

DEVELOPING REVERSE LOGISTICS IN RENTAL RETURNS MANAGEMENT

Case: 3 Step IT Group Oy

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Kivelä Eija

Lahti University of Applied Sciences
Faculty of Business Studies

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ABSTRACT

This research deals with developing reverse logistics in the field of managing rental returns.

The theoretical background covered in the research is based on services management, supply chain management and developing reverse logistics. Reverse logistics can be shortly described as moving a product backwards through the logistics channel. The products or materials are transferred backwards in the distribution channel either due to customer returns or removal of wastes and by-products. Developing reverse logistics taking into account requirements of rental returns management requires details from managing services and supply chains and the attributes of reverse logistics concept itself. To include the customer perspective into developing reverse logistics, this study reflects the balance between service standardization and customization and also the balance between perceived service quality and productivity.

The empirical part of the research project consists of developing the rental returns management system at 3 Step IT Group Oy. The target was to develop the company's reverse logistics operations and hence intensify the performance of order-supply chains. The research project included process, IT systems, training, and instructions changes made during a period of one year. The data retrieved by functional observation, group interviews, observations from customer trainings and the studied topic literature was used as a basis for the improved rental returns management system for 3 Step IT Group Oy.

3 Step IT's improved rental returns management system has been defined to include three main sections: ending option management, returning devices management and process support and training. These three parts form a unity which, in co-operation with earlier steps of 3 Step IT's IT lifecycle management process, creates additional value to customers and enables both companies to develop their operations to correct direction. The company's rental returns management system can not function merely as a returning devices management system. An efficient rental returns management system requires support from an efficient ending option management and applicable process support and training functionalities.

Key words: reverse logistics, supply chain management, services management, service productivity, 3 Step IT Group Oy

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Tämä opinnäytetyö käsittelee palautuslogistiikan kehittämistä palautuvien vuokralaitteiden käsittelyssä.

Teoriaosa perustuu palveluiden hallintaan, toimitusketjujen hallintaan ja palautuslogistiikan kehittämiseen. Lyhyesti kuvattuna palautuslogistiikka on tuotteiden siirtämistä takaisinpäin logistiikkaketjussa. Tuotteet tai materiaalit siirretään takaisinpäin jakelukanavassa joko asiakaspalautusten tai jätteiden ja sivutuotteiden poistamisen vuoksi. Palautuslogistiikan kehittäminen ottaen huomioon vuokralaitteiden palautusjärjestelmän vaatimukset tarvitsee tietoja palveluiden ja toimitusketjujen ja itse palautuslogistiikan ominaispiirteistä. Sisällyttääkseen asiakasnäkökulman palautuslogistiikan kehittämiseen, tämä tutkimus käsittelee palveluiden standardisoinnin ja räätälöinnin ja myös koetun palvelulaadun ja palvelun tuottavuuden välistä tasapainoa.

Opinnäytetyön empiriaosuus koostuu 3 Step IT Group Oy:n vuokralaitteiden palautusjärjestelmän kehittämisestä. Tavoitteena oli kehittää yrityksen palautuslogistiikkatoimintoja ja täten tehostaa tilaus-toimitusketjun suorituskykyä. Tutkimusprojekti sisälsi yhden vuoden aikana tehtyjä muutoksia prosesseihin, tietojärjestelmiin, koulutukseen ja ohjeistuksiin. Tutkimustieto kerättiin toiminnallisen havainnoinnin, ryhmähaastatteluiden, asiakaskoulutuksissa tehtyjen havaintojen sekä tutkimusaiheeseen liittyvän kirjallisen aineiston avulla. Näiden pohjalta rakennettiin parannettu vuokralaitteiden palautusjärjestelmä 3 Step IT Group Oy:lle.

3 Step IT:n parannettu vuokralaitteiden palautusjärjestelmä sisältää kolme pääosa-aluetta: päättymistapojen hallinnan, palautuvien laitteiden hallinnan sekä prosessituen ja koulutuksen. Nämä kolme osa-aluetta muodostavat kokonaisuuden, joka yhteistyössä muiden IT-laitteiden linkaarenhallinnan vaiheiden kanssa, luo lisäarvoa asiakkaille ja mahdollistaa molempia yrityksiä kehittämään toimintojaan oikeaan suuntaan. Yrityksen vuokralaitteiden palautusjärjestelmä ei voi toimia ainoastaan palautuvien laitteiden hallintajärjestelmänä. Tehokas vuokralaitteiden palautusjärjestelmä tarvitsee tukea tehokkaalta päättymistapojen hallinnalta ja tarkoituksenmukaiselta prosessituelta ja koulutustoiminnoilta.

Avainsanat: palautuslogistiikka, toimitusketjujen hallinta, palveluiden hallinta, palveluiden tuottavuus, 3 Step IT Group Oy

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LIST OF ABBREVIATIONS AND KEY TERMINOLOGY:

Reverse logistics	Reverse logistics process. Products are moved backwards through the logistics channel. The products or materials are transferred backwards in the distribution channel either due to customer returns or removal of wastes and by-products
EOL	End-Of-Lease or End-Of-Lifecycle services. Operations conducted after lease contract end date
NS 4	ERP system in use at 3 Step IT Group Oy
Asset Management	Asset Management reporting system where customers are able to manage their rented assets and own assets. Directly linked to 3 Step IT's ERP system, NS 4.
KaPula	Warehouse management system used at 3 Step IT
CRM team	Customer relationship management team that handles all customer service for rental customers including rental contracts, process support, pick-ups for ended equipment etc.
FIFO	First in, First out principle. With inventory management implies to handling inventory for the first arrived devices first, secondly arrived second etc.

1 INTRODUCTION

Reverse logistics has very quickly moved from an undesirable back office activity to a significant opportunity to enhance corporate profit. In this study the researcher will reflect reverse logistics as a procedure, not merely as handling product returns which has been considered to be the main purpose for reverse logistics. As the environmental thinking has grown in significance, also the shipments of wastes and by-products have raised the importance of reverse logistics. Reverse logistics can be defined as *all activities associated with a product or service after the point of sale, the ultimate goal being to optimize or make more efficient aftermarket activities, thus saving money and environmental resources (Pollock 2007, 12)*. Reverse logistics, as reflected in this study, is also a tool to handle returning rental equipment after lease contract time expires. The subject for the research was chosen as the efficient operations for rental returns management are growing increasingly important for the research company.

1.1 Case company presentation

The business idea of the case company for this research, 3 Step IT Group Oy, is to facilitate the management of the entire lifecycle of IT equipment. Basically this means three phases: flexible rental (Step 1), on-line Asset Management (Step 2) and environmentally sound remarketing services (Step 3). Company presentation for 3 Step IT can be found from appendix 1. 3 Step IT was founded in 1997 and operates at the moment in nine countries: Finland, Sweden, Norway, Denmark, Estonia, Latvia, Lithuania, United Kingdom and Russia. 3 Step IT headquarters are located in Vantaa, Finland. Annual turnover in year 2007 was 174 million Euros and increased to 219 million Euros in 2008. The amount of personnel in year 2007 was 107 whereas the personnel count in 2008 was 135. Growth has been significant both in terms of turnover but also with amount of personnel. Key figures for 3 Step IT Group's operations are described in table 1.

Table 1. 3 Step IT Group's key figures from year 2004 to year 2008 (3 Step IT Company presentation 2009)

	2004	2005	2006	2007	2008
Turnover (Meur)	91.4	102.0	130.0	174.0	219.0
Change	+ 36.0%	+ 11.6%	+ 27.5%	+ 33.9%	+ 25.9%
EBITDA (Meur)	3.0	3.4	4.5	5.5	6.5
Change	+ 53.8%	+ 13.3%	+ 32.4%	+ 22.2%	+ 18.2%
Managed assets	135.000	180.000	250.000	320.000	500.000
Change	+ 50.6%	+ 33.3%	+ 38.9%	+ 28.0%	+ 56.3%
Employees	75	80	85	105	135
Change	+ 29.3%	+ 6.7%	+ 6.3%	+ 23.5%	+ 28.6%

The customer portfolio for 3 Step IT consists mainly of small and medium sized companies but also of a large number of community customers. 3 Step IT has a strategy to build growth by efficient teams specialized for their own aspects of the operations, e.g. customer service management, IT systems development or trading sales of returned IT equipment. The teams effected by and contributed to the research are described later in chapter 6.2.

The target of the research, step 3 of 3 Step IT's operations begins when the lease time expires. At this time the customers generally have three options to choose from. The customers have the option to return the equipment, purchase them for their own use (buy-out) or extend the lease period further. The terms for the buy-out prices are determined in the lease contracts as well as the terms for lease extension. The lease extension periods are restricted to maximum 12 months, after which the customer has only the two remaining options; return or buy-out. In some contracts there are restrictions regarding available options. The returning option may for example be outlined from the contract or specified product groups. Approximately 40 per cent of all leased equipment is returned immediately after the lease term periods end. Services for the returned equipment consist of collection and packing services at the customer's premises and secure data erasure for all returned devices with hard discs.

The company's and its customers' rental devices are managed in an ERP system and an asset register system both developed solely for the company's own purposes by the company's own IT department. As the company's business operations have grown rapidly, yearly growth of returning rental device amounts 20 – 30 %, the need to improve and unify company's operational processes is clear. The purpose of this research is, therefore, to identify the next steps for systems and process development from both customer and company's own perspective. Taking into account researcher's own role with responsibility for company's operational logistics and Step 3 processes, this research gives significant benefits to both researcher's own work and the case company.

Figure 1 describes 3 Step IT's process for handling returning devices. The process is described from the point where the customer chooses to return the devices to selling the returned devices in the after market and handling required recycling for non-functioning parts and/or devices. The research will cover points 1 to 5 in the figure. The covered process starts with choosing the ending option and ends with the equipment's arrival to warehouse and inventory for returned devices. A more detailed process description can be found from appendix 2.

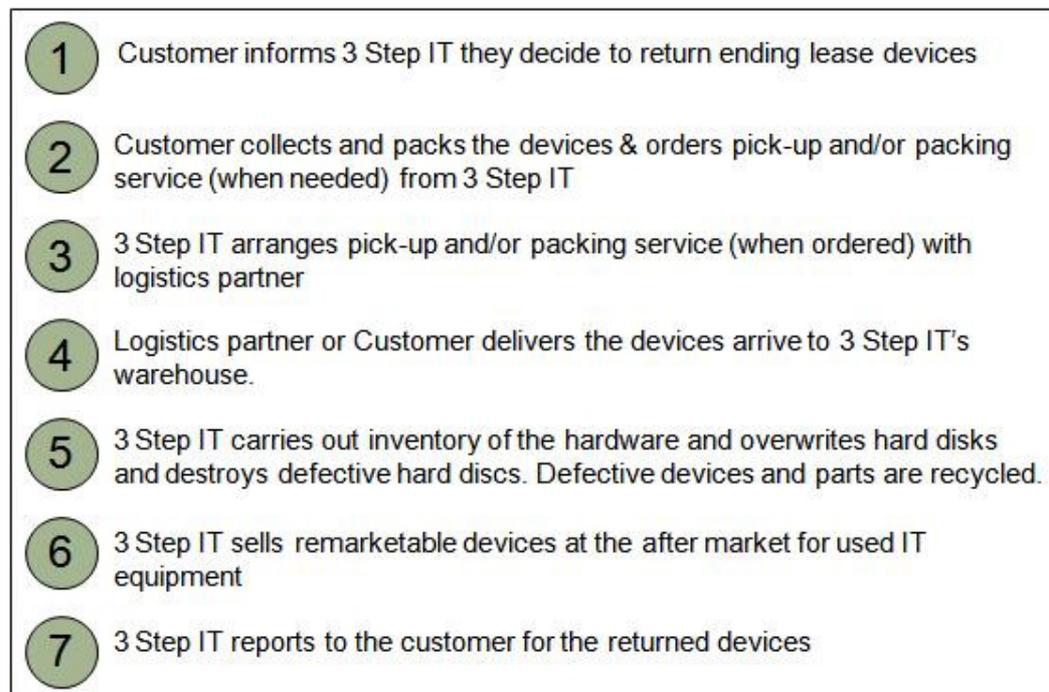


Figure 1. 3 Step IT's general process for returning rental equipment

Since beginning of year 2007 customers have had the opportunity to make transportation orders for all returning devices directly from the Asset Management reporting system. The orders are then handled and forwarded to the transportation company from 3 Step IT's own operational system, NS 4. This process was earlier handled totally by MS Excel and e-mail, and can now be totally handled from the company's own IT systems. After using the developed functionalities for over a year, this research project aims to collect experiences and understanding from both customer and company's inner perspective.

The business concept of 3 Step IT is challenging as the company operates as a service company but has also taken the responsibility for the physical process after lease contract expiration date. Most of the company's competitors use partners to handle the physical process. The only part of the physical process 3 Step IT out-sources is the transportation process. Also this process is monitored closely and 3 Step IT has a strategy to use only confirmed and trusted partners.

1.2 Objectives and research questions

The goal of the research project is to study the means of developing companies' reverse logistics processes and to therefore intensify the performance of order-supply chains. This research will take a clear customer-perspective to developing reverse logistics. The goal is to develop reverse logistics both from customer-perspective but naturally also from the perspective of the case company itself. This research also aims to determine the needed measurement tools to ensure the further development of a reverse logistics system.

Taking all this into account, the basic research question for this project is:

- What are the most efficient operational procedures for reverse logistics?

To better be able to answer the questions, the following additional support questions have been summarized:

- What are the customers' expectations from an efficient reverse logistics process?
- How to include the customer perspective to process development at the same time keeping in mind the final goal of a cost efficient reverse logistics process?
- How to measure the process to ensure further development and improvement of reverse logistics processes?

1.3 Limitations

Although reverse logistics generally creates discussion regarding environmental issues, this research will not cover the aspect of protecting the environment with the help of reverse logistics related activities. Also organizational matters will be addressed only from the aspect of personnel requirements. The transportation process will be reflected to only from process perspective in the research project. Developing the transportation process will be carried out separately in cooperation with company's logistics partners.

