



LAUREA
UNIVERSITY OF APPLIED SCIENCES
Together we are stronger

Current-State Assessment and Improvement Recommendations for Third Party Logistics: A Case Study of Company X

Kautiainen, Niklas

2015 Leppävaara

Laurea University of Applied Sciences
Leppävaara

Current-state Assessment and Improvement Recommendations for
Third Party Logistics: A Case Study of Company X

Kautiainen Niklas
Degree Programme in
Business Management
Bachelor's Thesis
August, 2015

Kautiainen Niklas

**Current-State Assessment and Improvement Recommendations for Third Party Logistics:
A Case Study of Company X**

Year	2015	Pages	38
------	------	-------	----

The purpose of this thesis project is to examine and analyse third party logistics as a part of a supply chain and to recommend improvements based on the results. The thesis was commissioned by the case company, company X, who requested to remain anonymous for this thesis report. The emphasis of the research was on the service processes of the company.

The empirical section of this thesis is qualitative and is based on surveys, interviews, personal observations and related theory. The surveys were carried out on the customers of the company and the supervisors of the production, and an in-depth interview was held with the company's Chief Executive Officer. The current state of the company was described using the information obtained from the research. A SWOT analysis was used as a tool to find the weaknesses and strengths in the current state and recommendations for improvement were provided based on the results. The current state of the company shows strengths in its flexible and reactive IT system, flexible business model and large warehouse capacity with customized temperatures. The weaknesses are in information flow, staff training and allocation, utilization of new technologies and claims handling in delivery errors.

The following suggestions for improvement were given to the company: invoicing all services delivered to the customer, better utilization of the company business model and IT system, improved staff training and training for various tasks, analysis of the possible implementation of newer logistics technologies, improvements in information flow externally and internally by means of meetings and organized information flow structures, improving forecasting by reflecting past years' order amounts, providing better tools for reclamation handling and also clarifying the basis for invoicing.

Keywords Logistics, 3PL, SWOT, KPI, Service Process

Kautiainen Niklas

**Current-State Assessment and Improvement Recommendations for Third Party Logistics:
A Case Study of Company X**

Vuosi 2015 Sivumäärä 38

Tämän opinnäytetyön tarkoitus on tutkia ja analysoida kolmannen osapuolen logistiikkaa osana toimitusketjua ja tarjota parannusehdotuksia tutkimustulosten perusteella. Työ saatiin toimeksiantona yritys X:ltä, joka haluaa pysyä anonyyminä tässä opinnäytetyössä. Työn painopiste on yrityksen palveluprosesseissa.

Empiirinen osuus tässä opinnäytetyössä on kvalitatiivinen ja perustuu kyselyihin, haastatteluun, omiin havaintoihin, ja aiheeseen liittyvään teoriaan. Kyselyt suoritettiin yrityksen asiakkaille ja toiminnasta vastaaville työnjohtajille, sekä syvähaastattelu pidettiin yrityksen toimitusjohtajan kanssa. Yrityksen nykytila kartoitettiin tutkimuksesta saatujen tietojen perusteella. SWOT-analyysiä käytettiin menetelmänä heikkouksien ja vahvuuksien etsimiseen yrityksen nykytilassa ja parannusehdotukset tarjottiin näiden vastausten perusteella. Yrityksen nykytila osoittaa vahvuuksia sen joustavassa ja nopeasti reagoivassa IT-järjestelmässä, joustavassa yritysmallissa ja suuressa lämpötilasäädelyssä varastokapasiteetissa. Heikkouksia löytyi tiedonkulussa, työvoiman koulutuksessa ja kohdentamisessa, uuden teknologian hyödyntämisessä ja reklamaatioiden hallinnassa toimitusvirheiden osalta.

Seuraavat parannusehdotukset tarjottiin yritykselle: Kaiken ylimääräisen palvelun laskuttaminen asiakkaalta, yrityksen joustavan yritysmallin ja IT-järjestelmän parempi hyödyntäminen, henkilöstön parempi kouluttaminen, sekä kouluttaminen eri tehtäviin. Näiden lisäksi parannusehdotuksina tarjottiin uusien teknologioiden kustannusrakenteen arvioiminen, tiedonkulun sujuvoittaminen yrityksen sisällä ja ulkopuolelle säännöllisten kokousten ja organisoidun tiedonkulun kautta, parempi ennustettavuus tarkastelemalla aikaisempien vuosien menekkejä, tarjoamalla paremmat työkalut virheselvittelyyn, sekä laskutusperusteiden selventäminen.

Avainsanat Logistiikka, 3PL, SWOT, KPI, Palveluprosessi

Table of contents

1	Introduction	7
1.1	Case Company Background	7
1.2	The Aim of the Study	7
1.3	Structure and Demarcation of the Study.....	8
2	Theoretical Background.....	8
2.1	Logistics.....	8
2.2	Supply chain.....	9
2.3	Third-Party Logistics.....	10
2.4	Warehousing and Distribution.....	11
2.4.1	Automated Processes	13
2.4.2	Information Flows	14
2.4.3	Customer Service.....	15
2.5	Service Process	15
2.5.1	Improving Process Performance	16
2.5.2	Performance Indicators	17
3	Research Approach and Methods	17
3.1	Methodology.....	17
3.1.1	Needs Assessment	18
3.1.2	Documentation	18
3.1.3	Interviews.....	19
3.1.4	Surveys	19
3.1.5	Observations	19
3.1.6	SWOT-Analysis	20
3.2	Validity and reliability	20
4	Empirical Study.....	21
4.1	Service Process - Company X.....	21
4.2	Needs assessment	23
4.2.1	Surveys and Interview	23
4.2.2	Analysis.....	24
4.2.3	SWOT-Analysis of Company X	26
5	Conclusions and Improvement Recommendations.....	29
	References	32
	Illustrations	33
	Figures	34
	Appendixes	36

Used abbreviations and terms

FIN-pallet	Standard sized (1000x1200x145mm) pallet used in Finland
EUR-pallet	Standard sized (800x1200x145mm) pallet used in Europe
SWOT-analysis	A tool used in companies to analyse strengths, weaknesses, threats and opportunities of the company
FIFO	First in first out principle for the order of products moving through the process
LIFO	Last in First out principle for the order of products moving through the process
3PL	Third-party logistics which is an outsourced company specialized in logistics operations such as warehousing and transportation
WMS	Warehouse management system which is used as a tool to track movement and storage of products in a warehouse
KPI	Key performance indicator
Transbox	400 x 600 mm box with three different heights: 255 mm, 136 mm or 176 mm. All boxes can be piled up on each other and boxes with the same height can also be stacked inside each other. The boxes include a barcode on both sides. Material: HDPE. Reusable and washable by general equipment, liquids and methods used in logistics.

1 Introduction

1.1 Case Company Background

Company X is a third-party logistics company operating in the food industry. It's a medium sized company with around 50 customers in total. The company provides services from picking, storing, and shipping to transportation on the whole national level. The idea behind the business is to handle all the logistical aspects of the customers so they can focus on their core processes. By combining the shipments of various suppliers into one delivery is the main drive to cost-effectiveness for the customer when using Company X's services.

The company has two warehouses with a total of 8000m² of storage capacity. One of the warehouses is optimized for food products and the other for plant and food products that require warm temperature. Both warehouses are temperature controlled with cold areas having a temperature of 0-3 degrees Celsius and other areas 7-20 degrees Celsius depending on the temperature need of the products.

Around half, 80, of the overall staff of the company are its own employees and the rest are employees hired from various recruitment companies for the fluctuation of volumes during high and low seasons. The transportation services are outsourced to other companies.

1.2 The Aim of the Study

The aim of the study is to provide a current state assessment and improvement recommendations for Company X with a focus on service processes. The study is commissioned by Company X and the initiative for the research comes from the company's investment plans towards expanding its service offering.

