logistics*, *internal logistics* and *distribution logistics*. Supply logistics takes place before production and includes the supply of raw materials and components according to the production plan. Internal logistics includes all logistics activities in the production plant, such as storing, picking and moving, and serves the production process as material is needed. Distribution logistics activities, e.g. storage and distribution, take place once goods are moving out from a production plant. (Ghani 2013, 5) This thesis is focusing on distribution logistics activities and further categorization of the activities will follow in later chapters.

2.1.2 Logistics planning and project logistics

Logistics planning is a frequently used term in the case company. However, observation has taught that there are varying opinions on what logistics planning actually is. Usually logistics planning is mentioned in operational project related logistics. It is worthwhile taking a look at what literature is saying about it.

Logistics planning can be divided to three separate decision-making groups depending on the time horizon the plans are made for. 1) Strategic decisions have long-term effect and involve large financial investments. Usually, these are plans for a time horizon more than a year. 2) Tactical decisions are made based on using the resources and forecasts available, and they are made every month, season or year. 3) Operational decisions are daily or weekly plans for the personnel or material. (Ghiani 2013, 19) To be successful in planning logistics the logistics manager should have capabilities in constructive thinking, organizational competencies, and strong understanding of potential solutions, project specific requirements and the imperatives of operative logistics (Gudehus & Kotzab 2012, 35).

Project logistics is a term used for temporary logistics activities performed in major projects in alternating locations. Central tasks of logistics companies that are specialized in project logistics are development of temporary logistics networks, assignment of specialized service providers, and management of the logistics network. (Gudehus & Kotzab 2012, 29)

2.1.3 Objectives of logistics

Traditionally the core objective of logistics is to develop and implement the best practice for overall logistics performance that satisfies customer's expectations at a realistic total cost. Yet, innovative companies understand that well-designed and operated logistics potentially gives competitive advantage. (Bowersox & Closs 1996, 12) Today the trend is that companies are focusing more and more

on ecological sustainability also in logistics. Examples of activities promoting environmental performance in logistics are;

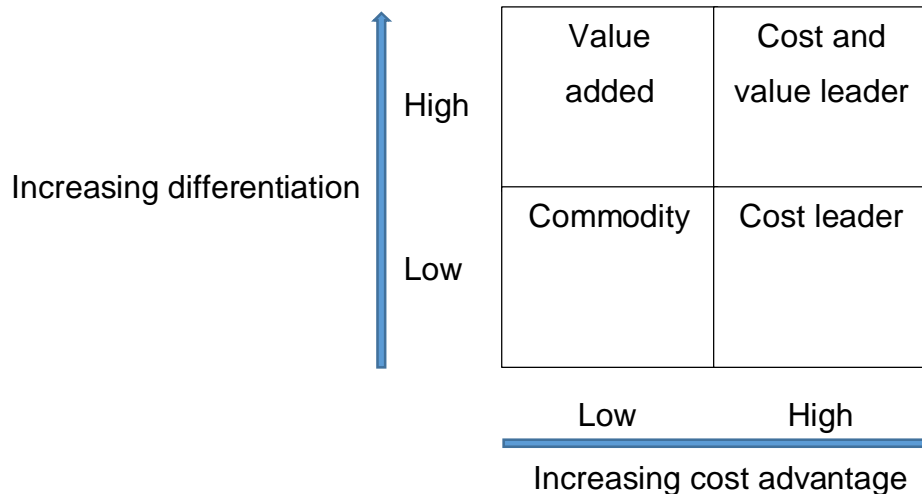
- Environmentally friendly design of transportation and reusable packing,
- Auditing suppliers for their ecological values, or purchase goods that are certified for environmental compatibility,
- Involving logistics service providers (LSPs) when designing environmental solutions on operational, tactical and strategic level,
- Measuring and evaluating environmental impact of logistics.