Developing 3 Step IT's rental returns management system is an ongoing and continuous process. Therefore, the development will be continued also after this research to correspond with the market and strategic requirements. The development aspect covered by this research is restricted to development tasks conducted between January - December 2008. Topics for further development scheduled to be conducted separately after this research project, are reviewed in chapter 6.6.

1.4 The research project and risk analysis

The research project was started with planning and choosing the best-suited data retrieval methods and studying the corresponding literature. The group interviews

and customer trainings were conducted during April – May 2008 and the development tasks during summer and autumn 2008. More details on the research project can be found in chapter 6.1. The general structure and goal of the research project are described in figure 2.

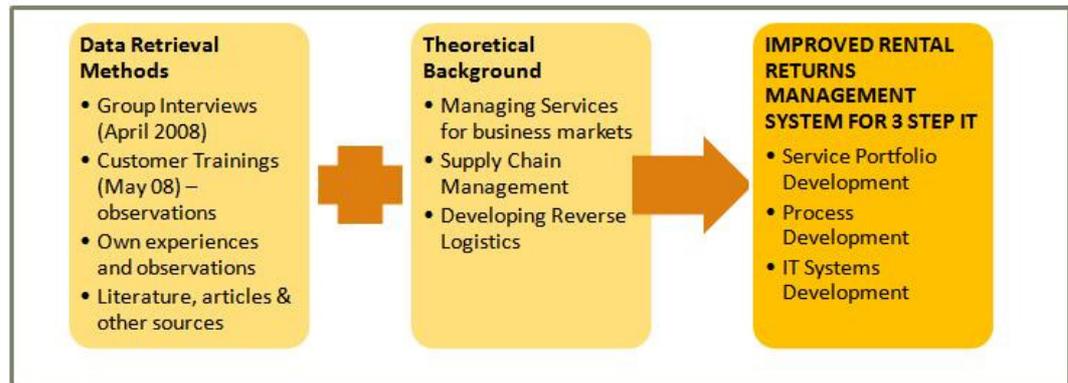


Figure 2. Research project structure and goal

The largest risks related to the research project are involved with the organization and available resources. When developing inner processes and services structure, the development tasks must be validated to the organization to ensure successful implementation. The presumption of minor internal resistance proved true as there is a clear inner demand for developing the rental returns management system further. A major risk for the development project was involved with available resources. The development has been conducted in connection with normal daily operations which has caused some delay in the project timetable. The development project has, however, been conducted during a satisfactory time period, during one year.

1.5 Structure of the report

The report has not been divided strictly into theoretical and practical sections. Instead, I have chosen to handle theoretical and practical matters alongside each other. Chapters 3 and 4 covering issues of services and supply chain management and developing reverse logistics are structured with first the theoretical part and the practical, case company related objectives have been included to each chapter

immediately after the theoretical part. This method has been chosen to bring theory closer to practise and to ease creation of general view on the subjects. The structure of the report is described in figure 3 below.

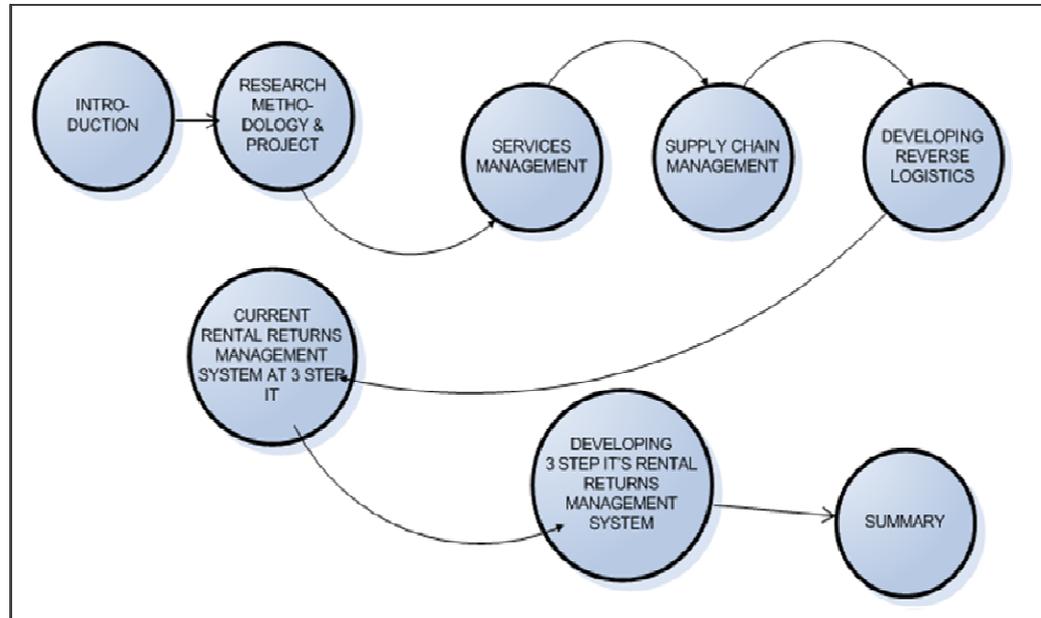


Figure 3. Structure of the report

After introducing the research subject, the used research methodology will be described and the contents of the research project outlined. The theoretical background and practical issues will be started by matters related to services management, following supply chain management matters and finally the developing of reverse logistics. Going further to the case company's operations, the current rental returns management system is described next in chapter 5. The developing and improving of 3 Step IT's rental returns management system is covered in chapter 6 with details on the results of the development project and changes made to the rental returns management system. Finally, the report is closed by the summary chapter.

2 RESEARCH METHODOLOGY AND RESEARCH PROJECT

This research has mainly been based on qualitative research methodology. The applied research methodologies will be outlined in the next chapter. The course and structure of the research project will be described. A short review on the data retrieval methods applied during the course of the research project will also be covered.

2.1 Research methodology

This research has been conducted as a case study and is mainly based on qualitative research methodology. Some aspects of the research have, however, characteristics from quantitative research. When discussing a case study research, one should understand that it does not refer to a technique. A case study does not take a qualitative or quantitative approach. With case studies, we are directed towards understanding the uniqueness, characteristics and functions of a particular case in all its complexity. A case study research can take many forms. It may rely on pre-existing information or observing the process or on in-depth interviews. The data gathering methods are, however, related to the research using either qualitative or quantitative approach. (Hackley 2003, 95 – 97; Welman 2001, 182 – 183.)

According to Hackley (2003, 9) most research studies are described to be a mixture of both research methodologies with an emphasis on one or the other. In this case the emphasis is mostly on qualitative research. As a combination of qualitative and quantitative research, the goal for this research has been to create something new and solve actual problems that are faced in the world of rental returns management, hence reverse logistics. The choice of using either structured or unstructured approach and of quantitative or qualitative mode of enquiry should depend upon the aim of the enquiry and use of the findings. (Ranjit 2005, 12.) Both methodologies have been shortly summarized in the next chapter.

Qualitative research methodology

Qualitative research methodology can be described as an exploratory research aiming to describe a situation, phenomenon, problem or event. If in qualitative research analysis is done to establish a variation in the situation, phenomenon or problem, the vital difference when compared to quantitative research is that qualitative research has no aim to quantify the variation. Examples of qualitative research are descriptions of observed situations, the historical enumeration of events, an account of the different opinions people have about an issue, and a description of the living conditions of a community. Unlike quantitative research, qualitative research relies on reasons behind various aspects of behaviour. Simply put, it investigates the why and how of decision making, as compared to what, where, and when of quantitative research. Taking all this into account, qualitative research relies on smaller but focused samples rather than large random samples. (Ranjit 2005, 12 – 22.)

Qualitative researchers typically rely on four methods for gathering information: participation in the setting, direct observation, in depth interviews and analysis of related documents and materials. When addressing types of qualitative data, they consist of different non-numerical material. The non-numerical data may be for example transcripts or audio-recordings of interviews, field notes of researcher observations, records of conversations, and any kinds of social texts such as books, articles, newspapers, advertisements or related company presentation and process material. (Hackley 2003, 25; Ranjit 2005, 12 – 22.)

Quantitative research methodology

Compared to qualitative research, when applying quantitative research methodology, the data consists of numerical information. Questionnaires are often used in business and management to gather data that can be quantified. After collecting the quantitative data, a statistical analysis is performed on the data. (Hackley 2003, 25.)

Quantitative research methodology is the systematic scientific investigation of properties and phenomena and their relationships. The objective of quantitative research is to develop and employ mathematical models, theories and/or hypotheses connecting to natural phenomena. The process of measurement is central to quantitative research because it provides the fundamental connection between empirical observation and mathematical expression of quantitative relationships. Quantitative research is widely used in both the natural sciences and social sciences, from physics and biology to sociology and journalism. It is also used as a way to research different aspects of education. The term quantitative research is most often used in the social sciences in contrast to qualitative research. (Ranjit 2005, 12 .)

2.2 Development project

Basic structure for the development project is described in figure 2 in chapter 1.4 including used data retrieval methods, chosen theoretical background and finally the ultimate goal of a new rental returns management system for 3 Step IT Group Oy. The data for the research was acquired from group interviews, customer trainings, own experiences and observations as well as current literature, articles and internet sources. Use of functional observation has great significance in the development project as a large part of the developing has been carried during the course of researcher's work.

Applied data retrieval methods

Large part of the data was retrieved from group interviews to customer service and sales personnel. Conducting interviews is a good data retrieval method irrespective of the applied method of research. Even with problem based researches interviews with practitioners can give a valuable insight into practical issues. With more theoretically informed research project, the so called in-depth interviews are used. When conducting interviews, there are some important aspects to consider. The interviewer must prepare well for the interview and aim to achieve as relaxed

atmosphere as possible for the interview. The interviewer must also choose between passive and active interview styles. In some cases, when determined appropriate in preliminary planning phase, the interviewer may lead the interviewees to a specific direction. In general, however, best results are often achieved when the interviewees are allowed to discuss the matter freely. Audio-recording the interviews is recommended. (Hackley 2003, 76 – 77.)

The four group interviews were conducted during April 2008. The groups for the interviews were formed according to personnel group. Sales assistants handling the daily rental returns management work formed the first group. Second group consisted of customer service specialists who do not handle the basic work but instead are responsible for the process support and training offered to the customers. Third group interview formed the perspective of the key account managers who are in charge of the total customer portfolios. Finally, the fourth group interview studied the perspective of the sales and customer service management. The underlying assumption that these four groups would have different interests and motivations proved itself true. All groups concentrated on the matters closest to their own job descriptions and responsibilities with the sales assistants concentrating more on practical matters concerning daily work whereas the sales management concentrated mostly on the service portfolio matters and total development of customer relationships. The execution and results of the group interviews are reviewed more closely in chapter 6.3.2.

Large part of the research data has been retrieved from researcher's personal experiences and observations during customer trainings and normal end-of-lease work. Observation is a research technique that is often implicit in data-gathering approaches. Our observations provide the social context that informs our judgments on the surroundings, operational procedures and people. Informal observation forms an integral part of interpretive research. More formal uses of observation in social research include action research and participant or non-participant observation. Each of these techniques involves the researcher in the process that is being studied. A challenge in using observation as a data gathering method is to

remain as invisible as possible in the process and among the people to be observed. (Hackley 2003, 85.)

Customer trainings regarding best practise procedures for End-of-lease were conducted in end of May 2008. Good observations regarding customers' own processes and expectations were made during the 14 different workshop trainings where the researcher acted as a primary trainer. More information on the data retrieved during customer trainings in chapter 6.3.3. Researcher's own background with responsibility for the company's operative logistics has also brought an important aspect to the research. Own observations and experiences have been used as basic data for the research.

Literature and article sources have been gathered from the fields of the chosen theoretical background. The theoretical background has been formed from fields of reverse logistics, supply chain management and management of services. The materials have been gathered to best suit the purposes of returns management systems taking into account that reverse logistics from 3 Step IT's perspective is much more than handling of customer returns.

The original project plan included also personal interviews with company's logistics partners. These interviews were, however, decided to be carried out after internal functions have first been developed. Concentration will be first made to correcting the process inside 3 Step IT and focus more on external development at later stage of the development. During the course of the research and development project the project was divided into two phases. The first phase including developments inside the company's own processes and systems, and the second phase which will be carried out after receiving experiences from the changes conducted after first project phase is completed. Therefore the originally planned customer survey was decided to be carried out only after phase one. This will enable us to get the customers' opinions heard when making the more specific developments to the process and systems. To ensure customer perspective also in phase one, the research relies on the group interviews conducted with the customer service per-

sonnel of 3 Step IT as well as observations from customer trainings and the daily end-of-lease work.

3 SERVICES AND SUPPLY CHAIN MANAGEMENT

The next chapters will guideline matters related to managing services and the overall supply chain. In each chapter, the theoretical background will be outlined first and each chapter will be concluded by describing how the individual matter is handled with regards to 3 Step IT's rental returns management system.

3.1 Managing services for business markets

When talking about managing services, it is important to recognize that not all services are the same. The variation between different services can be wide and will affect also the services management process. This study will take a very limited look into services management to best benefit the study in question. The researcher will first take a look into managing the service offering and secondly the required choice or balance between services standardization and differentiation. Thirdly, the opportunities to support service productivity will be gone through.

3.1.1 Managing the service offering

Customers deserve more than just a good service package. It also has to be made into a functioning service process. (Grönroos 2007, 183.) The first step in service business is to establish the needs of the customer segment they wish to serve. These needs must address the product, if there is a product, the customer transformation, and finally the customer perception. According to this information, a service strategy must be formed. (Sadler 2007, 79-80.) A key stage is, therefore, to determine what the company is selling and which customers they want to reach.

In the traditional product-centric mind-set services were seen as an afterthought – a way to make the product more attractive. With the growing competition, compa-

nies are giving increased attention to services management, particularly in the solutions-centric mind-set. As services management is often started with the actual product the company is offering to its customers, the solution-centered approach begins with an analysis of the customer problem and ends by identifying the products and services required to solve the problem. (Hutt & Speh 2007, 267.)