A current state assessment is a critical step to any business when planning expansion and improvements with high cost investments as it reduces the risk of unnecessary investments and focus on wrong improvement aspects. The improvement suggestions helps the company to have their current operations on as good level as possible before implementing new services to their service model.

The research problem aims to respond to the following question:

- How can the service processes of the company be improved?

The research problem results to be broad and in order to meet the demarcation of the thesis and the needs of the case company, the following research questions have been created:

- Iq1. What are the weaknesses and strengths in the company's service processes?
- Iq2. How can the strengths be utilized more effectively?
- Iq3. How can the weaknesses be strengthened?

1.3 Structure and Demarcation of the Study

The structure of the thesis is divided into 5 parts: Introduction to the case company and to the study, theoretical background on the field of study, research methodologies, empirical data of the research, analysis of data and conclusions with improvement recommendations for the case company.

As the study is commissioned by Company X, changes were requested to the surveys by the company managers in order to fulfil the company's needs as well as possible. Therefore the scope of the study was broadened to contain areas beyond only service process performance. Also to documentations (i.e. amounts of claims, rate of picking errors, lines picked in respect to a specific time, cost of investments) access was denied for confidentiality protection reasons. The time span for the study is limited from September 2014 until February 2015.

2 Theoretical Background

2.1 Logistics

Logistics is a widely perceived concept that can be defined in numerous ways depending on the perspective of the observer.

The main components of logistics consist of transportation, inventory and warehousing. These components can be opened up into sub-functions and -systems each of which can be looked at as an operation of its own. All these elements vary by industry and therefore the concept of logistics has to be adaptable to changes according to its environment. (Rushton, Croucher, Baker 2014, 3-4)

Lai and Cheng (2009) on the other hand defines the key components of logistics to be customer service, order processing, inventory management and transportation. The concept of logistics comprehends the whole flow of materials and products from the source of the supply chain all the way to the final consumer. The general idea of relating logistics with only manufacturing is a narrow perspective as logistics is a highly integrated in the service sector as well. Logistics

adds value to a product by creating two utilities: time utility and place utility. Time utility refers to when something is needed to be delivered and place utility refers to where something is needed to be delivered. The ultimate goal of logistics is to cut down costs or to optimize incurred costs without affecting quality. (Lai & Cheng 2009, 35-44)

Besides material flow, logistics includes also information and cash flows. Logistics consists of the management of the material flow from the source to the end consumer so that the product is at the right place at the right time with minimal cost and other negative impacts. Logistics is the productive and cost-effective investments, planning of services and management of material flows with execution and follow-up. In addition logistics need to acknowledge and satisfy customer requirements which is the key element for successful business. (Logistiikanmaailma)

2.2 Supply chain

Supply chain, much like logistics, is a wide concept with various definitions. Even more often the two terms are mixed between each other.

Supply chain extends from the initial supplier all the way to the final consumer and includes all the activities and processes within this chain. The supply chain is built on five main processes which include: Inbound logistics, Operations, Outbound logistics, Sales and marketing, and Service. (Blanchard 2010, 6-7)

The supply chain consists of different organizations that manages and develops the logistics flows. The structure of the supply chain is defined by the industry, product characteristics and customers. The chain links a company with its suppliers to terminals and customers making it an entity which focuses on cost-effectiveness, customer service and adding value. The difference to the term "logistics" is that logistics is usually the management of material flows by one company or industry where as a supply chain aims to manage the whole network of operations. (Logistiikanmaailma)

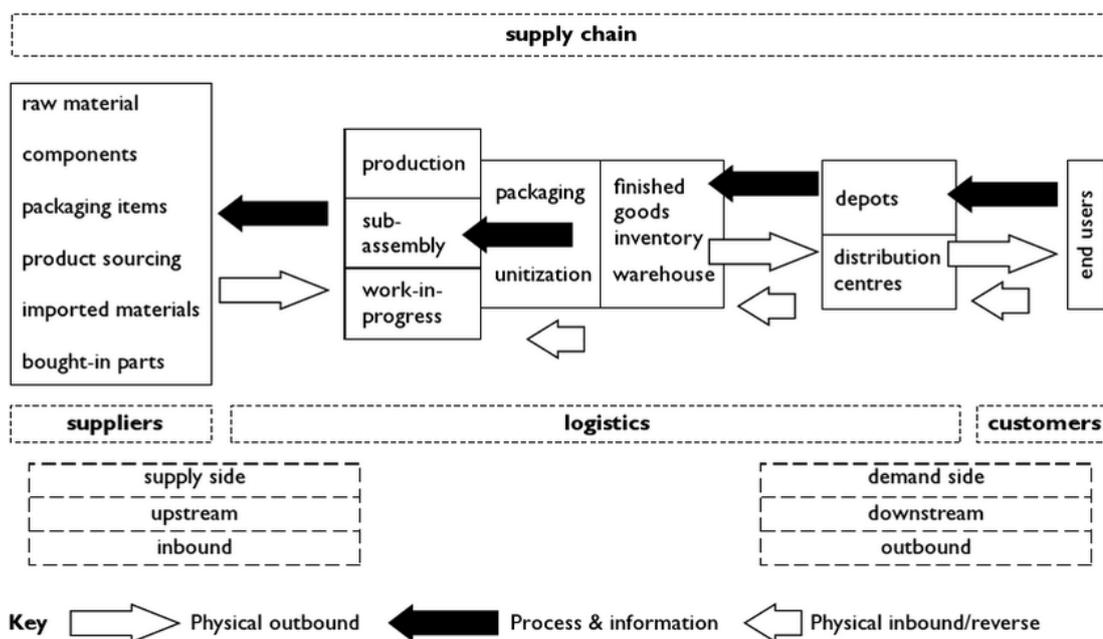


Figure 1. Flow representation and key components of logistics and supply chain (Rushton et al. 2014, 5)

2.3 Third-Party Logistics

Third-party logistics (3PL) services have been around for several years giving the possibility to outsource logistics components of a company to a third-party provider. Studies are supporting the expansion of 3PL industry with most common outsourced services being currently transportation and warehousing. The reason for this is that transportation and warehousing tend to be repetitive, operational and transactional activities rather than strategic ones.

(Rushton et al. 2014, 61, 63)

According to Trent (2008) there are 4 drivers behind the increase of outsourcing to third-party logistics. First, the reduced cost by using resources more efficiently. Second, the increase in specialization to specific processes, technologies or capabilities which has lead companies to not have the possibilities of handling everything that is required. Third, companies are increasingly defining and focusing on their core competencies while outsourcing non-core activities for other companies who are more specialized in those areas. Fourth, by winning marketplace by increasing speed and responsiveness through shorter cycle times. In addition the time it takes to develop an internal capability does not always correspond to the time window that an exploitable opportunity raises. (Trent 2008, 58)

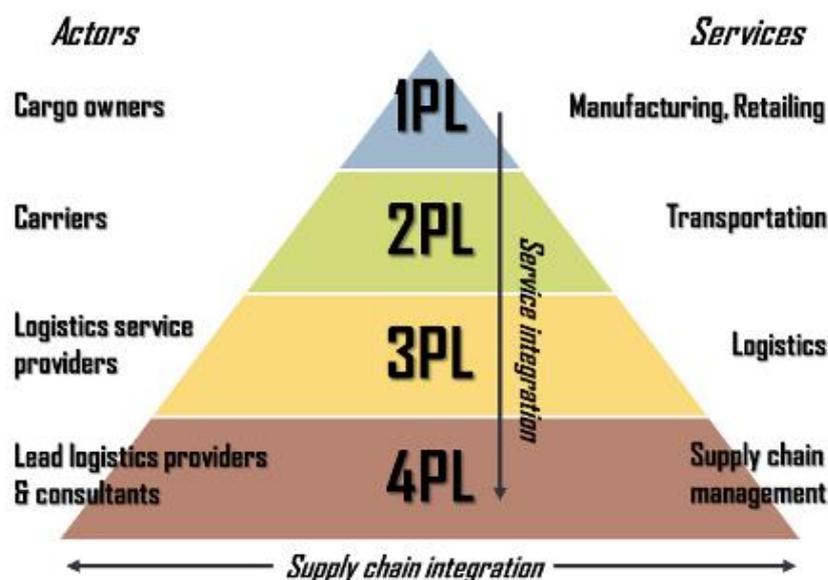


Figure 2. Different levels of logistics (Cerasis 2013)