The current megatrends are complicating logistics managers' work. There is an increasing demand to master networks due to globalization, security requirements and need to protect the environment. Furthermore, business requirements such as customer centricity require reliable, flexible and cost-efficient logistics activities. Consequently, logistics managers would need to be involved in end-to-end business operations and realize a holistic responsibility of logistics in companies. The success in the global networks is dependent on how well emerging trends are identified and related activities integrated to values, strategies and operational logistics systems. (Waters 2010, 43-47)

2.2 Value-adding logistics services

Logistics is generally seen as a necessary function in business. In contradiction to logistics being assumed as only a cost, the current trend is that logistics managers see it as a value-adding service. (Rutner & Langley 2000, 73) Customers are today more sensible to value, but it doesn't necessarily mean value for money. Money is still a critical factor in decision making, but customers are expecting more benefits and to a lower cost. To be able to obtain a competitive advantage it is a must for suppliers to find out ways to deliver according to the demand on the market. The picture 2.1 below is Michael Porter's basic argument of competitive advantage. It claims that either should a company try to become a low cost producer or a differentiated supplier to be successful on the market. A low cost leader will not be successful if its product is not perceived as comparable

or sufficient by customers. Yet again, a differentiator will not be successful if its price exceeds the extra cost of differentiation. (Porter 1998, 11-15)



Picture 2.1 Porter's competitive advantage (Porter 1998, 12)

In practice Porter's model isn't telling the entire truth. Customer may try to avoid a supplier that is only focusing on being the cost leader, because the expectations of the products are low. The imperative is to add perceived value of purchased products to customer. Customer is willing to pay more if level of benefit is increased or there is a potential cost saving in horizon. Consequently, the definition of customer value is the following:

$$\text{Customer value} = \frac{\text{Perceived benefits}}{\text{Total cost of ownership}}$$

The perceived benefits embrace product related but also service related complements. The total cost of ownership reflects all costs in the relationship, not merely the product cost itself. (Waters 2010, 22-23)

Logistics management can affect both the perceived benefits and total cost of ownership. Therefore, it is an effective tool to impact customer value. "Logistics

management is essentially an integrative process that seeks to optimize the flows of materials and supplies through the organization and its operations to the customer. It is essentially a planning process and an information-based activity." (Waters 2010, 3) LSPs competitiveness depends extensively on the company's ability to add value to its client. This is possible to achieve by constantly improving the supply chain performance through cooperation with clients, learning their business operations and introducing innovations. (Panayides, Photis & So 2005)

2.3 Third-party logistics

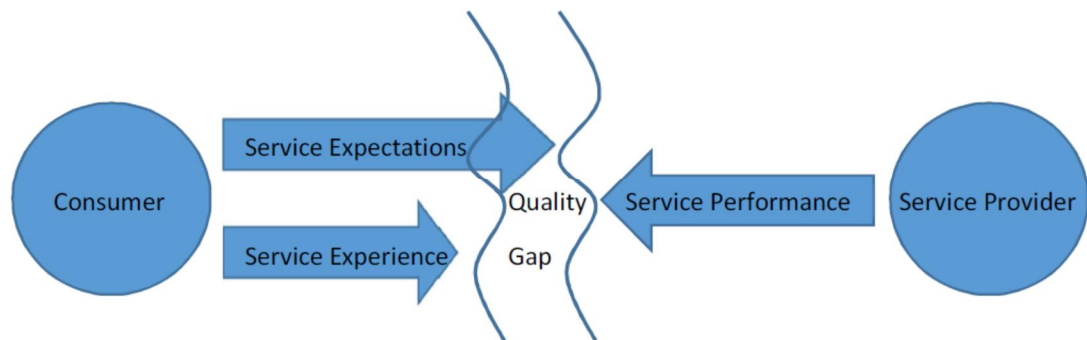
The traditional logistics and transportation services provided by transport and trucking companies have converted into smaller segments of specialized services. New channels of services, such as on-line services and real time tracking, are enabled through the development of information technology. Yet, the driving force of development in logistics are the demands of customers, and the urge to enhance the relationship by improved services that fulfill the demands. Often logistics service providers (LSPs) undertake a strategic role in client's supply chain in attempt to expand its scope of business. (Autere, Bask, Kovács, Spens & Taniskanen 2008, 57) LSPs are external companies that manage outsourced logistics on behalf of shippers or customers. They are also known as third-party logistics companies (3PLs). (Rushton & Walker 2007, 5) LSPs add value to customers by offering a variety of different logistics services. The benefits for client are that it can concentrate on core competencies and management of logistics including cost control, finding new global solutions, and improving overall performance etc. Logistics services are bought internationally, which at the end results in that service processes of LSPs need to be fast, reliable and cost efficient. (Autere & al. 2008, 57-58)