Whereas the traditional model has been transaction based, in the solution-centered model the exchange process is interaction based, and the value is created in cooperation with the customer. This will result in customer offering becoming integrated combination of products and services designed especially for determined customer segments. Therefore, services, as a critical part of the total solution, become a valuable basis for competitive advantage and an important driver of profitability. (Hutt & Speh 2007, 267-268.)

When developing solutions, business marketing companies must define their unique capabilities and determine how to use them to help customers reduce costs, increase responsiveness, or improve quality. In some cases, this may mean taking in some of the work the customer has now performed. Taking in some extra work in these cases will most likely also prove to be financially beneficial in the larger picture. Taking all this into account, there are two key elements and benefits for successful solution marketing: first, creating growth opportunities and secondly sustaining differentiation and customer loyalty. (Hutt & Speh 2007, 268-269.)

Managing service interactions effectively is a task that must be approached systematically. Several key service management decisions impact the overall product strategy starting from initial product planning through to end-of-life factors, and naturally in a global service network. In determining the overall success and profitability of a product, product planning plays a key role. It must be tightly aligned with marketing and engineering to ensure the product is designed to be serviceable and that the long-term cost implications of service decisions are understood. (Andreae 2007, 18 – 19.)

When developing the service package, it is useful to distinguish between three groups of services: the core services, the enabling services (and goods) and the enhancing services (and goods). The core service is the reason for the company being on the market. In order to make it possible for customers to use the core service, enabling services are required. These may also, in some cases, be enabling goods. Examples of enabling services are for example check-in services at the airport or reception service at a hotel. The third type of services, enhancing or supporting services, are similarly to the enabling services, auxiliary services, but they fulfill another function. Enhancing services do not facilitate the consumption or use of the core service but are used to increase value of the service or to differentiate the service from those of the competitors. Hotel restaurants and airport lounges are examples of enhancing services. When considering the different types of services, the distinction must be made that enabling services are mandatory, enhancing services are used for competition purpose only. (Grönroos 2007, 185-186.)

There are many ways to perceive the service process, or in other words buyer-seller interactions or service encounters. Due to the characteristics of most services, there are, however, three basic elements, which from a managerial point of view constitute the process. These basic elements are (1) the accessibility of the service, (2) the interaction with the service organization and (3) the customer participation. These elements are combined with the basic package, thus forming an augmented service offering which is described in Figure 4. (Grönroos 2007, 187-188.)

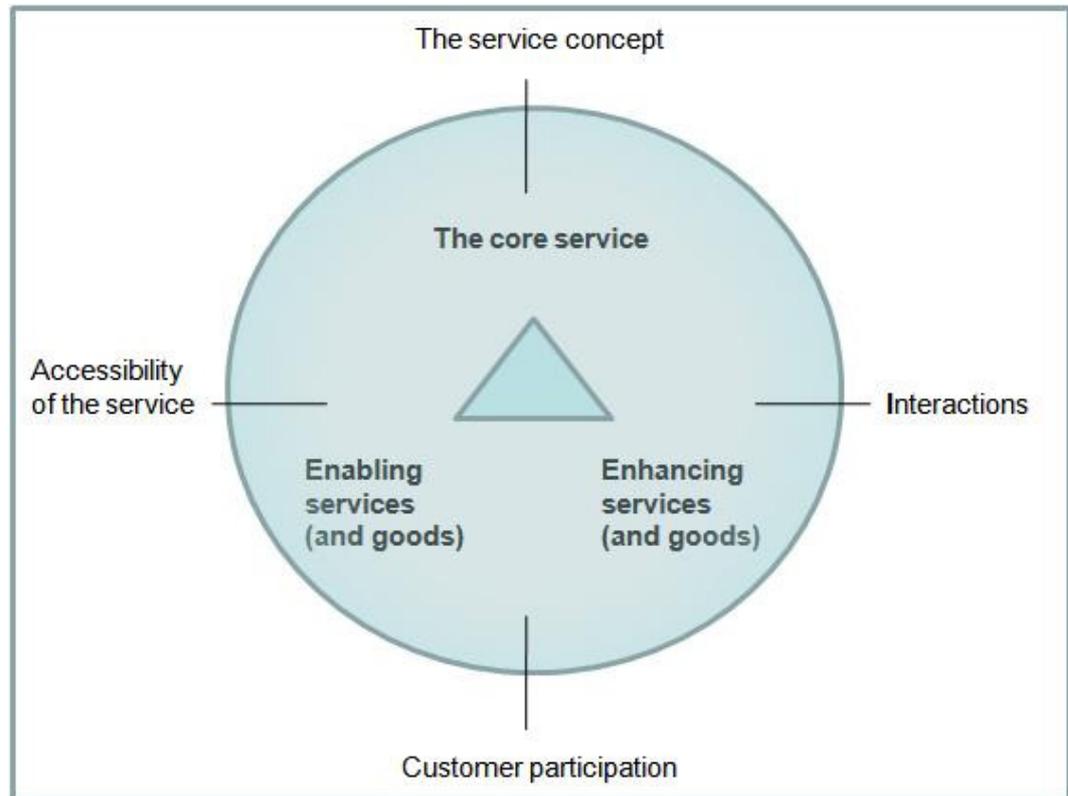


Figure 4. The augmented service offering (Grönroos, C. 2007. 187.)

It is important that the three elements of the service offering are directed at customer benefits according to the service concept developed for the company. Emphasis must be paid to guaranteeing the accessibility of the service and the functionality of the interactions. The clear importance of the customer participation also needs to be acknowledged. The customer has an impact of the service he perceives. Thus, he becomes a co-producer of the service and therefore also is involved in creating value for himself. (Grönroos, C. 2007. 187-190.)

As the business model of 3 Step IT is strongly based on making customer's IT lifecycle management easier, service management plays an important key role in the company. Concerning end-of-lease management, the service provided in Step 3 of the entire leasing process is one of the key competitive factors of the company. The company's functions are based on handling customers' product returns in an effective and environmentally friendly manner. Compared to many competitors, the main differentiating factor of 3 Step IT's concept is the fact that the returning rental equipment have real value to 3 Step IT. 3 Step IT finds new homes

to the returning IT equipment by selling them in the after market for used IT equipment. Only a small portion of the returning equipment, equipment that are defective or too old and hence have no after market value, are transferred to recycling according to the company's ISO 14001 certified environmental system. From the main IT equipment product groups, only 5 % of the total returning volume are transferred to recycling. As 95 % of the returned equipment can be sold at the after market, and the equipment have actual value to 3 Step IT, this has also been compensated for the customers in lower rental prices.

Based on all these matters, 3 Step IT has a strong interest and motivation to make rental returning as easy as possible to the customers therefore enabling customers to return as much IT equipment as possible. Analysis of customers' processes and needs have been taken into account when developing 3 Step IT's own processes and systems. One aspect of this study has also been to analyze the customer needs and solving at least part of the customer's problems. The ultimate goal is to offer a service that brings benefits to both customers and 3 Step IT and creates additional value to the customer.

3.1.2 Services standardization vs. customization

Whether a service is standard or customized makes substantial difference to services management. Generally speaking, the less the service includes customer contact, the more standard the service becomes. (Leenders, Johnson, Flynn & Fearon 2006, 454.) When talking about standardization, the clear difference between standardization and simplification must be made. Standardization does not automatically result in simplification. It merely requires definite decisions on what the company offers and in what kind of processes. The challenge is to find the balance between standard and simplified.

One factor affecting the degree of standardization is the type of business. Some business and service providers use standardization to improve their service quality, some merely to reduce costs. Specification procedure for standardized services

is often easier than with customized services. The specification process for highly customized services can become more difficult and the different options more difficult to understand. In these cases the involvement of the end consumers becomes also more important and the possibility of trade-offs in various make-or-buy sub-options needs to be explored before the final specifications are agreed on. The more customized the service, the more factors to evaluate when making specifications and also the more factors affecting the entire service management process. (Leenders etc. 2006, 454 – 455.)

When making the decision between standardization and customization, the personnel requirements are a key element to consider. The more customized the service, the more personnel is required and the more skills are required from the personnel. (Leenders etc. 2006, 455.)

The customer base of 3 Step IT is very wide in both size and customer type. Concerning the product and service offer, some variation has been made taking into account the customer's size and mode of business. The process matters for handling rental returns have, however, been standardized to a very large extent. The main restrictions to the offered service have already been stated in the cooperation and rental contracts made with the customer. An important factor when considering the service concept is the service description of 3 Step IT which is available to all customers in the on-line Asset Management system. The service description is the always valid source of information regarding customer process.

As rental returns management is handled in the company's own operational system, the system itself has been built in a manner to restrict the process. Decisions on the main process restrictions have been made before the new operational system was created in January 2007. The end-of-lease service has been specified as a standard procedure for all customers. All exceptions to the process require manual work from both the customer and 3 Step IT. There are a number of customers that have certain process exceptions stated in contracts. The variety of the exceptions needs to be handled manually. Standardizing the system and avoiding exceptions has proven beneficial also to customers as the process is clearer and follow-up is

easier. The need to customize has, however, risen as the sales management would prefer to differentiate also the services related to end-of-lease.

As stated earlier, the amount of equipment leased through 3 Step IT has grown significantly in the past years, yearly growth 20 – 30 %. This has brought pressure especially to personnel requirements. As the target is to facilitate the management of ending lease equipment, standardization and improvements in process descriptions and instructions also grows in importance. The target is to reduce the need for personnel and also to simplify the handling of the process itself. As the process becomes more standard and better described, it becomes easier to handle the daily work and to train the hired new personnel.

3.1.3 Supporting service productivity

When discussing services, productivity and quality can't be separated. The customer's role in productivity is also more important than in manufacturing industry. This is because customers are perceived as co-producers in the service process and therefore also influence the progress of its outcome. The service producer itself uses resources in the service process which can be labeled as provider-induced contribution to productivity. The customers, on the other hand, provide some inputs such as information, self-service activities, inquiries and complaints. These are customer-induced contributions to productivity. The customers don't only give the input needed to produce the service but also influence the way the employees and technologies in the service process function. In other words, interactions created by customers influence the efficiency of the service process. This can be called the interaction-induced contribution to productivity. (Grönroos 2007, 238 – 239.)

Depending on how well the service provider and customer can relate to and contribute with each other, the interactions that occur will contribute more or less to the perceived quality of the process. Simultaneously and as a result of the same resources contributing to productivity, depending on how well these resources

interact and perform, there are provider-induced, customer-induced and interaction-induced contributions to quality. Quality and productivity are thus two sides of the same coin. In addition to these factors, productivity is also influenced by demand. When there is a demand that meets the provider-induced resources in the service process, internal efficiency improves and a positive effect on productivity is created. When demand starts to exceed what can be managed with existing resources, external efficiency decreases, which has a negative effect on perceived service quality and hence on revenues and profitability. This means that demand is also a critical productivity factor. Figure 5 demonstrates the different interrelated factors in a service productivity context. (Grönroos 2007, 238 – 239; Parasuraman 2002, 6 – 9.)

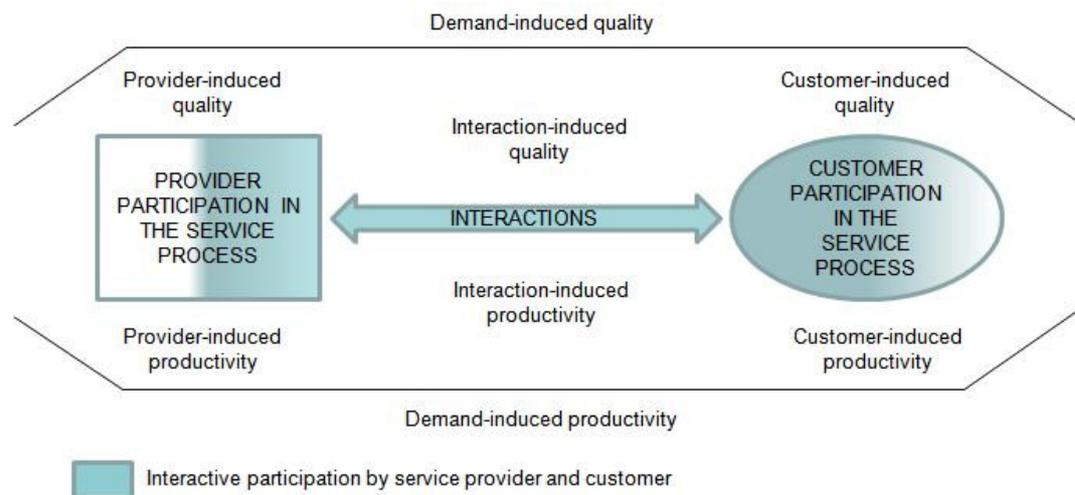


Figure 5. Productivity, quality, customer and provider participation and demand as productivity factors in service contexts (Grönroos 2007, 239.)

From a managerial point of view, there are four important aspects to consider when managing productivity in services. Firstly, there needs to be an optimal balance between perceived service quality and the company's external efficiency and cost efficiency must be maintained when designing the service provider's input into the process. Secondly, the service provider's resources must contribute to interactions with customers in the service process in a way that creates an optimal balance between perceived quality and internal efficiency. Thirdly, customers must be chosen, educated, motivated and informed in a way to, through their participation in the service process, contribute positively to customer-induced quality

and productivity as well as to interaction-induced quality and productivity. Finally and fourthly, the demand must be managed in a manner to maintain balance between perceived quality and internal efficiency and thus also between revenues and costs. (Grönroos 2007, 240; Johnston & Jones 2004, 211 – 212.)

Cost efficiency and managing costs form an important part of the management of productivity in services, as they also do in the manufacturing industry. However, due to the characteristics of services, cost efficiency is a more complicated issue in service contexts. (Grönroos 2007, 240.) In the next chapters attention will be paid to how productivity and quality can be improved in service organizations.