2.4 Warehousing and Distribution

Warehouses are a crucial part of a modern supply chain by being involved in sourcing, production and distribution of goods. Their function in the supply chain needs to be optimized in according to the whole supply chain's specific requirements. The purpose of warehouses is most commonly the movement of goods from the supplier to the end customer. Warehouses are among the most costly parts of the whole supply chain. (Rushton et al. 2014, 255-256)

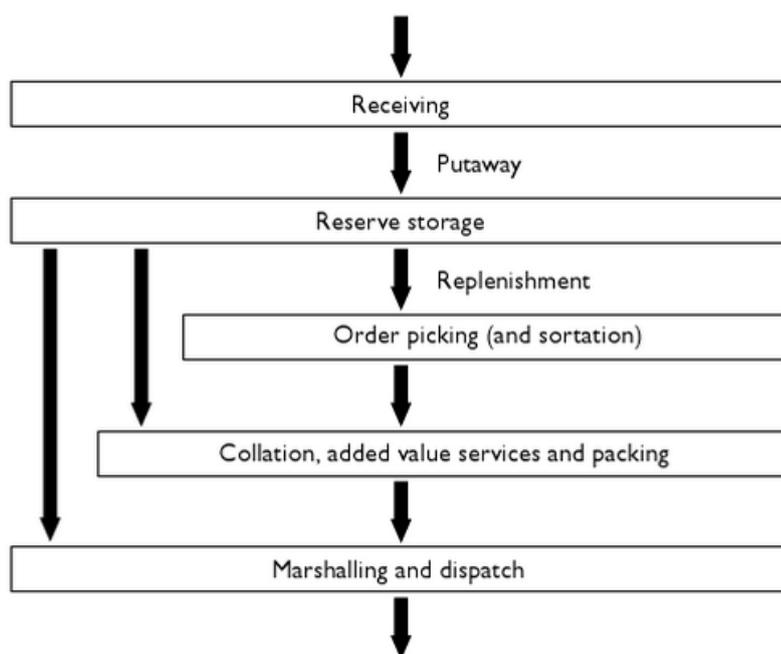


Figure 3. The functions of a warehouse with inventory (Rushton et al. 2014, 260)

Rushton et al. (2014) further describes the functions of an inventory holding warehouse as follows:

Receiving

The physical unloading of incoming load, checking the incoming goods against purchase orders and recording them into a computer system. Additional activities might include unpacking and repacking in a way that fits the warehouse operations. Also quality might be checked as part of this function. From here the goods will be placed to another location in the warehouse.

Reserve storage

Normally the goods are moved to a reserve or back-up storage area which usually consumes the largest amount of space since this area holds the bulk of the warehouse inventory in locations that are identifiable. The goods are then moved to marshalling or for replenishment of a picking place if requested.

Order picking

Goods are retrieved from the warehouse based on the order of the customer. An order usually contains several order lines each with a specific product with certain quantity. If the quantity is a full unit load (for instance a pallet), then this can be retrieved straight from the reserve storage area. If the quantity is less than the full unit load it will be retrieved normally from a picking place. The picking place and reserve storage can be combined into one consolidated location if the amount of goods are small. This is the key function in a warehouse in terms of cost and service as it requires a large amount of staff, and in order to achieve high service level high accuracy in order picking is required.

Sortation

Batching can be done for smaller order sizes to combine them as one order for picking purposes. This requires the picked batch to be sorted into individual orders before dispatch.

Collation, added value services and packing

Unless the goods are picked straight into dispatch containers, they need to be assembled or packed together into complete customer orders and made ready for dispatch. This function might also involve postponement activities or value added services such as kitting or labelling.

Marshalling and dispatch

Finally, in the dispatch area the goods are combined together to form loads for vehicle transportation to the next part of the supply chain.

(Rushton et al. 2014, 260-261)

To avoid many of these costly warehousing functions, especially holding an inventory, a process called “cross-docking” may be used. This process translates shortly into unloading, sorted by destination and loading into trucks. This way the material is never warehoused, but instead flows quickly through a distribution centre. Cross-docking can also be used as a mix with traditional inventory holding warehousing for instance by combining some products from the inventory to outbound shipments. This requires the distribution centre to have both a storage area, as well as a staging area for the handling of the loads. (Blanchard 2010, 92-93)

2.4.1 Automated Processes

Technologies gives a scientific approach to planning warehouse operations. A fully automated warehouse is a large investment, but offers completely integrated system with specially designed automated racks, cranes and stackers to pass items along a network of conveyor belts to the right loading location with high level of accuracy. (Christian 2013)

For most automated warehouses, picking and packing are still activities that are accomplished through manual labour. Some automated processes of a warehouse include:

- Automated sortation: If orders are batched, they need to be sorted after picking. In a mechanized sortation model the sortation can be as part of a conveyor system. The item is recognized via for instance an automatic barcode reader and sorted to a specific packing station afterwards.
- High density systems: Automated dense storage systems which use fully automated stacker cranes that move along a lane placing pallets to a rack and picking them out either in FIFO or LIFO -order depending on the system that is installed.
- Automated picking: Two variations of automated picking include layer pickers, which handles case picking from a pallet onto another pallet that will be delivered to the customer, and dispensers, which generally consist of a conveyor and magazines placed on top of it. Each magazine contains a single SKU and each item is stacked vertically and then dropped automatically on the conveyor according to the customer order.

(Rushton et al. 2014, 263, 286, 312)

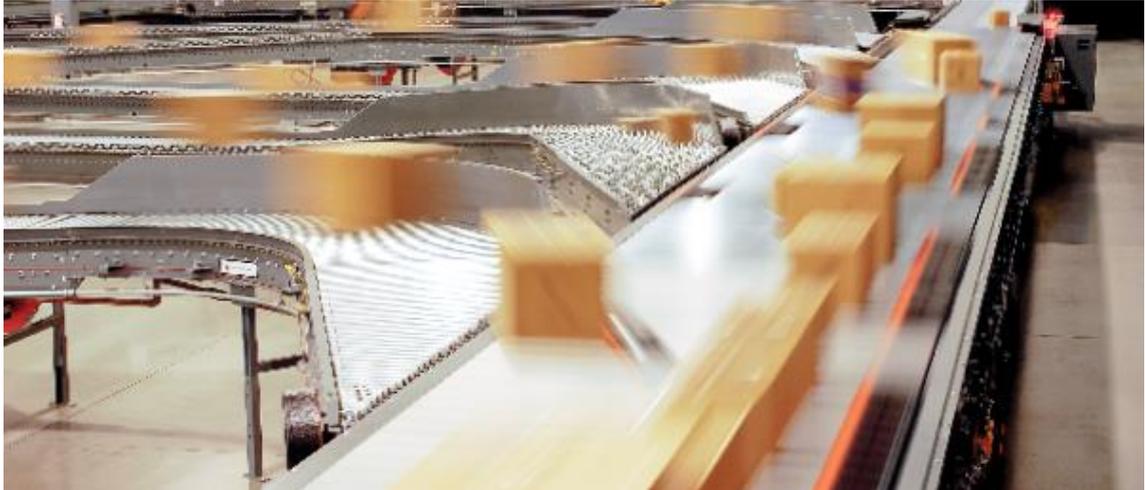


Figure 4. Automated cross-belt sortation. (Inbound Logistics 2013)