2.4 Customer deliveries and service quality

Service quality is crucial for the success of a company. Superior service quality is a competitive advantage on the market, and often customers are willing to pay

more for better service. Customers are expecting good service before and after buying a product. Looking at it from service provider's angle, service is a great chance to provide something non-material that is worth paying for. According to Ralf Lisch (2014) service *"is a difficult task that requires distinctive expertise, elaborate skills, experience, sensitivity and empathy"*. There are varying kinds of services. Transportation is a typical service that is contracted by people but performed on goods. (Lisch 2014, 8-10)

The picture 2.2 below illustrates a simple approach to service quality and customer satisfaction described as a gap between service expectations and perceived service experience. (Lisch 2014, 12)



Picture 2.2 Service quality gap

A customer is expecting a certain level of service, and is comparing that to the service experience. The quality gap illustrates the gap between experienced service and expected service. This gap defines the level of service quality and consequently customer satisfaction. It is important for service provider and customer to negotiate a joint understanding of the expected service performance. When expectations are communicated the service provider has a chance to fulfil the expectations which will create customer satisfaction. In logistics it is very common that service provider is easily changed for another. Service performance happens in a competitive environment, and the crucial competition is about who is meeting the expectations best. (Lisch 2014, 12-13)

3 LSP PERFORMANCE AND RELATIONSHIP

Chapter 3 is a walkthrough of theoretical background in the area of logistics service performance. This chapter is aiming to discover key elements that will be used in the empirical part of the thesis.

3.1 Logistics performance and service capabilities

LSPs can easily invest in physical resources e.g. a warehouse but the investment doesn't necessarily result in enhanced performance. Improved performance is reliant on the means LSPs are using to control the resources. Kee-hung Lai assumes service capability as "the ability of LSPs to create and deploy resources to satisfy the logistics needs of their customers in pursuit of better service performance". (Kee-hung Lai, 2004) The fundamental aim for monitoring outsourced logistics, i.e. services provided by LSPs, is to measure whether agreed service level is met at a satisfactory cost. A typical aspect is monitoring a plan against the progress, e.g. considering the budget. Yet, even more relevant goals are accurate, relevant and on-time information on costs, operational performance and changes and customer service levels, and regular information to customer as agreed. (Rushton & Walker 2007, 318-319)

There are a number of ways to monitor logistics operations. A combination of many ways to monitor outsourced logistics is likely to include the following activities:

- Monitoring against the contract
- Monitoring against the service level agreement (SLA)
- Budgetary control
- Management information and metrics
- Review meetings
- Activity forecast/redefine targets

- Audits through open book
- Incentivization of the management fee
- Constructive review process to include continuous improvement
(Rushton & Walker, p. 330-331)

A service-level agreement (SLA) is usually complementary to the main agreement. It should, in addition to the outsourcing services to be provided, specify the level of service to be accomplished. (Rushton & Walker 2007, 331)

3.1.1 Performance measurement

Logistics performance measurement is important for resource controlling as logistics withholds potential of competitive advantage (Bowersox & Closs 1996, 668). Key measures can be identified for measuring logistics operations as a whole or major elements. These measures are often called Key Performance Indicators (KPIs). Usually, KPIs measure performance of individual operation elements and their costs-efficiency. Rushton & Walker (2007) categorizes KPIs into financial, customer, sales, process, people and supplier KPIs. (Rushton & Walker 2007, 335-336) Depending on the level of outsourced disciplines, part of these KPIs can be considered as internal performance measures. While, in this thesis focal point is the external logistics service providers. External performance measures are differentiated by Bowersox and Closs (1996) as follows;

- Customer Perception Measurement
- Best Practice Benchmarking
- Comprehensive Supply Chain Measurement
- Customer Satisfaction/Quality
- Time
- Costs
- Assets

(Bowersox & Closs 1996, 675-681)

The traditional way of measuring performance is with financial indicators. Financial indicators are often linked directly with a company's financial result and hence the importance is obvious. Nonfinancial indicators are denominators for performance without monetary value. Examples of nonfinancial indicators are;

- Delivery precision
- Defect rate
- Number of complaints
- Customer satisfaction
- Quality of work life
- Innovation rate
- Brand image strength