Improving productivity and increasing service quality are tasks that can't be carried out simultaneously. All steps to improve service productivity should be based on (1) a thorough understanding of what constitutes good service quality as perceived by customers and (2) an equally thorough analysis of how the company operates to produce that quality; which resources (human, physical, technological and customer) are needed and which are unnecessary, and how effective or ineffective the used routines and systems are. Good costs, bad costs and mandatory costs must be identified and kept separate. When external and internal researches are compared, you will have established a strong basis for improving productivity and quality simultaneously. (Grönroos 2007, 248.)

I will now discuss some ways to improve service quality and productivity simultaneously. A clear method is to improve employees' technical skills. If the personnel have inadequate technical skills, the service process quality perceived by customers may be damaged. Any lack of skills and the need for corrective action and the repetition of activities affect productivity and hence quality. Productivity and quality can also be improved by service orientation of attitudes and employee behavior as well as making internal values supportive to good service productivity. (Grönroos 2007, 248-249.)

From technology point of view, the systems and technology must be made more supportive to employee and/or customer co-production. The service production

itself may be industrialized, that is substituting technology and automation for people. The Internet and information technology offer many opportunities of creating service processes that require fewer resources from the service provider and at the same are perceived as improved service quality by the customers. Another way to improve productivity and quality is to examine the customer participation in the service process. You can introduce more self-service elements to the service process, or you can improve the participation skills of customers. Better-informed and better-trained customers feel more secure, make fewer mistakes and need less unnecessary attention from the employees. The customers can speed up the service production process. By their input into the process they improve productivity, and employees are able to serve more customers, which also enhances productivity. Last discussed method to improve productivity and quality is to reduce the mismatch between supply and demand. Compared with manufacturing industry, service companies are not able to stock products when demand is low. If the demand peaks have high peaks and corresponding troughs, the service quality will most likely deteriorate during the troughs. Reducing the mismatch between supply and demand is a way of making quality more consistent and of improving productivity. Using part-time employees may be one way of doing this but is not always successful. Another way of matching supply and demand is to attempt to manage the customer flow but e.g. offering better prices during troughs. (Grönroos 2007, 249-251; Parasuraman 2002, 6 – 9.)

When discussing ways to improve productivity at 3 Step IT's rental returns management system, one key factor would be to improve the interaction between 3 Step IT and the customers. With IT systems development, parts of the rental returns management has been transferred to the customers, or with the help of automation the personal interaction has been decreased. Shifting the responsibility for making the transportation orders to the customers by decreasing personal contact and increasing automatic reminders has altered the interaction between customers and CRM teams.

Developing the service process into a more controlled and stringent service has enabled 3 Step IT to release resources into developing the customer portfolios and

process. The strong growth at 3 Step IT's operations has, on the other hand, caused pressure to improve processes and therefore reduce pressure of recruiting new personnel. The challenge is to find the balance between automating processes and at the same time offering customers better service. Automating processes such as transportation orders, gives customers the freedom to handle their part of the process at the most convenient time and also gives the customers the possibility to monitor the situation with their rental returns directly from Asset Management reporting system. A discussion on which services it is reasonable to automate and which customers need more personal service is on-going and will be carried further with sales management of 3 Step IT.

As the rental contracts end once a quarter and therefore the rental devices are returned to 3 Step IT mostly during a period of one month, there are high peaks in handling returning devices. Although many process parts have been automated, there are still many different tasks for the customer service personnel. This creates pressure for resources and work load planning. There are improvement issues related to leveling the mismatch between demand and supply but also related to employee skills, customer participation and use of technology. The customer participation to the process requires developments in IT systems and also customer instructions and trainings. When developing the IT systems, the advantages of better interaction between 3 Step IT and customer must be evaluated. In certain aspects it may prove more beneficial to handle the development issue with improved instructions and training than developing the IT systems. The processes should support the IT systems and vice versa. A controlled balance is important also here.

As stated earlier, the rental returns management system requires many skills from the customer service personnel. In addition to handling the transportation orders for the returning devices, the sales assistants handle all incoherence with the returned batches detected at product inventory at the warehouse. Related to end-of-lease tasks, the customer service personnel also controls the invoicing requests for the other ending options, buy-outs and lease extensions. And naturally handle all other customer service tasks during the same period. A discussion has been started

in using other resources for some parts of the end-of-lease process. This discussion will be continued after the research project.

3.2 Supply chain management

The following chapters will focus on the overall management of supply chains. The basic features for supply chains and supply chain management will be outlined first, then going deeper into managing supply chains in service organizations, managing the supply chain security issues and finally the aspect of IT support to supply chain management.

3.2.1 Definition and benefits

The role of supply chain management (SCM), is to plan, organize and coordinate all the supply chain's activities. In today's business world, the concept of supply chain management refers to a total systems approach to managing the entire supply chain. Going deeper, a supply chain refers to the flow of materials, information, payments, and services from the raw materials, through factories and warehouses, to the end customers. A supply chain also includes the organizations and processes that create and deliver products, information, and services to the end customers. This meaning that such tasks as purchasing, payment flow, material handling, production planning and control, logistics and warehousing inventory control, as well as distribution and delivery are all included in the supply chains. (Turban, McLean & Wetherbe 2002, 242.)

It is important to notice that supply chain management also includes the coordination and collaboration with different channel partners. Channel partners can be suppliers, intermediaries, third-party service providers, and customers. Fundamentally, supply chain management integrates supply and demand management within and also across companies. Different types of products require different supply chain structures and also different number of operators inside the supply chain. (Ballou 2007, 338; Waters 2009, 113.)

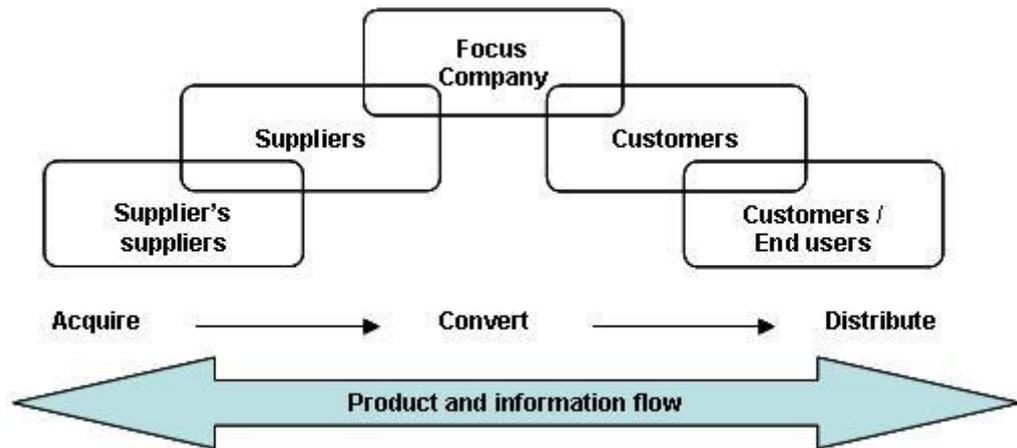


Figure 6. The multiple enterprises of the supply chain (Ballou 2007, 339.)

All the multiple enterprises that are included in the management of supply chains are presented in figure 6. Although there has been much discussion on the benefits of collaboration among channel members and expanding the scope of product flow management to include the entire supply chain channel, the extent to which this has really been practiced is limited. Around one-half of companies are working towards integration inside their own company and approximately one third of the companies focus their integration efforts to their first-tier suppliers. Beyond these limitations there is little attempt of integration. (Ballou 2007. 339 – 340.)

The main goal of modern supply chain management is to reduce uncertainty and risks in the supply chain. By doing this, you create positive affects on inventory levels, cycle time, business processes, and customer service. And as a result, you increase profitability and competitiveness. In today's competitive business world, the effectiveness and efficiency of supply chains is critical to organizations. The success of supply chains is often strongly dependent upon the supporting information systems. By constantly improving supply chain efficiency, supply chain managers simultaneously also increase the levels of risk. (Turban etc. 2002, 242 – 243; Waters 2009, 484 – 485.)

The basic supply chain for reverse logistics in 3 Step IT is described in Figure 7. The main parties of the 3 Step IT supply chain are customers, customer service management teams, EOL services team and operators, transportation companies

and financial department. All the parties and steps in the process are vital for the reverse logistics operations as are all the support functions and processes. This study is mainly focused on the main process of return goods handling. The support processes are reflected to only partly. The complexity of 3 Step IT's supply chain can be easily understood when reflecting the fact that there are approximately 550 individual returns each quarter. Amount of customers with returning equipment is approximately 400 pcs each quarter.

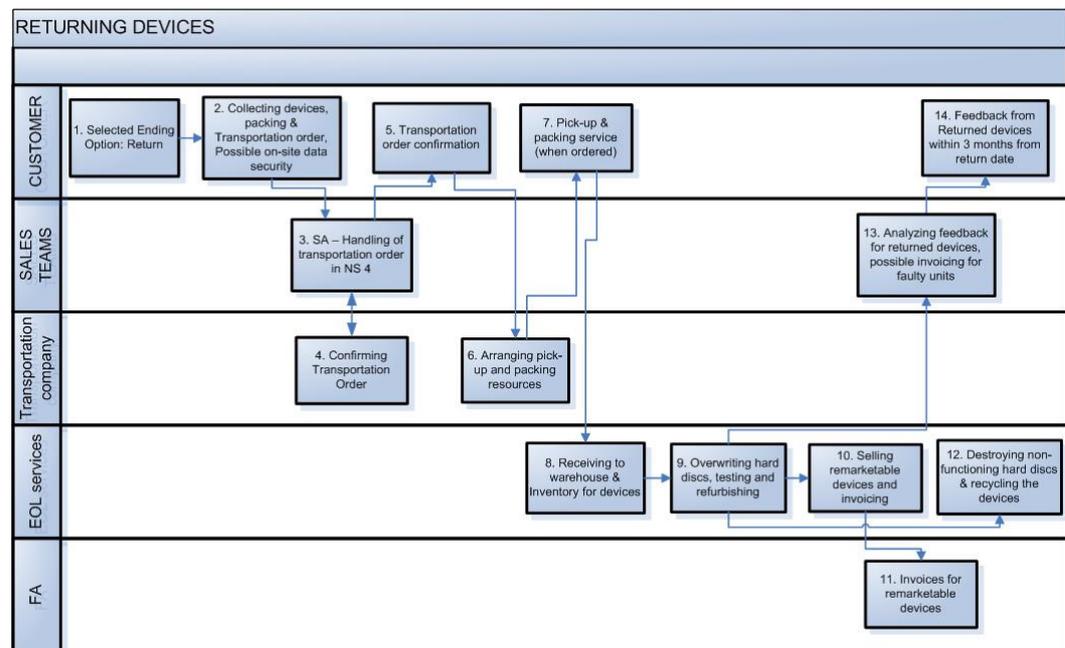


Figure 7. 3 Step IT's process for returning rental equipment (3 Step IT Intra pages)

More often the supply chain of 3 Step IT also includes subcontractors that the rental customers use. They can use subcontractors either for the entire IT management or alternatively only for e.g. collecting and packing the equipment. The presence of subcontractors must always be taken into account when developing the supply chains and also when developing company's IT systems. Any delays caused by subcontractors affect directly or indirectly 3 Step IT's own supply chains.

The tasks, responsibilities and risks related to subcontractors and their effect to 3 Step IT's supply chain should be studied more closely. This could be a topic for further research after this research project. 3 Step IT's customers often restrict

their own subcontractors by offering them only limited access and opportunities to use Asset Management reporting system. The role of 3 Step IT is to instruct and guide customers on the best practices when using subcontractors. Naturally it would always be more beneficial for 3 Step IT to offer the same services to the customers without the customers needing to acquire the services from their current subcontractors. The main goal is, however, to manage the supply chain effectively taking into account all affecting factors.

3.2.2 Challenges in managing supply chains in service organizations

The supply chain concept is important in most service organizations although the range of different services from personal services, such as banking, to mass services, e.g. retail stores, is really wide. Service organizations, with the exception of professional services, require materials and goods to provide to customers or to use in their service processes. Service organizations require a sophisticated and efficient information system to receive all the data and information enabling them to handle the numerous required decisions. Such companies require management coordination and strategic leadership along the entire supply chain to ensure a joint effort of all inner components to provide the promised services. The basic goal is to efficiently handle the supply chain, therefore being able to respond to market demands and deliver the market promise to end customers. (Sadler 2007, 70.)

Especially in service organizations customer satisfaction must be kept in mind. Although reducing costs is a prime motivator to strategic supply chain management, customer satisfaction and service portfolio should be counted as the leading goal for supply chain managers. This can be difficult to validate as it must be proved that short-term gains may cause losses in long-term value of strategic supply chains. (Fawcett, Magnan & McCarter 2008, 45.) When comparing the profit logic in service organizations and manufacturing industry, there are clear differences with regards to the internal and external efficiency, drivers of revenues and costs and on how decisions on internal and external efficiency are taken. In service

organizations internal and external efficiency can not be separated whereas in manufacturing industry different efficiencies are separate. Also revenues and costs are driven by separate processes in the manufacturing industry whereas in service organizations they are largely driven by the same processes. All this causes that in service organizations internal and external efficiency have to be managed in an integrated process. (Grönroos 2007, 217.) These differences need to be taken into consideration when managing and developing supply chains in service organizations.

In cases with problems in supply chain management, technology, information and measurement systems are often recognized by management as barriers to successful supply chain collaboration. However, managers should not overlook organizational culture and structure, as well as management styles when designing remedies to supply chain problems. The key to successful supply chain development are the people. Companies continue to invest in technology, information and measurement systems. However, management must not overlook the importance of training, educating and bringing together the right people to use the systems and interact with each other. By forming the right teams for the right tasks companies will achieve successful operations and positive commitment also from other organizations members thus increasing their commitment to supply chain collaboration. Most important is to keep a realistic view of the challenges found embedded in the very human and mechanical links of the supply chain and at the same time stay optimistic. By doing so, companies have the best chance of achieving their strategic goals. (Fawcett etc. 2008, 45.)