Flexibility is the key to automation as the market demand is highly volatile and automation solutions must meet the demand. There are many ways for a company to automate its processes for instance by investing in an automated conveyor and building shelf racks upward or by starting from scratch and going straight to fully automated wave picking. (O'Reilly 2013)

2.4.2 Information Flows

Information flow is crucial to any business. It can be categorized in many ways including formal or informal, external or internal, verbal or non-verbal information flow. The information that is communicated needs to be done in a way that it is understood by the receiver and that it is not distorted or blocked by any background noise. 4 main things needs to be taken into consideration when communicating information:

- Proper medium for information delivery
- Clarifying the objective of the information that is being delivered
- The needs of the receiver of the information
- Ensuring a possibility for feedback on the message sent

Internal information flow takes place inside a company. The purpose in internal information communication is to give and gather information, clarify issues and points and to influence action. External information flow, on the other hand, focuses on connecting to a company's stakeholders outside of the company. External communication affects the stakeholders' opinions of a company and its products or services. (Communication strategies to engage a variety of stakeholders, no date)

2.4.3 Customer Service

Customer service plays a major role in any logistics business. It is the output of logistics system by means of a physical product or a service, or both, and therefore has a direct impact on the company's performance and customer satisfaction. Attention should be paid not only to the quality of customer service, but also to the costs that incur for providing such service. In recent years customer needs and market competition has led to an increasing challenge for logistics companies to fulfil those needs and ultimately retain customers. (Lai & Cheng 2009, 48-49)

There are many elements concerning customer service. One way the elements of customer service in logistics can be divided, is by the nature and timing of the service. These are divided into 3 parts:

- Pre-transaction elements which refers to customer service factors before a transaction takes place
- Transaction elements which are directly related to the physical transaction (these are most commonly associated with distribution and logistics)
- Post-transaction elements which take place after a transaction.

The level of importance and relevance of the different elements of customer service depends on the product, company and market. (Rushton et al. 2014, 36)

To manage a relationship with the customer, an effective strategy is to implement a customer relationship management (CRM) software. This connects the company's sales, marketing, order entry customer service and support into one single program. The customer can also track product movement in different phases of the supply chain. For a customer focused strategy to be successful it needs to extend and deepen the relationship in order to obtain larger share of the customer relationship, reduce channel costs, reinforce and strengthen the brand image and to create customer satisfaction and loyalty. (Blanchard 2010, 40, 42)

2.5 Service Process

A process includes people, technology, materials, tools and procedures of activities that are combined to work as a system to deliver a service. The effectiveness of this system is determined by the skills of the workforce, clearly understood procedures, high-quality information flows, reliable technology, and how and when executives and management interferes in the steps of the process. Service process can be designed in 3 ways:

- Traditional flowcharting

- Sipoc diagramming
- Requirements based Process Design

(Taylor 2008, 19, 21)

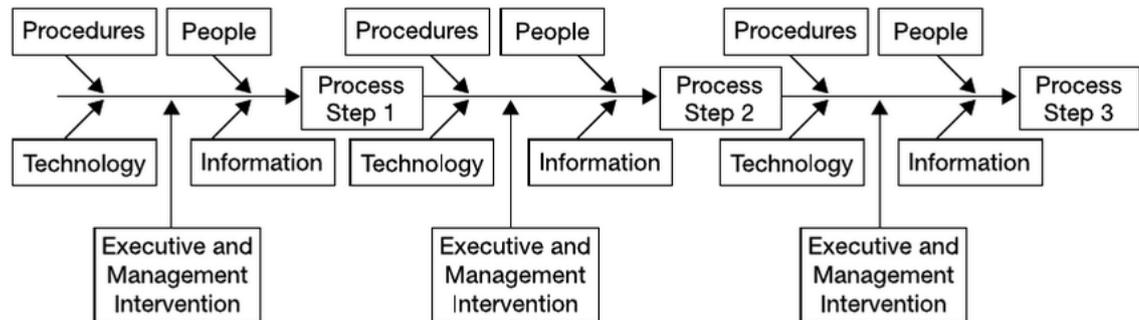


Figure 5. Service process elements (Taylor 2008, 19)

2.5.1 Improving Process Performance

In a service providing company, operational performance is normally measured by cost effectiveness and customer expectations. Cost effectiveness is measured with productivity and cost, and customer requirements relate to timeliness, accuracy and quality. (Taylor 2008, 56)

Creating a proper set of performance measurement metrics will enable performance excellence. This means implementing means to measure productivity, quality, and overall effectiveness of a process. (Taylor 2008, 200) Measurement helps to identify improvement areas, to track the rate of change, and areas that might benefit from performance benchmarking. It also allows for objective, rather than subjective, performance analysis for managers, and provides a drive for continuous improvement. (Trent 2008, 122)

Managing quality is about organizing and improving every aspect of a company and its activities by placing customers at the centre of operations in order to fully satisfy them. Quality management should include the following:

- Generating objective data for the systematic improvement of work processes and products before taking action
- Focusing on key problem areas in customer satisfaction
- Empowerment and involvement of employees

(Lai & Cheng 2009, 112)

2.5.2 Performance Indicators

For service organizations and transactional processes, an effective measurement system should be organized into the following categories:

1. Quality: Conformance or non-conformance to what customers require
2. Efficiency: Measurements of how an organization makes use of its assets
3. Productivity: The output of a work group, department, or company
4. Effectiveness: The degree to which the process delivers the right service to the right customer at the right time
5. Cost: The direct labour and material cost under the control of operations managers, and the comparison of budgeted or expected cost to actual cost

(Taylor 2008, 132)

Another, more commonly used performance indicator in logistics is the SCOR model based on five components of plan, source, make, deliver and return in all organizational processes within a company. The performance of planning, which composes of the tasks of planning demand and supply, is measured by costs of planning activities, inventory financing costs, inventory days of supply available and forecasting accuracy. The source component includes tasks of material acquisition where the performance is measured by materials acquisition costs, cycle times for receiving and using goods, and one day of supply of raw materials currently available. The component of making, which includes the tasks of production execution, is measured by production cycle time, number of product defects and other quality issues. The performance of delivering is measured by fill rates, order lead times, order management and transportation costs. The daily tasks of deliver include demand, order, warehouse, transportation, installation and commissioning management. The performance of return, the return of nonconforming goods and recycling of materials that are no longer required by the customer, is measured by the quantity of complaints, speed of customer service replies and customer follow-up measures. (Lai & Cheng 2009, 158)

3 Research Approach and Methods

3.1 Methodology

The methods used to gather data were surveys, interview and own observations. The tools used to conduct the surveys was structured questionnaires and for the interview an in-depth unstructured format was used. The surveys were conducted by phone calls to the customers of the company, face-to-face surveys were made to the company production supervisors and an

in-depth face-to-face interview was held with the company CEO. The customers of the company offers an external perspective, and the production supervisors and company Chief Executive Officer offers an internal perspective for the current state assessment. The interviews included 44 customers, 7 supervisors and the CEO of the company.

The means to analyse the collected data was SWOT-analysis. The results were gathered anonymously from the customers and supervisors in order to get as truthful answers as was possible. The CEO requested that the interview held with him was not to be recorded for confidentiality protection reasons.

3.1.1 Needs Assessment

Needs assessment can be defined as gaps between current results and desired results. The comparison of the distance and importance of these gaps is the information relevant to decision making. Additionally, the priority of needs are proportional to the comparison of costs: the cost of closing the gap between current and desired results and the cost of not closing the gap.