(Andersen 2007, 71)

3.1.2 Logistics performance measure areas

Performance measurement can be described as the *“evaluation of effectiveness and efficiency of completing a given task. Effectiveness is the extent to which goals are accomplished. Efficiency is a measure of how well resources are utilized.”* (Prahinski & Benton, 2004) To be able to evaluate logistics performance it is accommodating to differentiate the services, i.e. above mentioned *given tasks* that are generally provided by LSPs. A study made by Kee-hung Lai (2004) promotes a list of 24 service items that are commonly recognized in logistics. The service items are the following;

- 1) Freight forwarding
- 2) Custom clearance
- 3) Tracking and tracing shipment information
- 4) Warehousing
- 5) Information systems management
- 6) Performance reporting
- 7) Web-based linkages
- 8) Receiving/sending shipment notices using EDI

- 9) Logistics planning
- 10) Picking and packing
- 11) Billing function
- 12) Repackaging/re-labeling
- 13) Inventory management
- 14) L/C compliance and negotiation
- 15) Order processing
- 16) Fleet management
- 17) Receiving purchase and/or sales orders from customers EDI
- 18) Cross-docking
- 19) Assembling/re-assembling
- 20) Customer-specific label printing
- 21) Bar code scanning
- 22) Interfacing with ERP systems; e.g. SAP
- 23) Call center operations
- 24) Purchasing/procurement

(Kee-hung Lai, 2004)

3.1.3 Service capability

Chiung-Lin Liu and Andrew C. Lyons (2011) made a research which aimed to evaluate the relationship between the service capabilities and performance of UK and Taiwanese 3PL providers. The key service capabilities from customer perspective used in the study are listed in table 3.2 below. The added value of this list is that it's more detailed than Kee-hung Lai's version, and it has item grouping of the key service capabilities which is convenient surplus for the empirical part of this thesis. The groups are;

- 1) Transportation-related capabilities
- 2) Transportation planning & management-related capabilities
- 3) Warehousing/inventory-related capabilities
- 4) Value-added services

- 5) Information technology
- 6) Product design and marketing support-related capabilities
- 7) Finance-related capabilities
- 8) Consulting services-related capabilities
- 9) Other customer service

The added value of categorizing services in groups is that it makes it easier to rank the importance of service items, and consequently find the most valuable areas for development. Kee-hung Lai's list of 24 items is basically complete but the items are broken to smaller pieces in Chiung-Lin Liu and Andrew C. Lyons categorization. All service items listed in the two studies are not effective for case company, or at least not valuable to include in the study due to low usage of them. Thus, I will use a combination of these two itemizations and personal experience from working in the company to create an own categorization of service items that is suitable for the case company and the scope of this thesis.

Table 3.1 Comparison of logistics service items

Comparison of logistics service items	
Kee-hung Lai	Chiung-Lin Liu & Andrew C. Lyons
Freight forwarding	<i>Transportation-related</i> Inbound transportation Outbound distribution Overseas sourcing Overseas distribution Merge in transit/Freight (de)consolidation Direct transportation service Expedited delivery Emergency transport
Customs clearance	
Tracking and tracing shipment information	
Warehousing	
Information systems management	
Performance reporting	
Web-based linkages	
Receiving/sending shipment notices using EDI	
Logistics planning	
Picking and packing	
Billing function	
Repackaging/re-labeling	
Inventory management	
L/C compliance and negotiation	

Order processing	Freight forwarding/freight brokering
Fleet management	<i>Warehousing/Inventory-Related</i>
Receiving purchase and/or sales orders from customers EDI	Warehousing/Storage with goods reception
Cross-docking	Customer spare parts
Assembling/re-assembling	Storage of products with special requirements
Customer-specific label printing	Inventory management/Inventory replenishment
Bar code scanning	Bonded warehousing
Interfacing with ERP systems; e.g. SAP	Pick and pack
Call center operations	Order processing
Purchasing/procurement	Order fulfilment
	Cross-docking
	Product testing/inspection/quality control
	Product returns
	Reverse logistics
	<i>Value-added services</i>
	Labelling/Marking
	Packaging
	Relabelling/Repackaging
	Kitting
	Assembly/Reassembling/Customization
	Repair
	<i>Information Technology</i>
	Bar code scanning
	RFID
	Electronic commerce
	Tracking and tracing shipment information
	Logistics information systems
	Order entry/management systems
	Selection of software
	Interfacing with ERP systems; e.g. SAP
	<i>Product design and marketing support-related</i>
	Packaging design
	Product configuration/product design
	Promotional support
	Exhibition
	<i>Finance-related</i>
	Invoicing/billing function
	Freight bill auditing/payment
	Billing the final customer