3 Step IT has addressed the need for an efficient and sophisticated information system by creating and developing own systems by the company's own IT department. More information on IT support to supply chain management in chapter 3.2.4. This has also enabled the company to better respond to customer needs and therefore give better customer service. The goal is to keep developing the information systems to suit the business model and also to respond to the strategy goals set by the management. 3 Step IT's basic goal of always offering customers something extra requires continuous development.

A basic challenge in a service company is involved with attitude. Also service organizations must understand that supply chains exist also in their operations. Every company has a diversity of different supply chains and a number of different supply chain contributors. To develop 3 Step IT's supply chains, the internal and external processes must be developed side by side. A balance must be found between offering strategy-based services to customer, being cost-efficient and creating revenue for the company at the same time. A discussion on building the right teams to handle individual parts of the process must be continued.

3.2.3 Supply chain security

When considering the total service chain, the security of modern supply chain operation must be evaluated. This requires that risks are identified and reduced so that disruption, be it from any source, is minimized. All businesses are susceptible to disruption. (Sadler 2007, 90.) Supply chain security can be defined as the application of policies, procedures and technology to protect assets, facilities, information and personnel from e.g. theft, damage or terrorism. Basically supply chain security is a question of being prepared for the unexpected. The supply chain must be formed in a manner to sustain close to normal processes when confronting unexpected events. (Bowersox, Closs & Cooper 2007, 290.)

Whereas supply chain security was addressed earlier, another important term, supply chain resiliency, should also be considered. Supply chain resiliency refers to a supply chain's ability to withstand and recover from an incident. A resilient supply chain is proactive in anticipating and establishing planned steps to prevent and respond to security incidents. Resilient supply chains can quickly establish substitute ways of operation when experiencing a security incident. (Bowersox etc. 2007, 290.)

The security issues must be addressed taking into account all parts of the supply chain process, both internal and external matters. Internal processes, personnel matters and infrastructure must be evaluated from risk perspective. External proc-

esses are harder to control and therefore the risks should be evaluated even more closely. One important, in most cases external, part of the supply chain is the transportation process. Carriers, freight forwarders, and terminal operators each have responsibilities for critical stages of the supply chain process. The best procedures of a trusted trading partner are meaningless unless supported by effective carrier security procedures to secure goods while in transit. Supply chain security requires that logistics management work cross-functionally with their transportation partners to guarantee the required security level. (Bowersox etc. 2007, 292-293.)

The security of 3 Step IT's supply chain also needs to be addressed both for internal and external aspect. As this research concentrates on the process from ending option choice to the goods' arrival to warehouse, the main external security issues are involved with transportation and data security risk. The returning products are transported to the warehouse either by the customer or by 3 Step IT's forwarder. 3 Step IT has a strategy to operate only with longer established and preferably certified transportation companies. This study will address the transportation process only shortly but in stead concentrates on the inner processes. The transportation order process is controlled by the CRM teams and end-of-lease team. The link and process with the transportation company are controlled on a quarterly basis and will be developed further at later stage and is therefore not included in this research project. Also the aspect with data security will not be included into this project but is a subject of an own research.

The main inner security risks are involved with the process of handling returning equipment. The inner risks address the situation with following the agreed process and instructions. One part of ensuring the functionality of the process is dividing customer service workload efficiently. Also the use of temporary staff can be considered a security risk to the process. In cases where the workload is too high, there is a severe risk that the process will be affected and therefore also the customer service level.

The personnel aspect and the tailored operational systems have made 3 Step IT's rental returns management strongly dependant on IT. The system itself restricts, monitors and controls the personnel in many ways and offers the management opportunities to control the operations. Due to the strong dependence on IT, the customer service personnel is a key factor also when developing the IT systems. Quarterly training sessions are held for sales assistants and customer service specialists to keep them updated on the current situation, to inform them of new functions or instructions and also to collect feedback and development ideas from the teams.

3.2.4 IT support to supply chain management

Information technology both enables and dominates the supply chains. It has changed business operations through the flow of information, control over operations remote in distance and across organizational boundaries and by automation of processes. Information technology is also shaping the future of supply chain development by use of Internet. Information technology is no longer merely a search of efficiency but an enabler of new opportunities. No business can ignore the importance of information technology to their operations and implementation of chosen strategy. Perhaps the most important contribution is information technology's ability to bring visibility to the entire supply chain. (Schary & Skjøtt-Larsen 2001, 291.)

Information systems and information technology enable a supply organization to contribute efficiently and effectively to organizational goals and strategies (Leenders, Johnson, Flynn & Fearon 2006, 106.). We have come far from the days when many of the supply chain activities were managed with paper transactions. The use of computers and information systems has gradually become more and more important to companies and their profitability. (Turban, McLean & Wetherbe 2002, 250 – 251.)

The essential role of the supply chain information system is to bind the entire chain together as a single integrated unit. The underlying framework is described in Figure 8. It has both an intra-firm dimension that is largely vertical and hierarchical and inter-functional and inter-firm dimensions that are horizontal, following the transaction flow. The intra-firm system is highly developed, following a traditional management orientation. The inter-firm system is emerging slowly, restrained not by technology as much as by relationships among organizations in the supply chain. (Schary & Skjøtt-Larsen 2001, 295.)

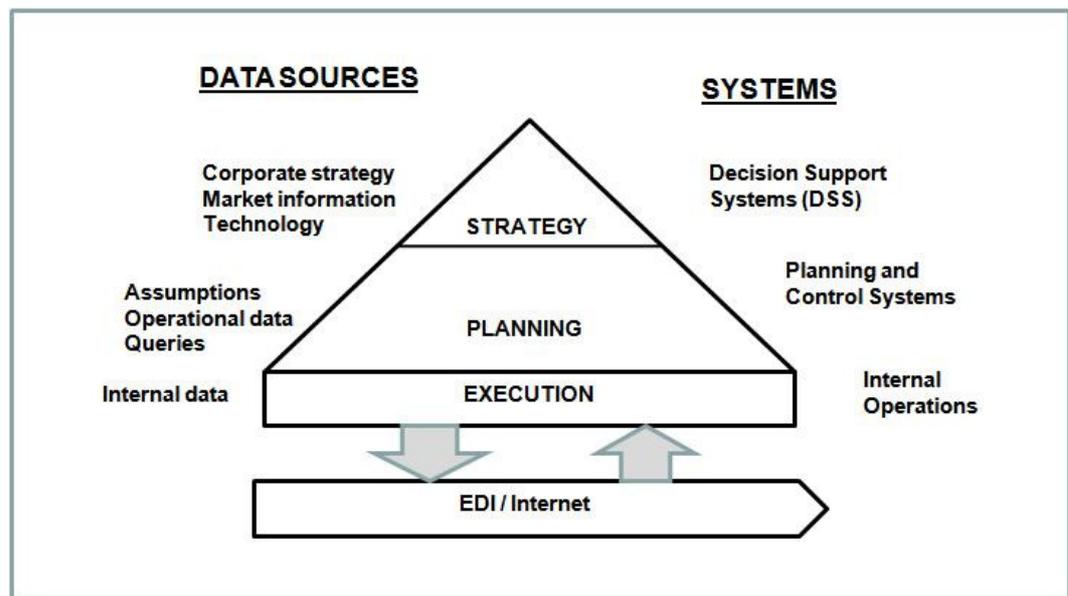


Figure 8. The concept of the information system (Schary & Skjøtt-Larsen 2001, 296.)

Management mostly recognizes the strategic importance of information and knowledge management and the possibilities underlying with technology. The most important factor for management and developers to consider, is when and where the application of the technology is most appropriate and what technology should be selected. If the process itself has flaws, the process needs to be corrected before any automation through technology can be carried out. (Leenders etc. 2006, 91.)

One of 3 Step IT's key competitive elements is a sophisticated asset management register (Asset Management NG) which is directly linked with the company's own

operational system, NS 4. Strong dependency on the operational systems has increased during last two years. This is due to the system launch made in January 2007. After the system upgrade the CRM teams have been able to handle all phases of the customers' IT management from handling the rental contracts after equipment purchase to asset management phase and finally to equipment renewal phase in the company's operational systems with comparison to the old MS Excel sheets.

The company's IT systems are developed continuously. A system upgrade consisting of either new functionalities or corrections to the old functionalities is normally conducted once a quarter. System upgrades to rental returns management is therefore also conducted once a quarter. The aim is to achieve efficient processes. The decision on what end-of-lease related processes are automated is evaluated and plans made taken into account inner resources and requirements as well as the customers' requirements. As stated earlier in this chapter, one key challenge is to determine which processes should be automated and also which processes are in good enough condition to be automated. The work for defining and refining company's end-of-lease processes carried out during last years also works as basis for automation through IT systems.

4 DEVELOPING REVERSE LOGISTICS

When developing rental returns management, it is crucial to understand the concept of reverse logistics and what is required when developing reverse logistics. As matters related to supply chain management were covered in earlier chapters, the following chapters will define the differences and challenges in handling a reverse supply chain. A key element is to understand that reverse logistics can be used as a tool to improve competitive advantage rather than just a way to handle the returning items cost-efficiently.

4.1 Reverse Logistics - Definition and background

As the aftermarket services have grown in importance to companies, reverse logistics has become increasingly important. A short description of reverse logistics is to move a product backward through the logistics channel. Products or materials can be transferred backward in distribution channel due to either customer returns or removal of wastes and by-products. The environmental legislation is increasing in terms of restrictions to waste and obligation for reuse of materials. Normally reverse logistics is managed by having a temporary storage location from which the materials are transported to the disposal, reuse, reprocessing, or recycling locations. As the concern for recycling and reusable packaging grows, this issue will receive increasing amounts of attention. (Lambert, Stock & Ellram 1998, 20, 116.)

As the margins for core product profits are decreasing and competition continues to increase, aftermarket services are becoming increasingly important in driving to product profitability and customer satisfaction. In the manufacturing industry, service is receiving more attention by executive management. By making the right decisions, companies can actually boost their revenues by ensuring their aftermarket services are handled effectively. Marketing and engineering departments are generally considered to be the drivers of decisions regarding product strategy. In

practice, however, service and logistics departments consistently make many strategic choices that greatly affect ultimate profitability and success of the products themselves. (Andreae 2007, 18.)

Managing the returns channel as a business process offers the companies the same opportunity to achieve sustainable competitive advantage as managing the supply chain from an outbound perspective. Ability to manage reverse logistics processes effectively enables the companies to identify points for productivity improvement and breakthrough projects. (Lambert etc. 1998, 535.)

When discussing reverse logistics, one may also use the terms aftermarket logistics, retrologistics (return logistics) and aftermarket supply chain. The marketplace defines reverse logistics in number of ways, ranging from as simple as “processing of returns”, to as complex as “the logistics process of removing new or used products from their initial point in a supply chain and distributing them by using disposition management rules that will result in maximized value at the end of the items’ original useful life”. However, regardless of how your organization defines reverse logistics, they can not escape to issues: firstly, virtually all business organizations use it, and secondly depending on how you perform, it will have an impact on how your customers measure and evaluate your customer service and competitive performance. (Pollock 2007, 12 – 13.)

At the case of 3 Step IT, managing reverse logistics is a clear method of competitive advantage and a way to evaluate customer service level. More details on how to use reverse logistics as a competitive advantage in Chapter 4.3.1. In the finance markets, 3 Step IT offers an exception compared to competitors by keeping all the reverse logistics phases strictly under own control. Especially taking into account the data security issue related to used IT equipment, the additional value created to customers by offering a comprehensive and guaranteed process is an important competitive factor. To compete only with rental margins is increasingly difficult. Companies need ways to differentiate and create value to their customers. Efficient handling of reverse logistics is a good way to achieve this. At the market for IT equipment rental contracts, a service that ensures easy, efficient and data-secure

removal of the old, used, IT equipment is a good value-adding service to the customers.

4.2 Reverse logistics as a tool to increase competitive performance

Reverse logistics is crucial to virtually all businesses but it is not merely a method to handle returning articles. The most successful companies are those that can utilize their reverse logistics capabilities to provide customers exactly what they want and expect, at the same time creating and maintaining a competitive advantage wherever possible. This will, however, require a deep understanding of how to use both the real and perceived benefits of reverse logistics to enhance the organization's customer service capabilities, as well as its overall competitive market position. By promoting the most compelling message to the marketplace, organizations can gain additional competitive status in an otherwise uniform market. (Pollock 2007, 12.) One additional aspect to consider with reverse logistics is the social enforcement by consumers and companies and the increasing expectation that companies act responsibly. The environmental aspect is clear with efficient handling of reverse logistics. (Halldorsson 2008, 27.)

The secret to success in this field is quite simple. The companies need to position reverse logistics in their organization as a tool for improving customer satisfaction and therefore also competitive advantage. There are four steps to achieve this goal. Firstly companies need to identify, measure and promote both the real and perceived value of the organization's total logistics capabilities to both their customers and also the general marketplace. Secondly companies must continually transform improvements in their logistics capabilities into improved customer service and satisfaction ratings. Thirdly companies must use logistics improvement as an ongoing marketing and promotional tool. Finally, companies must position their organization well ahead of the competition by aggressively promoting the specific value and benefits associated with its logistics capabilities. (Pollock 2007, 12.)

To take control of the reverse logistics challenge and enable it to become customer benefit companies must make the reverse logistics process visible to customers. The company needs to be able develop a reverse logistics chain that is easy to understand from a customer point of view, and that the burden is removed as much as possible from the end customer. By taking responsibility for returns from the customers and in general, giving customers the possibility and freedom to choose which parts of the returning process they want to handle by themselves offers flexibility and hence, additional value to the customers. Naturally, by taking responsibility for the returning logistics, the company can achieve better control for the returns as the goods are transported through their own logistics process. (Morton 2007, 18; Walsh 2007, 42 – 43.)

The target at 3 Step IT is to educate the customers to return the ending lease devices according to original lease times. This way 3 Step IT receives the devices as young as possible and is able to sell them better in the after market for used IT equipment. This can be transferred to customers' benefit as decreased rental costs. Naturally by returning the devices the customers will also purchase new devices for their personnel's use which increases personnel satisfaction and decreases IT management costs. According to studies lengthening IT devices' age has significant impact on IT resource requirements and hence costs.