Needs assessment relies on a broad set of tools and techniques for data collection and decision making. Many of these tool are used also during and after an activity has taken place. The perspective of the needs assessment is crucial when identifying the tools to be used, what questions and how questions are asked, and how to analyse the information. A discrepancy perspective identifies and measures differences and inconsistencies between current state and desired state. All types of data can be used depending on the point of view the researcher uses to compare information against other information. An appreciative inquiry perspective, however, focuses on building organizations, programs and projects around what works instead of only fixing what does not work. Various data collection tools and techniques should be used. This perspective helps to identify beneficial results in current activities and how they can be improved to achieve desirable results. (Watkins, Meiers & Yisser 2012, 62-64, 83) Most common sources for data collection are interviews, surveys, documentation and observations. (Swanborn 2010, 73)

3.1.2 Documentation

Documents include data such as reports, archives, agendas and minutes of meetings, self-evaluations etc. These are stable data and compared to for instance interviews, are not affected by the researcher. Documents, however, are susceptible to be influenced towards the institution or person who created them. (Swanborn 2010, 73)

3.1.3 Interviews

Interviews are used to obtain information through a structured, semi structured or an un-structured way from a single person. Compared to surveys, interviews provide more in-depth information, stories and further discussion related to the topics of the interviewer in terms of elaboration, explanations and follow-up questions. In addition, interviews help the interviewer to become more familiar with the needs assessment and allows for the observation of nonverbal behaviour of the interviewee.

As a disadvantage interviewing method is time consuming, sample size is reduced, results are more difficult to analyse and the interviewees may represent only a limited perspective on performance issues. Furthermore interviews might lead to off topic discussions and become frustrating for both parties involved in the interview. (Watkins et al. 2012, 106-107)

3.1.4 Surveys

When information from a large number of people is required, a survey is a useful tool to gather the data. Surveys are also useful for their ease of development, ability to transform survey data into useful information and their possibility to be easily distributed to large or small groups. Compared to an interview, surveys require less time to conduct. Traditional single-response survey is a tool used in many business activities such as opinion polling and evaluation. As an advantage, surveys give the perspective of multiple groups on various topics related to performance. Also, surveys offer the possibility of asking a few or many questions, and open-ended or close-ended questions depending on the needs of the researcher.

Disadvantages of surveys include the possibility of confusing survey data and performance data, exhaustion of employees by frequent use of surveys which might reduce response rates or otherwise compromise the integrity of the survey results, and the impossibility of follow-up questions to respondents. In addition surveys are often developed poorly despite being easily created. (Watkins et al. 2012, 116-117)

3.1.5 Observations

Observation serves as a complementary data source to other means of gathering data. It focuses on observing human behaviours, physical artefacts, material resources and surroundings that helps to develop insight in the process at hand. It can be either participatory observation, where the researcher fills a functional role in the study during a certain period of time, or the observation can be performed during a field visit or during the research phase of interviewing.

However, if the actual processes of the study took place in the past, observation is excluded from the data gathering methods. (Swanborn 2010, 73-74)

3.1.6 SWOT-Analysis

SWOT-analysis is a widely accepted tool to analyse key aspects that affect a company. It analyses the internal aspects of company through strengths and weaknesses, and its external environment through opportunities and threats.

The main benefits of using SWOT-analysis tool are:

- Simplicity and practicality
- Easy to understand
- Focuses on key internal and external factors that affect a company
- Assists in identifying future goals and initiates further analysis

Possible limitations of using SWOT-analysis tool include:

- The excessive list of strengths, weaknesses, opportunities and threats
- Factors are not prioritized, are described too broadly and are usually opinions instead of facts.
- Has no actual method of distinguishing between strengths and weaknesses, opportunities and threats.

(Jurevicious O. 2013)

3.2 Validity and reliability

The research was done for a case company and therefore all data gathered were from a real company and its customers.

“The standards for research quality in social sciences are valid for case study research as well as for all other research strategies.” (Swanborn 2010, 36) Swanborn (2010) continues by identifying 4 quality criteria to test validity and reliability of a case study research:

- Validity construction: Are the measuring tools and methods measuring the concepts they are meant to measure?
- Reliability: Are the results of the measurements stable over time, independent of the researcher’s and contextual properties? In case studies the dependence on contextual properties of some measurements is acceptable.

- Internal or causal validity: Is the relation between variables, interpreted by the researcher as causal or are the correlations resulting from other factors?
- External validity or generalisability: Can the results of the research be generalized to other target populations or domains?

The measuring tools and methods (surveys, interview, own observations) were all limited to the research topic. The respondents of the surveys and informant of the interview were categorized by topic areas in a manner that every respondent had the most insight on the specific topic area (i.e. customers answered to statements concerning quality and effectiveness). The results of the research are not stable over time, as the results may vary for instance by having different respondents in the surveys or changes made within the company which affects the perceived performance of the respondents.

The sample size of customers was 44 respondents and 7 supervisors which covered all the supervisors of the company and nearly all the customers of the company giving an adequate sample size for both categories. The least reliable source was the interview of the company CEO on operations costs as the sample size had only one respondent. Overall the research can be considered reliable enough for reaching its objective and the results of this case study can be generalized to other companies with similar characteristics and processes.

The surveys for the customers and supervisors were made anonymously for more honest answers. This resulted in restrictions for more detailed segmentation when analysing results from the customers as for instance segmentation by product type (e.g. fish or meat) or by the length the company has been a customer of Company X could have easily been traceable in some cases to a specific customer.

4 Empirical Study

4.1 Service Process - Company X

The service process of Company X contains the following warehousing elements: transportation, storage, and order handling and distribution services.

Reception

The process starts from the shipment arriving to the warehouse. The shipment is unloaded to a designated reception area and the product quantities and quality are checked by approximation by the receptionist. Also the temperature is checked with a thermometer in the same process. The products come in Transboxes which are placed on pallets that are either EUR-pallets or FIN-pallets. The products are then inserted into stock via a warehouse management program

(WMS). Each pallet will receive a unique barcode sticker that contains product information, quantity and expiration date. From the reception area the pallets are moved manually by forklift trucks to the reserve shelves to wait for orders.

Order picking

Orders are generally received to the WMS on the previous day prior to the delivery date. The program then batches automatically the orders by routes in according to where the order will be delivered. The production supervisor then opens the batches for picking based on delivery times: the earlier the delivery leaves the warehouse, the earlier the picking starts. The picking can only start after all orders have been received. A few orders will come daily via email which have to be manually inserted into the system.

The warehouse has two picking lines each with stationary picking stations on both sides of the lines. Each station has a CPU, monitor, keyboard and a barcode reader. Pickers move along the picking lines to the stations where orders are opened. The picking starts by the picker inserting his or her picking ID to the station and presses ENTER. An order appears on the monitor which shows product, quantity, delivery route and picking place. The picking places which are on shelves are always behind the station so that the picker will stand in between the shelf and the station. The picker picks the amount ordered from the corresponding picking place and places them in a Transbox. The picker then reads both the Transbox and the product picked. If the amount in the picking place goes near to zero, the system automatically will send a refill request to the forklift truck drivers who picks up a pallet from the reserve shelves and brings it near the picking place where he or she refills the place. After all the products of the order have been picked, the box is pushed to the conveyor in the middle of the line that will transfer the box to a palletisation area.

Palletisation

The picking lines connect into a single spherically shaped palletisation line. At the end of both picking line there is an ink jet printer that prints the route and the end-customer address on both sides of the Transbox. Workers on the palletisation area places the Transboxes on pallets according to the route printed on them. Once a pallet is full, stacked either 5x5 or 5x8 depending on the route requirements, the pallet will be moved to a shipping area where the containers' barcodes are read and the pallet is taped and a route note is attached on one side of the pallet. The pallet is then placed with a forklift truck into a specific shipment location where pallets with the same route are placed in a line.

Transportation

Once all containers of a specific route have passed through the order handling process and to the shipping row, the WMS shows the route is finished. The person in the dispatch department prints the waybills and delivery notes and straps them together for a truck driver to sign them and start loading the truck for delivery. Most commonly the deliveries go through a central corporation terminal where they are sorted and delivered forward to the shops. In some cases they are delivered straight to the shop from the warehouse.