Factoring/financing service
Insurance service
<i>Consulting services</i>
Logistics planning
Supply chain design
<i>Other customer service</i>
Customs brokerage
Call center operation/after sales service
Management/performance reports
Procurement of materials

The study of Chiung-Lin Liu and Andrew C. Lyons makes a difference between 3PL service capabilities and 3PL operational performance. As can be seen in table 3.2 there are differences in valued service capabilities between Taiwan and UK. However, appreciated 3PL operational performance items are similar in the top ten rankings. It appears in the study that in both countries it is acknowledged important that deliveries are on time and accurate, they're undamaged, customer satisfaction is high, delivery lead-times are short, customer complaint rate is low, and expedited shipments are moved efficiently. (Liu & Lyons, 2011)

Table 3.2 Ranking of logistics services in Taiwan and UK

Chiung-Lin Liu & Andrew C. Lyons	Ranking importance of 3PL service capabilities to customers in;	
	Taiwan, rank #	UK, rank #
Services		
Inbound transportation	7	
Outbound distribution	2	1
Rate negotiation	5	3
Warehousing/Storage with goods reception	9	7
Inventory management/Inventory replenishment		9
Order fulfilment	4	2
Bar code scanning	8	
Tracking and tracing shipment information	1	4
Logistics information systems	3	6
Order entry/management systems	6	
Interfacing with ERP systems; e.g. SAP	10	5
Billing the final customer		10
Management/performance reports		8

By observing the values there is more to discuss about the importance of services. In table 3.3 below the ranking is categorized to give a picture of which areas of service are mainly valued in UK and Taiwan. Analysis tells that when the top ten ranked lines are categorized under the nine given service groups, it can be realized that the categories *value-added service*, *product design and marketing related* and *consulting services* don't get any top ten ranking positions. The basic operational transportation work including transportations, transportation planning and rate negotiation appear important. But even more so does information technology related services which gets most ranking positions in top ten when both countries are included. Managerial items seem to have a slightly higher importance in the UK while Taiwan is focused on basic operational logistics and IT. These are broad researches in two countries. The values for one particular company is expected to give clearly varying results as businesses have different needs and expectations of logistics services. The needs can actually be broken down to product level. Customer's choice of product and the nature of the product are determinants of the supply chain pipeline (Christopher & Towill 2002, 1). Sizes, weights and manufacturing locations of products are affecting the logistics service needs for the case company of this thesis. Evaluation areas of the case company will be discussed further in chapter 5.2.

Table 3.3 Categorized ranking in Taiwan and UK

Chiung-Lin Liu & Andrew C. Lyons	Ranking importance of 3PL service capabilities to customers in;	
	Taiwan, rank #	UK, rank #
Services		
<i>Transportation-related</i>		
Inbound transportation	7	
Outbound distribution	2	1
<i>Transportation planning</i>		
Rate negotiation	5	3
<i>Warehousing/Inventory-Related</i>		
Warehousing/Storage with goods reception	9	7
Inventory management/Inventory replenishment		9
Order fulfilment	4	2
<i>Value-added services</i>	N/A	N/A
<i>Information Technology</i>		
Bar code scanning	8	
Tracking and tracing shipment information	1	4
Logistics information systems	3	6
Order entry/management systems	6	
Interfacing with ERP systems; e.g. SAP	10	5
<i>Product design and marketing support-related</i>	N/A	N/A
<i>Finance-related</i>		
Billing the final customer		10
<i>Consulting services</i>	N/A	N/A
<i>Other customer service</i>		
Management/performance reports		8