Compared to competitors, 3 Step IT handles all the related points of the rental returns process themselves. Most competitors use subcontractors to handle the returning equipment. 3 Step IT has made the strategic choice to handle the entire process by own resources. This aspect is a way to differentiate from the competitors and emphasize the importance of a controlled process for returning rental equipment.

4.3 Managing reverse logistics

Reverse logistics is often perceived as just a tool to handle unwanted product returns. In the following chapter I will describe the reverse logistics process, it's

basic characteristics and requirements. Following the process aspect, I will outline the management of the different supply chain relationships involved in reverse supply chains.

4.3.1 Reverse logistics process

Understanding reverse logistics process requires understanding the differences between normal logistics flow and reverse logistics flow. Logistics, in itself, can be described as a system, a network of related activities with the purpose of managing the flow of materials and personnel within the logistics channel. Figure 9 shows a simplified example of the network of relationships that a logistics system is required to manage in a channel of distribution. When considering reverse logistics, one needs to view and reflect the flow to reverse direction. As the flow in the distribution channel is generally considered to drive from left to right, with reverse logistics the movements are made from right to left. (Lambert, Stock & Ellram 1998, 7-9; Tibben-Lembke & Rogers 2002, 272 – 273.)

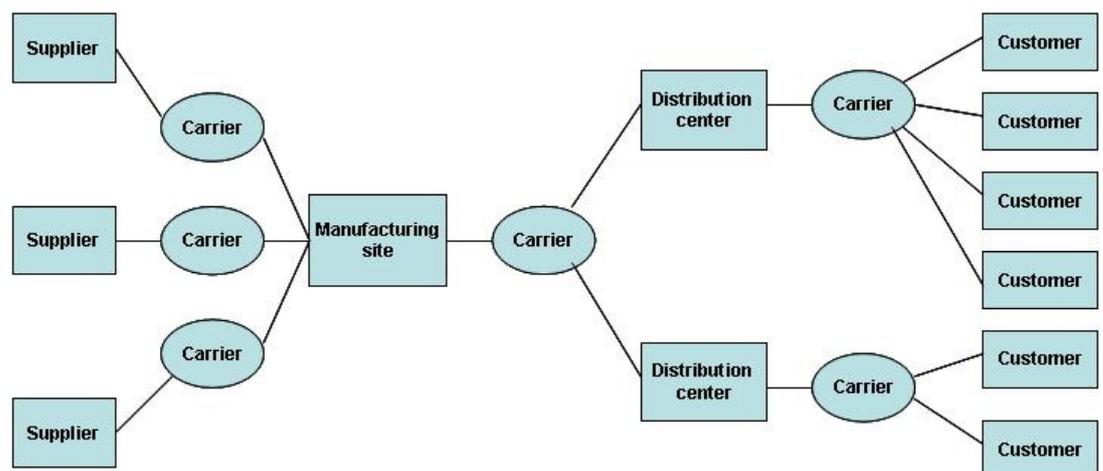


Figure 9. Logistics manages the flow through the distribution channel (Lambert, Stock & Ellram 1998, 8.)

A big difference in reverse logistics flow comes from the type of movements. As the traditional logistics flow is characterized by movements from a small amount of origins to a large set of destinations, reverse logistics channels move goods

from a large amount of origins to a relatively small set of destinations. A good example of reverse logistics is the collection, movement, processing and disposal of municipal solid waste. The question of forecasting the required resources is often more difficult with reverse logistics. The reverse logistics process tends to be more reactive than with forward logistics process. (Haas, Murphy & Lancioni 2003, 59 – 60; Tibben-Lembke & Rogers 2002, 275 – 276.)

The general process for return goods handling is concerned with handling of product returns from customers, mostly due to problems with the performance of the item or simply because the customer has changed his or her mind and decided to return the product. Handling return goods is complex because it normally differs greatly from the company's normal way of working. Return goods handling involves moving smaller quantities of goods back from the customer rather than to deliver goods to the customer. Many logistics systems have difficulties handling these kinds of movements. Also costs regarding this kind of movements tend to be much higher than moving the same products from the manufacturer to the customer. (Lambert etc. 1998, 20.)

The decision on whether the company decides to handle the returning goods by themselves or outsource the resources needs to be made in accordance with the overall company strategy. Studies have been made to point out that it is not necessary to outsource the returns process to a third party. The returning goods handling process is very vital to the customer relationship and hence, a question may be raised on why company should outsource such a vital process. (Morton 2007, 18 – 19.) Companies seeking outside assistance in handling returning goods are most often aiming to change their business. After analyzing the company's situation, a conclusion can be made that the companies are merely looking for better service and more flexibility, things they can't do by themselves because of physical limitations or lack of data management systems. Apart from enabling companies not to have to deal with the physical aspects of returned devices, companies that specialize in returns offer a level of expertise and wealth of knowledge and experience most companies don't have. The key to what these outside providers offer is information management. However, although outsourced partners offer companies

a peace of mind by handling the process, companies must make sure that they still remain in control of the process and receive all necessary data to develop their operations further. (Witt 2007, 28 – 29.)

When handling the reverse logistics process, there are several issues to consider. Some of them become more important than when addressing same issues in a forward logistics process. One problem to be resolved lies with IT systems. Commonly used systems lack functionalities to handle the returns process. Problems lie mainly in ways to monitor the reverse product flow. Also the issue with adequate warehouse personnel needs to be addressed. The warehouse personnel need to be trained to handle the returns of different sizes and conditions. Inspection and inventory phases in returned goods handling are crucial to the entire process and its cost efficiency. Automation of processes through technology is often required for returns processing to respond to the strategic goals. There are several other issues to consider such as product and packaging quality, difference in logistics costs and after sales process. The last and perhaps most important factor is measuring and reporting the reverse logistics performance to enable development of entire company's operations. (Morton 2007, 18 – 19; Tibben-Lembke & Rogers 2002, 275 – 281.)

The logistics flow of 3 Step IT consists of a large amount of customers that return rental products to 3 Step IT's production facility. At the moment 3 Step IT receives 450 – 500 different sized batches of returning IT equipment to the production facility each quarter. Major part of the returns is made within a time limit of four weeks. Customers have the option to return also earlier but most return the equipment during the last possible weeks. The process for handling the returning goods must, therefore, be very effective and the process in strict control by the customer service teams and EOL team. The challenge is to be able to collect a large number of different sized returns within a small period of time. Figure 10 describes 3 Step IT's logistics flow.

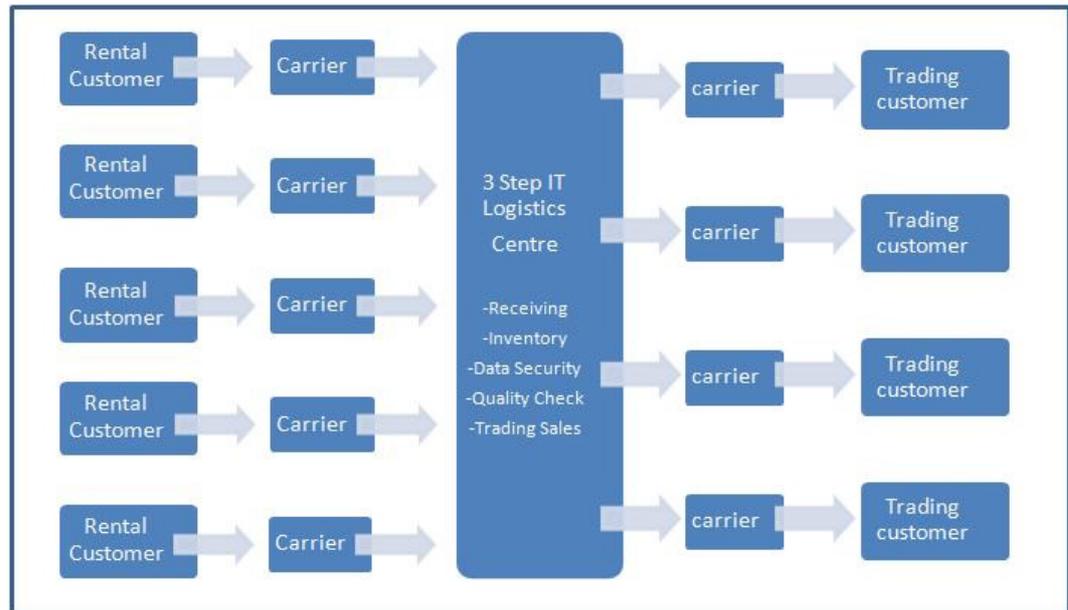


Figure 10. Logistics Flow for 3 Step IT

Collecting the equipment is handled either by 3 Step IT or the customers themselves. If 3 Step IT collects the equipment, the collections are handled by outsourced resources. As stated earlier in Chapter 3.2.3, to guarantee the agreed service level 3 Step IT has a strategy to use established and certified forwarders. All returns are transferred to 3 Step IT's warehouse as directly as possible without additional stops. Some shipments go through transportation company's terminal but preferably as directly as possible to 3 Step IT's warehouse. This procedure decreases even more the data security risk involved with transportation.

4.3.2 Managing the reverse supply chain relationships

With all supply chains, but especially with reverse supply chains, the ability to successfully manage the supply chain relationships is crucial to an efficient supply chain. Traditionally the relationship between supplier and customer has been primarily limited to the relationship between the customer's buyer and the supplier's sales person. Other function of the company, such as marketing, R&D and information systems have been kept outside the relationship. In today's world, a more integrated and closer relationship between all effected departments is needed.

(Harrison & van Hoek 2005, 233-234.) The creation of a closer relationship and way of thinking is described in figure 11.

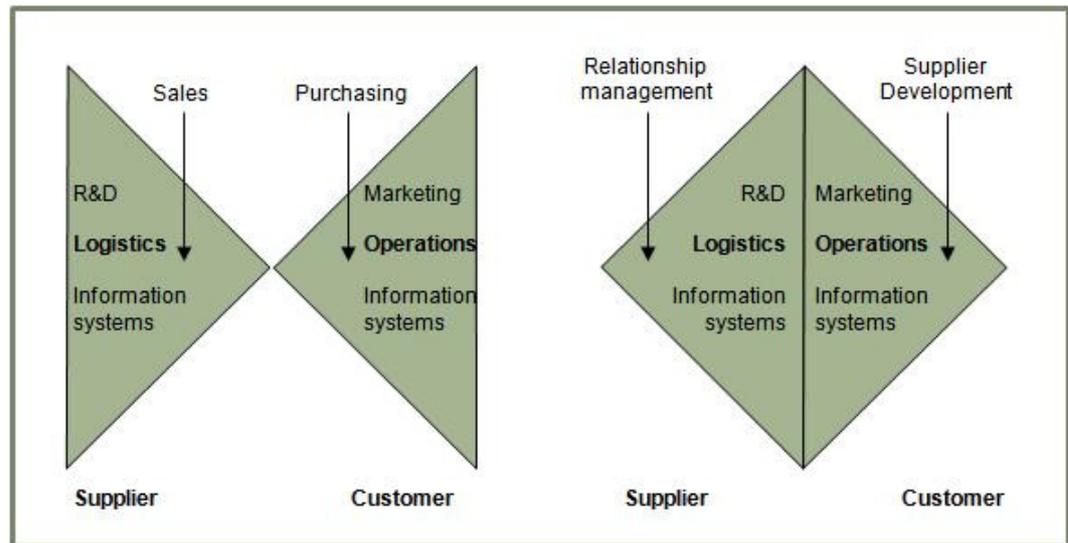


Figure 11. Creating closer supply chain relationships (Harrison & van Hoek 2005, 234.)

Companies have grown to realize that optimizing the supply chain process inevitably leads to a growing interdependence among different partners in the supply chain. With the knowledge of this interdependence has also come the realization that cooperation and partnership are necessary for both partners to achieve long-term benefits. The success lies in developing those skills that enable companies to develop their buyer-supplier relationships and manage them successfully on a day-to-day basis. (Harrison & van Hoek 2005, 245.) Supply management is, therefore, not simply engaged in the exchange of money for goods and services, but also in the management of the buyer-seller relationship (Leenders etc. 2006, 496.).

When trying to determine partnerships, or cooperative relationships, inside a supply chain they are generally based upon sharing information, trust and openness, coordination and planning, mutual benefits and sharing of risks, recognition of mutual interdependence, shared goals, and finally, the compatibility of corporate philosophies. The most important, however, is sharing of information. This should always include demand and supply information to enable both parties to plan their operations in a more precise manner. (Harrison & van Hoek 2005, 253.)

The key operators in the 3 Step IT's supply chain are the customers and the logistics partners. The connections with these very different types of supply chain operators must be developed further. As returning devices from ending rental contracts are vital for 3 Step IT's operations, the partnership with customers needs further developing. The functionalities with the logistics partner are evaluated in the regular meetings conducted after each quarter's returns have been handled and before next quarters returning peak starts. When developing these relationships, some tradeoffs need to be made for example in sharing information to improve the operations. The challenge is to find the fine line between sharing information and becoming too interdependent.

The development of the partnership with rental customers has earlier been handled mainly by the CRM teams with limited assistance from end-of-lease personnel. The aim is to find more tools for developing the partnership from rental returns management perspective in co-operation with CRM teams. Developments from the perspective of service portfolio and the customer service process will be outlined in chapters 6.4.1 and 6.4.2.

4.3.3 Challenges in developing a reverse logistics model

Basic logistics challenges of the future are much acquainted with supply chain management and the changing markets as a whole. This may require companies to change the way supply chains and logistics operations are structured, and to place new challenges to the management of these issues. Logistics in the supply chain in the future will demand changes in management and strategy. Figure 12 gives one picture of the future challenges in field of logistics. On the other side are the principles which will form logistics future challenges and the figure proposes the implementation to take place by means of four enablers. (Harrison & van Hoek 2005, 273 – 274.)