4.2 Needs assessment

As the case company requested a current-state assessment without defining future desired state, the needs assessment research only focused on gathering data for identifying the current state of the company. The desired future state of each element included in the research will be assumed to be as good as possible when developing the improvement recommendations.

4.2.1 Surveys and Interview

The surveys and interview were based on questionnaires which were scaled by Likert scale. Likert scale is used to measure agreement or disagreement by providing various statements to respondents and evaluating their responses in base on the level of agreement or disagreement. (McLeod 2008).

The scale in the surveys ranges from 1 - 5 as following: 1 = strong disagreement, 2 = slight disagreement, 3 = neither agree nor disagree, 4 = slight agreement, 5 = strong agreement. The surveys and interview were conducted in Finnish as all the participants were Finns. The surveys were conducted via phone calls to customers and face-to-face to supervisors. The interview with the company CEO was held face-to-face.

The surveys and interview aims to answer five service performance indicators: Quality, effectiveness, efficiency, productivity and cost. The surveys were divided as following: Surveys including the customers, answers to quality and effectiveness, surveys including the production supervisors, answers to efficiency and productivity, and cost was covered by an interview with the company CEO with 4 pre-structured statements to evaluate in the same manner as the surveys in order to quantify the performance of cost.

The target sample of customers was divided into 2 categorize in base of size: Mid-sized customers, which included 31 customers, and small customers, which included 13 customers. The level of size was determined by the average amount of order lines per day: <500 lines = small-sized

customer, >500 lines = mid-sized customer. Segmentation for the other respondent groups was not perceived as necessary.

4.2.2 Analysis

When analysing the results, the Likert scale used for the surveys provide the basis for analysis. The averages of the level of agreement from the respondent groups to the given statements indicates the level of need for development: 1.0 - 2.9 (=disagreement) indicates need for development, 3.0 - 3.9 (=neither agree nor disagree) indicates a possible or future development area, and 4.0 - 5.0 (=agreement) indicates no current need for development.

For instance a statement with an average score of 2.1, meaning that on average the respondents slightly disagreed with the given statement, would indicate a need for development. The averages of all performance indicators are listed below by respondent groups:

Customers

Performance indicator	Scale 1- 5	Scale1-5
Quality	Mid-Sized Customers	Small Customers
Company X has a good reputation in the industry	4,5	3,5
The price/quality ratio of the services are on a good level	4,2	3,9
Company X has a good and tight collaboration with its customers	3,7	2,5
Company X's activities are transparent (Information is open and honest)	4,1	3,3
I receive individual service	2,5	2
The quality of the activities is good (Errors in picking and deliveries are minimal)	3,1	3,1
Claims handling works well	2,1	1,9
Invoicing is clear (What and how is invoiced)	2,1	2
Effectiveness		
The order-delivery-rhythm is optimal	4,4	4,2
The deliver reliability is good and deliveries are delivered on time	4,8	4,4
The remote access to the WMS covers the needs of the customer	4,1	4,2
Information flow to the customer is effective	2,5	2,2

Production Supervisors

Performance indicator	Scale 1- 5
Efficiency	
Current warehouse spaces are sufficient and their usage is optimized sufficiently enough	3,5
The equipment and machinery of the warehouse are reliable	4
The company incorporates well the newest technologies	1,9
The workforce is trained sufficiently and diversely enough	1,5
The information flow between different levels of the company is fluent	1,2
Productiveness	
The workforce is sufficiently productive	3,5
Forecasting for changes in production volumes is on a good basis	2,2
Performance measurements are sufficient and they are being used frequently	3,2
The company reacts quickly to problems and solves them	4

Company Chief Executive Officer

Performance indicator	Scale 1- 5
Cost	
The operations are currently very profitable	4
Material expenses are below the budgeted expenses	4
Staff expenses are below the budgeted expenses	3
All offered services are invoiced to the customer	2

Small-sized and mid-sized customers disagreed on average on the same statements. The only noticeable difference is that the level of disagreement was stronger among small-sized companies. The level of individual service is not seen adequate enough for the customers. The reclamation handling is seen to not be working as well as it could and invoicing is seen as unclear. Customers perceive the information flow to be not effective and the production supervisors share this same view on the information flow within the company. The production supervisors disagreed also on the level of implementing newest technologies in processes. The workforce is seen to not be trained enough for a specific task nor diversely enough for other tasks. Also forecasting is perceived inefficient for seasonal changes in volume. The company does not charge customers for all services provided.

The radar diagram in Figure 7 shows the overall service performance to be within the scale of 2-4 which indicates an intermediary level of performance. The best scoring performance indicator is the company's effectiveness. The least scoring performance indicator is the company's efficiency. Quality, cost and productiveness all scored an average of 3.

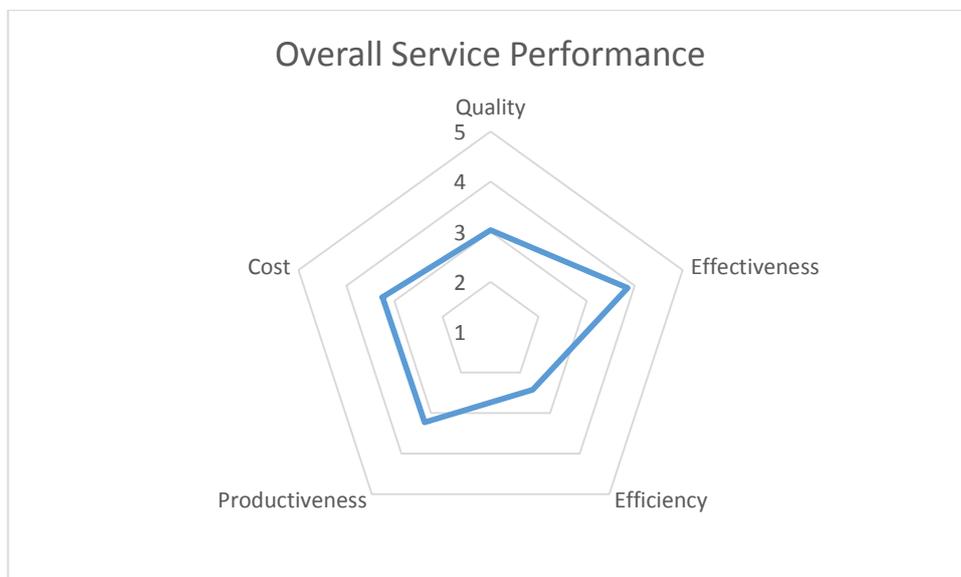


Figure 6. Radar diagram showing the overall service performance of Company X

4.2.3 SWOT-Analysis of Company X

The SWOT-analysis is based on the interview, surveys and own observations. SWOT-analysis is used as a tool to find the strengths, weaknesses, opportunities and threats in the company.