3.2 Relationship

In business environment emphasis is on developing long-term cooperative relationships with important suppliers (Prahinski & Benton, 2004). Long-term relationships are especially beneficial in service industries where continuous operations reduce costs per transaction or continually improves customer satisfaction. High-quality logistics service is crucial to meet a demand of on-time deliveries in a cost-efficient fashion. (Daugherty, Stank & Rogers, 1996) The goal of a relationship

between logistics service provider and contractor is a partnership where both parties look for ways to lower costs and improve the service. On the contrary, many relationships are focusing on the contract arguing about minor details which makes the business culture between the parties confrontational. Two main means towards a healthy partnership are improved communication and well defined requirements and procedures. (Rushton & Walker 2007, 254)

A relationship is successful when both parties are collaborative. For instance, the customer can improve its supply chain to enable cost reductions and service improvement. Whereas the service provider can assist customer with strategic matters and value adding services. (Rushton & Walker 2007, 298-299) "*A strategic partnership is created when both parties make credible commitments to the relationship in reciprocal manner.*" This indicates that the service is highly customized to requirements of customer, and service provider is involved in development projects and process development. Consequently, the relationship is durable and mutually reliable. (Autere & al. 2008, 286) Monica Nyholm (2011) found in her study "Activation of Supply Relationships" in the Turku logistics cluster made at Åbo Akademi University that pros of long-term relationships are many while only one particular con could be recognized. The disadvantage is that customer's logistics managers may lose the critical touch by getting too well acquainted with the service providers. This can carry a risk of higher prices in the belief that service relationship can be assumed. Advantages that Nyholm found were related to trust in each other and quality, loyalty in cooperation, efficiency, dependency on specialized skills and services and accustomed ways of working with familiar people among others. (Nyholm 2011, 150-153)

3.3 Flexibility

Flexibility can be explained as a company's ability to take care of customer service requests that are out of the ordinary. These services requested from logistics companies can be related to e.g. sudden changes in ship-to destinations, support

in new marketing programs, product launching or recall related logistics, extraordinary services requested by certain end-customers, and product or packing adjustments while in transit. Often flexibility is realized as the key to logistical competence superiority. (Bowersox & Closs 1996, 71) It is important for both the LSP and its customer to understand the pace of changes in the business environment. Changes can, in addition to the above mentioned, be related to staff in the companies or company processes. Even mergers and acquisitions may affect the relationship and performance. General points to describe outsourcing relationship flexibility should include:

- *a willingness to change direction when and where necessary;*
- *an acceptance that changes need to be incorporated within existing arrangements;*
- *a recognition that customer demands do change over time and that any working agreements need to be adjusted accordingly;*
- *Positive support in implementing any process developments.*

(Rushton & Walker 2007, 255-256)

4 RESEARCH METHODOLOGY AND THE CASE COMPANY

The purpose of this chapter is to present the research method used in this thesis, and give background information about the case company. The first two subchapters will focus on the research methodology. Chapter 4.3 will share a general view of the company and chapter 4.4 will look at the organization and logistics management more in detail.

4.1 Research methods

The study is performed in two phases. In the first phase data is collected through observation, and quantitative and qualitative interviews of logistics experts working in the case company. The aim of the first phase is to get a clear view of what are the expected and experienced service levels of contracted LSPs. The second phase consists of qualitative interviews of management in LSPs. The aim of the second phase is to collect data about current focus of services, development of business and innovation. After completing the two phases it is possible to analyze the results, and realize the potential service quality gap between the case company and the service provider. Service quality was discussed in chapter 2.5 and picture 2.2 illustrated the service quality gap.

4.1.1 Observation

While doing the research I am working in the case company and thus inevitably a participant of the group that is studied. Therefore, the importance of observation as research method is undeniable. Observation involves *“the systematic observation, recording, description, analysis and interpretation of people’s behavior”* (Saunders & al. 2009, 288). There are four roles a researcher can undertake as participant;

- 1) Complete participant;
- 2) Complete observer;
- 3) Observer as participant;
- 4) Participant as observer.

(Saunders et. al. 2009, 293)

In the study I assumed the role of participant as observer collecting experiential data. A participant as observer reveals the purpose as a researcher to gain trust from the group and consequently enhance his understanding in the subject. Experiential data refers to perceptions, feelings and changes experienced by observer in the research process. This includes possible changes in the roles and organizations of participants in the study. (Saunders & al. 2009, 294-296) However, the main focus of data collection relies on quantitative and qualitative interviews. Data was collected objectively to ensure a valid and reliable result. Objectivity in data collection stage means that data is collected accurately and completely, and that selecting is avoided in data recording (Saunders et. al. 2009, 194).