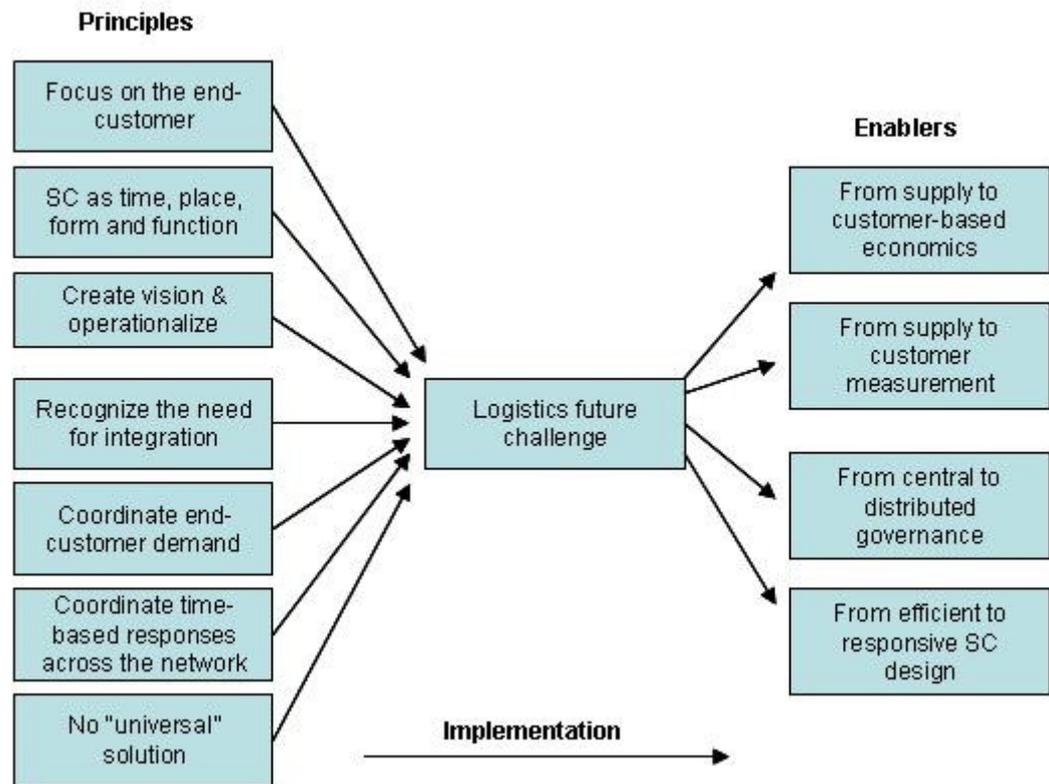


Figure 12. Logistics future challenges (Harrison & van Hoek 2005, 274.)

To summarize the challenges related to reverse logistics, one clear challenge lies in developing a financial model for reverse logistics. When measuring the cost effectiveness of processing returns, it is common practice to compare cost of refurbishment in contrast to the potential resale value of the product. However, measuring the cost of returns and refurbishment is anything but common. The methods of measurement vary greatly. To measure the full impact of returns, it is necessary to begin with an understanding of the real value of the product. When tracking down the costs for returning the products, the strategy on how much company encourages customers to make product returns must be determined as it will have a strong impact on customer behavior. (Mehrmann 2008, 44 – 47.)

Also the amount of required handling phases needs to be evaluated. There are a significant number of touch points in the reverse supply chain that add up to a lot of cost. Every time someone needs to handle the product, it adds cost to the entire chain which inevitably is put back into future products. There is also a risk involved with each handling phase. Every time someone needs to handle the prod-

uct, there is risk for damage which in turn is a delay in the resale phase and sometimes also a loss of resale profit. By not properly addressing the touch points, companies can negatively impact profitability, customer satisfaction and brand image. Taking all this into account, companies involved with reverse logistics need to develop a more sophisticated approach to handling returning goods. (Mehrmann 2008, 44 – 47; Reese 2005, 44.)

As stated earlier in chapter 4.3.1, forecasting the product returns, hence reverse logistics flow is one the key factors when developing a reverse logistics model. Companies need to estimate the return flows, required location and capacity and prepare for resale of the returning products. All these must be evaluated taking into account the overall service level of the company. The returns management model needs to support the overall product and vice versa. The impact of forecasting on co-ordination of the physical flows is remarkable. The different mechanisms used in reverse logistics collection systems need to be evaluated. The variety in customer bases and collection patterns leads to diversity in reverse distribution systems. Therefore, when developing an appropriate reverse logistics model, the customer behavior and type of business offer additional challenges to the company and reverse logistics model itself. (Flygansvær, Gadde & Haugland 2008, 17; Srivastava & Srivastava 2006, 524 – 533.)

The challenge from 3 Step IT's perspective is to develop company's reverse logistics model to fit the quarterly structure. The basic reverse logistics models are more developed for handling unforeseen and undesired customer returns, whereas with 3 Step IT's model the returning flows can be estimated in advance and 3 Step IT wants to receive as many returned devices as possible. The quarterly high peaks of returning equipment also create challenges to resources management. The warehouse personnel is in crucial position when a high number of devices must go through receiving, inventory, data security and quality-check phases within only couple of weeks. The importance of adequate training and instructions is crucial to the success of the process activities. The process needs to run through as quickly as possible also due to the fact that the sales of the returned devices must be made as soon as possible. The value of used IT equipment diminishes rather quickly.

The process for collection itself and coordination of collection process is also very challenging taking into account the importance of collection process and the short time limit in which the devices must be collected from the customers. As the company's service vision is to facilitate the management of IT equipment, the customers must be made feel as if 3 Step IT's service makes their operations easier. Security issues must be evaluated from data security perspective. The collection must be made with as few separate work phases as possible.

5 CURRENT RETURNS MANAGEMENT SYSTEM AT 3 STEP IT GROUP OY

This chapter will give an overview of the current returns management system used at 3 Step IT Group Oy in Finland. Firstly rental returns management from customer perspective is described moving forward to the perspective of customer service personnel and processes. Finally the current support from company's information systems to rental returns management will be outlined. The researcher will determine what development actions have already taken place. This chapter ends with a summary of the development requirements already known or assumed at the start of the development project.

5.1 Customers' process and instructions

The basic guidelines for end-of-lease procedures are determined in the service description which is delivered to each customer when contracts are made. The valid service description is always available to customers from Asset Management reporting system. Instructions in how to handle returning equipment, how to pack the returning equipment and how to make transportation orders are also available through Asset Management.

The normal process for handling returning equipment is described in contracts and the service description gives customers the basic guidelines. 3 Step IT informs all umbrella customers (customers with a framework agreement) three months prior to contract end date that they have ending contracts, whereas once customers (customers with only individual rental contracts) are informed two months prior to contract end date. Ending option choices must be made latest one month prior to contract end date and returning equipment must be returned to 3 Step IT's warehouse latest four weeks after contract end date. Compared to the terms that were valid when most of the ending contracts were made, 3 Step IT has given customers two weeks additional flexibility on the last returning date. The earlier deadline

was two weeks after contract end date compared with the current deadline of four weeks after contract end date. This change was mainly due to large quarterly amount of returning equipment to ease the resources requirements.

These guidelines mean that after the customers have received information about ending contracts, the customers have two months to decide the ending option and after that one and a half months to return the chosen equipment. Controlling the ending equipment is naturally possible also earlier from Asset Management reporting system but the ending option choices can be made earliest three months prior to contract end date. Some customers plan the different actions well in advance. Starting the process only after 3 Step IT has sent the ending contract info creates pressure and additional challenges to the customers. Timing the equipment renewals and handling the returning of rental equipment can prove challenging. At this stage, the CRM teams play a key role in educating the customers. 3 Step IT also arranges regular customer training events to inform the customers about tested “best practice” solutions to IT lifecycle management including also matters conducted after lease contracts end.

5.2 Customer service process and instructions

Instructions for handling end-of-lease actions are available for the company’s personnel in company’s Intra pages. These instructions have been updated and completed during last two years. Process descriptions for handling ending and returning equipment and internal instructions have also been updated during last years by the researcher. Documenting the processes has decreased the need for internal training, delays in end-of-lease process and therefore also increased customer satisfaction due to more efficient handling of transportation orders and unclear returns. The process descriptions have also proved crucial as the company continues to expand and company needs to train new personnel on a regular basis.

5.3 IT System support to returns management

As stated earlier, the current returns management system at 3 Step IT Group Oy is operated in the company's own IT systems: the ERP system called NS4 and Asset Management reporting system developed for the customers' own use. The systems have been developed by the company's own IT department and solely for the company's own purposes. This has enabled the system to be tailor-made for handling rental contracts. Both systems have been developed during past years with system support changes affecting customers, customer service personnel and warehouse operations. Changes for all three aspects are described in the following chapters.

IT System support changes from customer perspective

Ending option choices have been handled in the systems also earlier but since beginning of year 2007 also the transportation orders for returning equipment have been handled online in EOL (end-of-lease) Management in Asset Management and NS4. This has meant that after the customer has made the choice in Asset Management system that they wish to return the selected devices, they can make also the transportation order in the same system. Earlier this part of the process was handled with MS Excel forms that the customer sent by e-mail or telefax to customer service personnel who then sent the order further to the transportation company in a different MS Excel form.

As the transportation order management functionality was added to Asset Management, the customers are now also required and able to determine pick-up locations for all returning devices. This is a good tool for customers who have devices returning from different locations and need the ability to mark the returning devices in advance. These customers also have had the most challenges in coordinating the different rental returns. A default pick-up location is updated to all devices automatically at the start of the quarter. The transportation order system requires the customer to inform the exact devices that are returned from individual pick-up locations. Earlier the customers only informed amounts per product group, not

which devices will be returned from which pick-up location. This has been perceived as a demanding task by some customers but many customers have also appreciated the functionality from a follow-up perspective. (Hassinen, Jaatinen, Kivi, Lindblom, Savas & Varpula 2008; Musto, Sandgren & Voipio 2008.)

Another advantage to customers has been the transportation order page itself in Asset Management. The customers have now had an on-line page where they can, also at a later stage, study their transportation orders and even see the details of the received devices after the inventory has been handled at 3 Step IT's warehouse. The further development of the transportation order page is one clear target for this research project.

IT System support changes from customer service perspective

As the customer service teams handle the EOL process itself, the automation of the transportation order system has brought them significant advantages. The handling of manual transportation order forms in MS Excel format has been replaced by an on-line link from Asset Management system to company's own ERP system NS 4. After the customer has made the transportation order in Asset Management, the sales assistant of the customer's team receives an automatic e-mail from the system to process the transportation order in NS 4. After checking the transportation order, the sales assistant can send the transportation order straight from NS 4 to the transportation company.

All stages of the returning equipment procedure can be traced from EOL Management page in NS 4. Different details are easily seen under own function Pick-Up View in their own columns. Pick-Up View includes only those devices that customers have chosen to return in the selected quarter. The Pick-Up View page includes all necessary details on the pick-up orders such as pick-up dates, device amounts, pallet amounts and dates when the order has been made, handled and confirmed to customer. Also details after receiving to warehouse and inventory can be seen from Pick-Up View. Prior to the automated transportation order management the coordination of transportation orders was handled in MS Excel sheets

saved to company's file server. Although the instructions on updating information to the file were unified, the actual practise of using the control file depended strongly on the team and person updating the details. Moving the process follow-up from MS Excel sheets to this on-line management in the system has made the process more effective and transparent. (Hassinen etc. 2008; Musto etc. 2008.)

IT System support changes from warehouse perspective

The system support to rental returns management has also improved warehouse efficiency. In 3 Step IT all returning packages, pallets or boxes, must have a cover document attached to them. Prior to the adaptation of the transportation order system in Asset Management and NS4 the cover documents were also created manually to MS Excel sheets by CRM teams. After the automation of transportation order management the covering documents for the shipments have been generated automatically in the system. The new cover document includes the name and address of the returning customer, the name and address of the receiving warehouse and most importantly, it includes the individual pick-up number as a barcode. This development has improved the warehouse operations significantly. This has required also a development of company's own warehouse management system, KaPula, which was taken into production in June 2007. By scanning the pick-up numbers the receiving and inventory details are updated simultaneously into both systems, NS 4 and KaPula.

The warehouse management system is used to register the receiving and inventory information into company's ERP system, NS 4. Both systems are directly linked. The inventory details are also updated to Asset Management for the customers' use. Details are, however, updated to Asset Management only after the entire pick-up is closed either at the warehouse or in case of unclear pick-up order, after the sales assistant has handled the unclear pick-up order.

The inventory is handled by comparing the device details customer has informed and confirmed through Asset Management to the devices actually received to warehouse. The customer needs to inform and confirm the returning devices when

making the transportation order for the devices in Asset Management. The inventory type depends on the product group. Most IT equipment product groups are inventoried according to serial number but some product groups such as for example CRT monitors are inventoried only according to product description and quantity. One target for an efficient returns management system is to diminish extra work at the warehouse. When the returning process is made easy enough for the customers, it reduces also the amount of unclear pick-up orders. Most errors in returned pick-up orders are created by acting with limited resources and inadequate instructions for handling ending and returning devices.

5.4 Requirements from development project

The basic features regarding end-of-lease have proven to be successful both from customer and inner perspective. 3 Step IT's goal is to be a forerunner in handling ending lease contracts. This creates pressure to improve the process and functionalities further. As parts of the process have already been automated, this development project aims to find the correct further development aspects. Aim is not to automate everything but to refine the current functionalities and determine which parts of the process are economically advantageous to automate and which parts of the process need more refining.

Apart from systems development, the goal for the development project is to find the best process and best system for rental returns management. The development project needs to take into account the process, instructions and training requirements from both external and internal aspect. With some systems and process development conducted starting from year 2007, the development project aimed to make further changes and to find the best solutions for company's rental returns management.

6 DEVELOPING 3 STEP IT'S RETURNS MANAGEMENT SYSTEM

Taking into account the requirements set for the development project, 3 Step IT's rental returns management system has been developed further taking into account required changes to service portfolio, process and systems. The implementation and timetable for the development project, the target groups and aimed results are gone through then going further into how the actual research was conducted. Finally the chapter will be concluded with describing the result of the development project, an improved rental returns management system for 3 Step IT. Also topics for further research will be outlined.