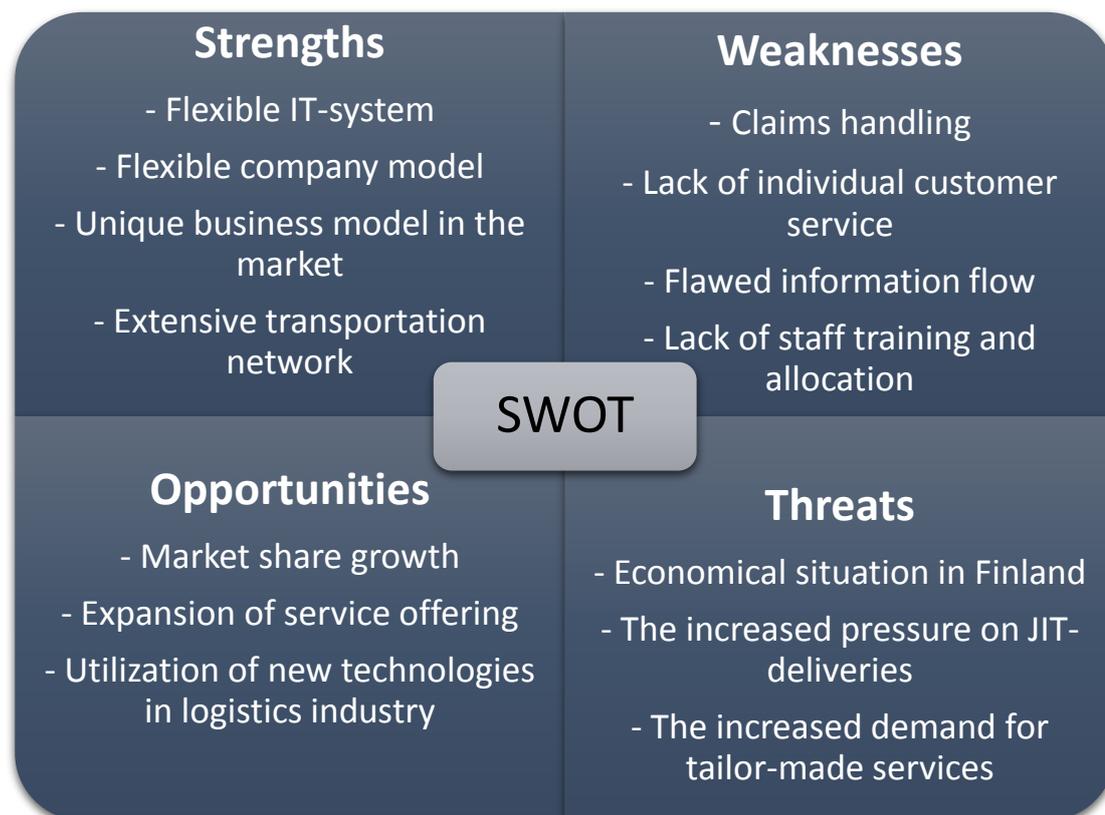


Figure 7. SWOT-analysis of Company X

Strengths

The biggest strength of the company lies in its IT-system and personnel. It is flexible and fast reacting, usually within 24 hours depending on the extent and importance of the coding that needs to be done in the system. For any new type of service provided or a customer with different logistics requirements, the processes can be “tailor-made” in the IT-system to correspond to the requirements. This is a huge advantage for acquiring different types of customers with different company sizes and different needs. The IT-system also supports many of the customer’s own IT-systems making it easy to integrate both parties.

In addition, customers with other products than groceries can be acquired with the flexibility of the company model and its storage spaces that cover temperatures ranging from 0-20 degrees. The extensive transportation network is also an advantage when customers need to sell their products in different places around Finland.

The unique market position has its own advantages. Since many customers replied during the phone calls of the surveys that they did not know to what compare the prices offered by the Company X, the company is in a position where it can keep a high-level pricing policy with little to non-existent competition.

Weaknesses

The weaknesses analysed from the data gathered from the customers were mostly related to customer service and reclamation handling. Small sized companies were especially unhappy for the lack of individual customer service. Customers hoped for a clearer invoicing as it was not always clear for what Company X was charging the customer and in case of delivery errors who was the payer of compensation.

Defective information flow is a major weakness area in the company. The lack of organized reporting, the lack of information going to all individuals involved, and the lack of regular meetings inside the company all accounted for the poor information flow. Also, the company lacks training. Supervisors are not trained adequately with any leadership training and the company employees are not trained thoroughly for their specific tasks. This results in lower productivity and increased risk of mistakes. Also the lack of training employees for different tasks is a weakness to consider in the company.

Threats

The impact of the economic situation in Finland has driven many companies to cut down the costs of their logistics. With 3PL it's mostly seen as customers either going for a competitor with lower costs or setting up their own operations for handling logistics.

The growing trend on demanding for JIT- deliveries puts the flexibility of 3PL on a test. By being able to send orders on the "last minute", it makes forecasting more difficult or sometimes next to impossible which results in difficulties for human resourcing, storage space capacity planning etc. The increased demand for tailor-made services puts the flexibility of the whole company under strain. When having many customers, the more streamlined the processes the easier it is to manage various daily activities and tasks such as picking, transporting, invoicing etc. When customers start to demand for more customized services e.g. different way of stacking pallets or picking products into cartoons instead of Transboxes, the slower the lead times of the orders become.

Opportunities

As an opportunity, the company has space for growth in the market. 3PL is a growing industry with an increasing demand for smaller order sizes, smaller delivery frequencies and 7-days-per-week delivery possibility. This has made it difficult to send products straight from the manufacturer to the end-customer and the possibilities of setting up an own warehouse is usually costly and distracts from focusing on core competencies.

New technologies give possibilities for automated processes in the logistics industry. Manual order handling tasks such as picking and palletizing can be automatized resulting in cost-effectiveness and increased accuracy in the long-run.

The characteristics of Company X, flexible IT-system, temperature controlled storage spaces and flexible company model, makes it possible for the company to expand its target market to other products besides groceries and flowers. As sales are moving more and more toward online-selling, the company has a possibility of making its business model support also online shopping.

5 Conclusions and Improvement Recommendations

This thesis does not aim to provide a ready-made improvement plan for the case company, but instead provides improvement recommendations for the company based on the results of the research.

The improvement suggestions are based on the current state analysis which produced the following 7 improvement areas:

- Pricing
- Utilization of company business model and IT-system
- Staff training and work force allocation
- Implementation of newer logistics technologies
- Information flow externally and internally
- Forecasting
- Claims handling

Pricing

The company should raise the prices of its services and charge for any extra service requested by the customer. Despite improving customer relationships, extra requests comes with higher costs than the ordinary daily activities and as such the company should have a charging policy for these cases. This suggestion is further supported with the results of very high customer satisfactory on both service quality and service price in the interviews conducted for the customers which indicates the possibility of providing over service.

Utilization of company assets

The company's main advantage lies in its IT-system and its ability to be adapted to customer requirements. Adding more IT-personnel in order to provide more improvements with faster

speed to the current warehouse management program would support this advantage. The company should take advantage of its possibility of acquiring customers with other products than only groceries as the company's IT-system and business model supports the expansion to other markets.

Staff training and allocation

Training for the staff should be enforced. Supervisors should be offered leadership training and IT-skill learning to support their position. The company employees with full-time contracts should be trained for various tasks in order to avoid workforce shortages in different areas of production. The importance of training to multiple tasks grows especially under holiday seasons or when multiple employees are on sick leave simultaneously. Varying the tasks given to individual employees might also increase work motivation and satisfaction among the employees compared to working daily on one task.

Implementation of new logistics technologies

New technologies should be investigated. Faster and more durable barcode readers should be acquired for faster picking and lowering maintenance costs. Furthermore the current cost-structure of the palletisation area should be examined for calculating the benefits of making that part of the order handling process automatized compared to the current manual palletisation.

Information flow

Inconsistent and slow information flow is a major issue to be recognized in the company as it concerns both the external and internal aspects of the company. Reporting within the company should be organized in a way that the flow of information is immediate and goes to all personnel involved. Regular meetings instead of random and rare meetings for the upper management and the supervisors is highly recommended.

Forecasting

Forecasting of the production especially for seasonal changes should be done. This can be implemented in accordance to past years volumes. Another factor to consider when forecasting is the weather which affects the demand of grill foods. Also information on big events affecting the volumes should be acquired in order to optimize the production.

Claims handling

The claims handling should be reinforced with more tools that helps to determine and prove where the mistake has been made along the supply chain. The invoicing structure should be re-examined that it is consistent and a clear invoicing basis should be communicated to the customers.