4.1.2 Quantitative data

Quantitative data is collected in this study as a part of interviews of operational personnel. Saunders et al. define quantitative data as “*numerical data or data that have been quantified*” (Saunders et al. 2009, 598). The collected data will define the areas which the second phase of the study, i.e. interview of LSP managers, and analysis part will focus on. The quantitative part is ranking LSP service items per importance and service satisfaction per service item. This creates an understanding of which service items should be in focus when case company is developing the cooperation with LSPs.

4.1.3 Qualitative interviews

Interviews can be categorized into three different types. The questions in (1) structured interviews are pre-formulated, the sequence of the questions and sometimes also timetable are regulated. In (2) semi-structured interviews some questions are pre-formulated but new questions may occur during the interview. In (3) unstructured interviews the interviewees basically have a freedom of speech and there are only few questions if any. (Myers 2013, 121-122)

Along with a quantitative part structured interviews were chosen for the first phase of this study because there are certain questions that expect direct answers. Yet, a partially free word was given to interviewees in both the quantitative and qualitative parts in the first phase. Experience from the field tells me that people are often talkative and have own opinions about best practices in logistics. It is added value to the study to have varying opinions on the table, which was enabled by a freedom to elaborate ideas in the interviews.

Due to budgetary restrictions and geographical distance to interviewees the interviews were mainly done as synchronous one-to-one electronic interviews. Synchronous electronic interviews refer to interviews held real-time using the Internet and organizations' intranets. As there was a possibility to do it, also face-to-face interviews were performed in the second phase of the research. The pros of face-to-face interviews are that they allow the researcher to observe interviewee's uncertainty, and clarify doubts and ensure questions are correctly understood (Sekaran & Bougie 2013, 124).

4.1.4 Qualitative data analysis

Qualitative research produces lots of data, and it is important to have a plan for how to elaborate it (Myers 2013, 26). The qualitative data analysis aims at producing conclusions out of this commonly vast amount of data. The steps of qualitative data analysis can be termed data reduction, data display and data coding.

The process isn't linear from data reduction to coding. It's a continuous work between the steps where presentation set-up of the data in data display phase may affect data reduction, e.g. the categorization of data. Furthermore, while developing ideas in the data coding phase new ideas may emerge to presentation or categorization. The terms are clarified in table 4.1 below.

Table 4.1 Steps of data analysis

Data reduction	Selecting, coding and categorizing data
Data display	Presenting the data
Data coding	Develop ideas, draw conclusions, feedback to data display, feedback from preliminary conclusions to data categorization

(Sekaran & Bougie 2013, 336-337).

Nature of studies can be either exploratory, descriptive, or causal. Nature is defined by the stage in which knowledge about the research topic is. In the exploratory study some facts are known but more is needed to build a viable theoretical framework. Descriptive studies aim to describe characteristics of phenomena in a certain point of interest. A causal study tries to find one or more factors that are causing a problem or change. (Sekaran & Bougie 2013, 96-98) The nature of this study is descriptive.

The methods used in this study were stated in chapter 4.1.1, 4.1.2 and 4.1.3 but a more detailed description follows in chapter 4.2.

4.2 Stages of the research

The first phase of the research, i.e. internal interviews, was executed in October 2015. There were two different interviews; operational and strategic. Six operational logistics managers were interviewed with quantitative questions and related

open questions. Four senior logistics managers in strategic positions were interviewed with semi-structured questions. One of the strategic managers also has an operational role in the organization, and thus he was interviewed also for his operational point of view. He was also chosen as the first to be interviewed, because of the potential of feedback for both question forms; strategic and operational. The input was valuable for improving interviewing techniques for the upcoming interviews. Interviews were performed through the IT-managed platform *Skype for Business* which enables audial and visual communication, simultaneous chatting, and the recording of them. The only exception was the face-to-face interview of one strategic logistics manager. The first interview, which included two parts, lasted one and a half hours which meant that 45 minutes would be a suitable time to reserve for the rest of the interviews. The face-to-face meeting lasted double the time compared to Skype meetings, mainly because discussion was more open and active.

The second phase of the research, i.e. interviewing LSP managers, was executed in late February and early March 2016. All three companies' representatives were interviewed with identical themes. Interviews were performed as unstructured interviews with only themes as guidelines, which resulted in varying discussions. Consequently, the sequence of themes in the interviews varied somewhat. All interviews were face-to-face meetings, and they lasted approximately two hours.

REFERENCES

Andersen, Bjorn, Business Process Improvement Toolbox, July 2007, ASQ Quality Press

Autere, Vesa, Bask Anu H., Gyöngyi Kovács, Spens, Karen and Tanskanen Kari, Beyond business logistics: selected full papers at the 20th Anniversary NOFOMA 2008 conference held in June 2008 at Hanken in Helsinki, Finland, 2008, Saarijärven Offset

Björklund, Maria and Forslund, Helena, The purpose and focus of environmental performance measurement systems in logistics, Vol. 62, Issue: 3, pp. 230-249, International Journal of Productivity and performance Management

Bowersox, Donald J. and Closs, David J., Logistical Management: The Integrated Supply Chain Process, 1996, McGraw-Hill

Christopher, Martin and Towill, Denis R., Developing Market Specific Supply Chain Strategies, Vol. 13 Iss 1 pp.1-4, 2002, The International Journal of Logistics Management, Emerald Insight

Daugherty, Patricia J., Stank Theodore P. and Rogers, Dale S., Third-Party Logistics Service Providers: Purchaser's Perceptions, Volume 32, Issue 1, March 1996, International Journal of Purchasing and Materials

Ghiani, Gianpaolo, Essentials in operations research and management science: introduction to logistics systems management (2nd edition) P. 319- January 2013, John Wiley & Sons Ltd.

Ghiani, Gianpaolo, Laporte, Gilbert and Masmanno, Roberto, Introduction to logistics systems management, 2013, John Wiley & Sons Ltd.

Gudehus, Timm and Kotzab, Herbert, Comprehensive logistics, 2012, Springer Science & Business Media.

Kee-hung Lai, Service capability and performance of logistics service providers, Volume 40, Issue 5, September 2004, Transportation research part E: Logistics and transportation review.

Lisch, Ralf, Measuring Service Performance: Practical Research for Better Quality, March 2014, Gower Publishing Limited

Liu, Chiung-Lin and Lyons, Andrew C., An analysis of third-party logistics performance and service provision, Vol. 47, Issue 4, July 2011, Pages 547-570, Transportation Research Part E: Logistics and Transportation Review.

Myers, Michael D., Qualitative Research in Business & Management, 2013, SAGE Publications Ltd.

Nyholm, Monica, Activation of supply relationships: a study of main providers in the Turku logistics cluster, 2011, Åbo Akademi University Press.

Panayides, Photis M. and So, Meko, Logistics service provider-client relationship, *Transportation Research Part E: Logistics and Transportation Review*, Volume 41, Issue 3, May 2005.

Patton, Michael Quinn, *Qualitative evaluation and research methods*, 1990, Sage.

Prahinski, Carol and Benton, B.C. Supplier evaluations: communication strategies to improve supplier performance, Volume 22, Issue 1, February 2004, *Journal of Operations Management*

Porter, Michael E., *Competitive advantage – creating and sustaining superior performance*, 1998, The Free Press.

Rachan, Wilfred, *The effects of collaborative supply chain solutions on strategic performance management*. Leiden University Press, 2012.

Rushton, Alan and Walker, Steve, *International logistics and supply chain outsourcing: from local to global*, 2007, Kogan Page Limited.

Rutner, Stephen M. and Langley, C. John, Jr, Logistics Value: Definition, Process and measurement, *The International Journal of Logistics Management*, 2000, Vol. 11 Iss 2 p. 73-82, Emerald Insight.

Saunders, Mark, Lewis, Philip and Thornhill, Adrian, Research methods for business students, fifth edition, 2009, Pearson Education Limited.

Sekaran Uma and Bougie, Roger, Research Methods for Business – A Skill-Building Approach, 2013, John Wiley & Sons Ltd.

Waters, Donald, Global logistics: new directions in supply chain management, 2010, London: Kogan Page.

www.logisticsworld.com/logistics.htm