The thesis is commissioned by Company X, therefore it can be assumed that it will be of value to the company. The company has several investment plans to expand the business so it is relevant that the current-state is evaluated and improved in order to implement the investment plans accordingly. Further study suggestion is to analyse more deeply each individual function of the company and to set up proper performance measurement methods for objective quantitative data collection. With proper performance measurement methods set in place, the outcome and monitoring of improvement implementations are easily quantifiable.

References

Blanchard D. 2010. Supply Chain Management Best Practices. Second Edition. New Jersey: John Wiley & Sons.

Business Case Studies - Communication strategies to engage a variety of stakeholders. No Date. Accessed 29.5.2015.

<http://businesscasestudies.co.uk/enterprise-rent-a-car/communication-strategies-to-engage-a-variety-of-stakeholders/introduction.html>

Cerasis 2013. Accessed 5.6.2015.

<http://cerasis.com/2013/08/08/3pl-vs-4pl/>

Christian R. 2013. Material Handling & Logistics. Accessed 27.5.2015.

<http://mhlnews.com/facilities-management/back-basics-inventory-handling-and-tracking-technologies>

FMG Shipping. Accessed 20.5.2015.

<http://www.fmgshipping.com/en/info.php?t=25>

Jurevicius O. 2013. Strategic Management Insight. Accessed 20.5.2015.

<http://www.strategicmanagementinsight.com/tools/swot-analysis-how-to-do-it.html>

Lai K. & Cheng T.C.E. 2009. Just-in-Time Logistics. Farnham: Ashgate Publishing Group.

Logistiikanmaailma. Accessed 20.5.2015.

http://www.logistiikanmaailma.fi/wiki/Logistiikka_ja_toimituksetju

McLeod S. 2008. Simply Psychology. Accessed 26.5.2015.

<http://www.simplypsychology.org/likert-scale.html>

O'Reilly J. 2013. Inbound Logistics. Accessed 27.5.2015.

<http://www.inboundlogistics.com/cms/article/dc-automation-sorting-it-out/>

Rushton A., Croucher P. & Baker P. 2014. Handbook of logistics and distribution management: Understanding the Supply Chain. Fifth Edition. London: Kogan Page.

Swanborn P. 2010. Case Study Research: What, Why and How? London: SAGE Publications.

Taylor G. 2008. Lean Six Sigma Service Excellence H/C: A Guide to Green Belt Certification and Bottom Line Improvement. Florida: J. Ross Publishing.

Transbox. Accessed 29.5.2015.

<http://www.transbox.fi/>

Trent R. 2008. End-To-End Lean Management: A Guide to Complete Supply Chain Improvement. Florida: J. Ross Publishing.

Watkins R., Meiers M. & Visser Y. 2012. A Guide to Assessing Needs: Essential Tools for Collecting Information, Making Decisions, and Achieving Development Results. Washington DC: The World Bank.

Illustrations

Figures

Figure 1. Flow representation and key components of logistics and supply chain	10
Figure 2. Different levels of logistics (Cerasis 2013)	11
Figure 3. The functions of a warehouse with inventory (Rushton et al. 2014, 260)	11
Figure 4. Automated cross-belt sortation. (Inbound Logistics 2013)	14
Figure 5. Service process elements (Taylor 2008, 19).....	16
Figure 6. Radar diagram showing the overall service performance of Company X.....	26
Figure 7. SWOT-analysis of Company X	27

Tables

Appendixes

Appendix 1: Customer Survey Questionnaire

Asiakaskysely

Kuinka arvioisit seuraavia tekijöitä yrityksessä? Ympyröi mielipidettäsi parhaiten vastaavaa numero jokaisen väittämän kohdalla, jossa: 1 = Täysin eri mieltä, 2 = Hieman eri mieltä, 3 = Ei samaa eikä eri mieltä, 4 = Hieman samaa mieltä, 5 = Täysin samaa mieltä.

		Täysin eri mieltä	Hieman eri mieltä	Ei samaa eikä eri mieltä	Hieman samaa mieltä	Täysin samaa mieltä
1.	Yrityksellä on hyvä maine alalla.	1	2	3	4	5
2.	Hinta- /laatusuhde palveluilla on hyvä.	1	2	3	4	5
3.	Yrityksellä on hyvä ja tiivis yhteistyö asiakkaidensa kanssa.	1	2	3	4	5
4.	Yrityksen toiminta on läpinäkyvää.	1	2	3	4	5
5.	Koen saavani yksilöllistä palvelua.	1	2	3	4	5
6.	Toiminnan laatu on hyvä (keräys- ja toimitusvirheet ovat minimaaliset).	1	2	3	4	5
7.	Virheselvittely toimii hyvin.	1	2	3	4	5
8.	Laskutus on selkeää.	1	2	3	4	5
9.	Tilaus-toimitusrytmi on optimaalinen.	1	2	3	4	5
10.	Toimitusvarmuus on hyvä ja toimitukset ovat ajallaan.	1	2	3	4	5
11.	Varaston etäyhteyspalvelu kattaa asiakkaan tarpeet.	1	2	3	4	5
12.	Tieto kulkee asiakkaalle tehokkaasti.	1	2	3	4	5

Muuta kommentoitavaa

Appendix 2: Production Supervisors' Survey Questionnaire

Työnjohtokysely

Kuinka arvioisit seuraavia tekijöitä yrityksessä? Ympyröi mielipidettäsi parhaiten vastaavaa numero jokaisen väittämän kohdalla, jossa: 1 = Täysin eri mieltä, 2 = Hieman eri mieltä, 3 = Ei samaa eikä eri mieltä, 4 = Hieman samaa mieltä, 5 = Täysin samaa mieltä.

		Täysin eri mieltä	Hieman eri mieltä	Ei samaa eikä eri mieltä	Hieman samaa mieltä	Täysin samaa mieltä
1.	Nykyiset varastotilat ovat riittävät ja niiden käyttö on optimoitu riittävästi.	1	2	3	4	5
2.	Laitteisto ja koneisto ovat toimintavaroja.	1	2	3	4	5
3.	Yritys hyödyntää hyvin uusinta teknologiaa.	1	2	3	4	5
4.	Työntekijöitä koulutetaan riittävästi ja monipuolisesti eri tehtäviin.	1	2	3	4	5
5.	Tieto yrityksen sisällä kulkee sujuvasti eri tasoilla.	1	2	3	4	5
6.	Työntekijät ovat riittävän tuottoisia.	1	2	3	4	5
7.	Ennustavuus menekin vaihteluille on hyvällä tasolla.	1	2	3	4	5
8.	Tuottavuusmittarit ovat riittävät ja niitä käytetään usein.	1	2	3	4	5
9.	Yritys reagoi nopeasti ongelmiin ja ratkaisee ne.	1	2	3	4	5

Muuta kommentoitavaa

Appendix 3: Chief Executive Officer Questionnaire

Yritysjohdon kysely

Kuinka arvioisit seuraavia tekijöitä yrityksessä? Ympyröi mielipidettäsi parhaiten vastaavaa numero jokaisen väittämän kohdalla, jossa: 1 = Täysin eri mieltä, 2 = Hieman eri mieltä, 3 = Ei samaa eikä eri mieltä, 4 = Hieman samaa mieltä, 5 = Täysin samaa mieltä.

	Täysin eri mieltä	Hieman eri mieltä	Ei samaa eikä eri mieltä	Hieman samaa mieltä	Täysin samaa mieltä
1. Toiminta on nykyisellä mallilla erittäin kannattavaa	1	2	3	4	5
2. Materiaalikustannukset ovat alle budjetoitujen kustannusten tasoa	1	2	3	4	5
3. Henkilöstökustannukset ovat alle budjetoitujen kustannusten tasoa	1	2	3	4	5
4. Kaikista tarjotuista palveluista laskutetaan	1	2	3	4	5