6.1 Implementation and timetable of the development project

The development project was started January 2008 by signing the research contract and writing the research plan. The first presentation of the research subject and plan was made January 24th 2008 at Lahti University of Applied Sciences. After studying related material and adjusting the research goals the development project plan was finalized and presented at a research seminar at Lahti University of Applied Sciences in March 6th 2008. The operational development tasks were started with planning and conducting the group interviews to customer service and sales personnel.

The personnel resources for the development project consisted of one person carrying out the research in connection with normal daily work. Additional resources were used for implementing the individual development tasks. Large part of the study material includes researcher's personal experiences and observations working with and developing 3 Step IT's returns management system. The development project budget consisted mainly of personnel resources. No additional costs were budgeted before the project nor realized during the development project.

Communications strategy

The development project was conducted as a part of normal on-going development of end-of-lease processes. Therefore the communication regarding the project was made to customer service personnel at the start of the project.

6.2 Target groups and aimed results

The development project was targeted to 3 Step IT's inner processes and functions regarding end-of-lease as well as customers using our services. A clear target group for the research was the entire sales and customer service personnel in Finland. This included sales assistant handling the daily returning goods management, customer service specialist educating the customers about end-of-lease process, key account manager responsible for the customer portfolios and naturally of course the sales and customer service management. The only personnel group decided to be left outside the research at this point were the sales persons handling the acquiring of new rental customers. It was decided that the key account managers and sales management would be used to acquire the sales point-of-view to the development project. The development project has been restricted to experiences from current customers who have used the new systems and have experiences from 3 Step IT's rental returns management system.

Naturally a critical target group of the development project was the end-of-lease department where also the researcher operates. End-of-lease department is responsible for the warehouse and production, i.e. data security and quality control, operations at 3 Step IT as well as developing the end-of-lease operations in cooperation with the sales organization and the production and development department. With regards to the systems development, the production and development department is in a vital role to the development project.

6.3 Mapping of initial situation and gathering development data

The next chapters will outline the mapping of initial situation, starting the development project and gathering the data for the development project. Concerning the data gathering, the chapters outline the qualitative data gathering from the group interviews and also the data from the customer trainings.

6.3.1 Starting development project

Development project was started with gathering the resource materials and literature and studying them. The group interviews for customer service personnel were conducted during April 2008 in four groups. The aim was to carry out the group interviews prior to the customer trainings scheduled to be held in May 2008. The customer training consisted of educating customers on the best-practice solutions for handling ending lease equipment and therefore also handling returning rental devices. The results from the group interviews were used when determining the training material and also to determine where it would be most beneficial to direct the open conversation in the trainings.

6.3.2 Group interviews

Target for the group interviews was to collect the inner feedback for the current returning goods management functionalities at 3 Step IT. The interviews covered inner processes related to handling transportation orders and carrying out inventory for the returned goods as well as handling unclear returns. Also customer processes related to functions offered through Asset Management reporting system were covered. Related to the pick-up and packing service functions, the covered aspects were process, instructions and the co-operation with company's logistics partners. This matter was covered both from customer and inner perspective in the interviews. The discussion topics for the group interviews can be found from appendix No. 3.

The duration for each interview was one and a half hours. All interviews were audio-recorded. The researcher analyzed the interviews by making notes of discovered development needs and also the expressions on the atmosphere and validity of discussions. The expressions and overall procedure of group interviews is covered later in this same chapter. The development tasks realized at the group interviews are covered in chapter 6.4. All interviews were conducted with the target to achieve as much free conversation as possible. The target of the researcher was to get the interviewed persons to discuss the matter freely amongst themselves with the researcher only providing them with discussion topics according to the planned interview topics. This goal was achieved as discussion was open in all four group interviews and resulted in development ideas also slightly outside the planned topics but helpful to the overall developing of returning goods management.

The four group interviews were conducted according to organization group. First group included the sales assistants, second group included the customer service specialists, third group consisted of key account managers and fourth group of customer service and sales management. The interview groups were deliberately formed to be as uniform as possible. The goal was to generate a relaxed and opinion-friendly atmosphere for the interviews and hence receive more development ideas. The responsibilities and therefore also needs were presumed to be different depending on the organization group.

This prediction proved to be accurate as each group interview concentrated on different aspects of returning goods management. Even the interviews with the two main groups closest to the customers' returning goods management, sales assistants and customer services specialists, also had significant differences in results. With the sales assistants handling the daily end-of-lease activities with the customers and customer service specialists responsible for process training and support as well as controlling the end-of-lease process, the sales assistants concentrated more on practical smaller issues as the customer service specialists were interested in new ways to support the process and improve customer service and loyalty. (Hassinen etc. 2008; Musto etc. 2008.)

The interview with company's key account managers clearly indicated that they feel to have inadequate information about their customers' end-of-lease processes and functions. As the key account managers are the ones visiting the customers on a regularly basis they are a key operator in giving feedback to the customers and instructing them in finding the best solutions for handling ending and returning equipment. Key account managers also requested more assisting tools in easily giving customers information and clearer picture on how their returning goods management functions. (Kopu, Lampi & Manskinen 2008.)

When discussing returning goods management with customer service management, the discussion directed itself to determining company's service portfolio and the challenges in handling returning goods from a variation of different sized customers. A question of dividing customers to different groups according to size and business type is one topic of development. Grouping customers, when handled correctly, could lead to enhanced processes both at 3 Step IT and at customer. (Karjalainen & Kouva 2008.)

6.3.3 Data from customer trainings

The customer trainings were conducted during May 2008 in Vantaa and Tampere. In total 14 groups with a total of 170 customers' contact persons participated in the trainings. The researcher acted as the second trainer in Step 3 trainings including best-practice manners in handling ending lease contracts and therefore renewed IT equipment. The customers were offered one solution that has proved itself effective according to 3 Step IT's experience. The offered solution consisted of division to yearly, quarterly and daily activities as well as examples to be used as inner instructions. The inner instructions or inner operational guide to handling ending lease equipment has been proved most beneficial to customers when kept simple, and with a maximum length of one page, and brought to easy access of all personnel. Example for a company's guidelines to handling ending lease devices can be found from appendix No. 4.

The discussions during customer trainings brought good points of view from the customer side. The customers have both inner and outer factors to consider. The inner development issues have most to do with setting clear guidelines and communicating them to the entire personnel. Delays to returning the ended lease equipment are often caused by the IT personnel not being able to retrieve the old equipment from the users. For this purpose the inner guidelines would be an excellent tool. Most customers did not view 3 Step IT's timetable restrictions too demanding but perceived them as a good tool to keep also their own timetable as strict as possible. Delays in the early parts of the equipment replacement process have significant implications to also the returning process itself.

Customers also requested more tools to use when planning and predicting the equipment replacement. The Asset Management system was perceived as a good tool but more development was requested to be able to mark ending options and returning locations more in advance. At the moment the customers can start marking the ending options and returning locations three months prior to contract end date. Especially with larger customers, this is perceived to be too late for the process to run through smoothly.

One clear problem raised at the customer trainings was the equipment's users' attitude towards their replaced equipment. Most users do not see their old equipment to hold after market value but have the assumption that the returned equipment are all transferred directly to recycling. The customers' contact persons themselves were unaware of the amount of devices 3 Step IT is able to actually sell at the after market for used IT equipment. 3 Step IT has here a clear communication and marketing message to bring further to our customers' knowledge. By making customers understand the after market value their used IT equipment hold to 3 Step IT, the customers will make a stronger effort to educate their customers on how to handle their replaced IT equipment. More often the users themselves do not understand the need to return the devices according to 3 Step IT's guidelines related to timetable and they may also handle their replaced equipment in a manner that decreases the equipment's after market value. 3 Step IT has according to contract an opportunity to invoice the customer for the decrease in product value

as the devices should be returned to 3 Step IT in good working condition. One good tool for customers' internal communication is the inner guidelines paper that would be easily accessible to all personnel.

The guidelines should also give the users the timetable for releasing the used equipment to the IT personnel for returning back to 3 Step IT. This would help the IT organizations or service operators to manage the returning process according to 3 Step IT's deadlines. A clear message received during the customer trainings was the vital need for inner instructions and guidelines. And for these, 3 Step IT needs to support the customers and give them tools for returning goods management by offering best practice –guides and instruction examples. Also details regarding the functionality of their own process would be appreciated by the customers.

The topic related to the planned process functionality reporting was raised in the customer trainings. In most training groups, this created vivid discussions. Most foreseen process report according to experiences from the customer training groups was the planned inventory report showing how well customers' returns had matched with the informed device details. Especially in larger organizations where the process parts are handled by individual departments or even outsourced service partners, the detailed information on how the process works is difficult to find. This seems to be a place where 3 Step IT can offer customers support and additional value.

6.4 Determining development tasks and setting development goals

After studying the material and conducting the group interviews and customer trainings, the development project was divided into service portfolio development, process development and systems development. The process development paragraph includes in addition to the overall process development a vital part of the development project, customer reporting requirements. Finally in chapter 6.4.4 the achieved development tasks are summarized and compared with the situation before starting the development project.

6.4.1 Service portfolio development

When discussing the handling of customers' returning goods management process, the issue of growing returning amounts is a critical risk to customer service process. A question was raised, especially in the group interview with customer service and sales management, on whether it is possible or even reasonable to offer the same services, hence timetable to all customers. At the moment the process is restricted with only one set of principles that affect all customers in Asset Management and NS 4. The same service is provided to all customers with same restrictions. This was stated in the group interviews to influence negatively on the service quality the customers perceive. (Karjalainen & Kouva 2008; Kopu etc. 2008.) The relationship between offered service and perceived quality was studied in more detail in chapter 3.1.

Question was raised in all four group interviews to offer differentiated services, hence restrictions, to different types of customers. As the customer portfolio of 3 Step IT is very wide, same rules do not apply with all customers. It is also difficult to validate to larger customers why 3 Step IT can not give more flexibility to them when compared to smaller customers. Larger customers have a wider set of challenges in returning goods management. The device amount in individual rental returns vary between 1 – 600 devices. This creates pressure to handling the individual returns. (Hassinen etc. 2008; Musto etc. 2008; Kopu etc. 2008; Karjalainen & Kouva 2008.) With 11.000 – 15.000 returning devices per quarter received to the warehouse in Finland, the process needs to be strict and efficient to be able to result in good customer service and proper use of warehouse and production resources. Especially since the device amount may in some quarters be even higher due to roll-out projects where a customer replaces their entire IT equipment base at the same time. This may include up to 10.000 returning devices during one project.

As a result of the discussions in the group interviews and later meetings regarding process development, the project of defining end-of-lease customer types has been started. From a sales and customer service management aspect, there may be a

need for number of different end-of-lease customer types. From a process and systems point of view, managing a larger number of end-of-lease customer types would be more challenging. One possibility to be studied further is to utilize the current customer classification and link them to different EOL customer types. The first presumption would be to create maximum five EOL customer types with the preferred model being dividing customers into two different EOL customer types. As for example the restrictions in the transportation order management would be divided according to EOL customer type, from IT systems point-of-view the overall management grows increasingly challenging the more different EOL customer types would be created. The EOL customer type project will be started during spring 2009.

3 Step IT's entire product and service portfolio has been under development during 2008 and will not be addressed more closely in this research. This research will focus only on the changes that will be made on the handling of end-of-lease process with the help of instructions, trainings and timetables. Other service portfolio related development tasks will be conducted after the company's entire product and service portfolio development is finalized.

During all the group interviews the importance of clear contract structure was indicated. The terms regarding end-of-lease guidelines should be made clear and exceptions to general guidelines avoided. Although exceptions from sales point of view can be seen as sales arguments by the sales personnel, from process perspective all exceptions cause additional work and increase possibility for errors, hence decreased customer service. With the systems updates conducted during year 2008, the control for contract structure has been increased. A project for renewing the contract structure itself is ongoing and will be finalized during year 2009. As with the service portfolio development, the contract structure development is covered only from process perspective in the development project.

The need for determining clearer inner guidelines and instructions on handling the exceptions for end-of-lease contracts was clearly stated in the group interviews for sales assistants and customer service specialists. This will be covered in more de-

tail in chapter 6.4.2 when discussing customer service process development. (Hasinen etc. 2008; Musto etc. 2008.)

6.4.2 Process development

The processes development has been divided into customer service process development, transportation process development and warehouse operations development. The main focus has been paid to developing the customer service process and warehouse operations as they proved most beneficial to the overall process development at the current phase of development. The transportation process will be reflected to only from perspective of developing co-operation with 3 Step IT's transportation partner.

Customer service process development

The process development regarding customer service process at 3 Step IT for handling the returning equipment includes improvements to inner instructions and training as well as process reporting. The IT systems which are a major part of the customer service process will also be developed further to better support the process. The systems development issues will be covered in chapter 6.4.3. The returning goods management process itself described in appendix 2 will not be changed. The target is to fine tune the current process and find new ways to support the process functionalities.

The changes will be made in the inner instructions and their availability as well as training related to handling returning devices. Quarterly update trainings are held to sales assistants and customer service specialists to remind of the basic details but also to point out specific challenges and matters that require additional attention. The materials presented at the update trainings are always delivered to customer service personnel in electronic form after the training. These trainings have been taken well among the sales assistants and customer service specialists. The structure and content of the trainings will be developed more towards giving best

practice tools and tips for handling the ending contracts. (Hassinen etc. 2008; Musto etc. 2008.) Quarterly update meetings with key account managers will also be held. The demand for updated information was clearly stated in the group interview conducted with key account managers. (Kopu etc. 2008.)

The earlier location for inner instructions at company's internal file server was not found with enough easy access. The company's Intra was released in October 2008. All instructions and process descriptions related to handling returning equipment are now easily retrieved from company's Intra. The Intra pages include instructions in handling returning devices as well as instructions in handling the unclear pick-up orders. In cases with an unclear pick-up order the received pick-up order does not correspond with the information received from the customer via Asset Management when making the order. In such cases, the efficient handling of the pick-up order improves customer service level and also facilitates the returned devices management at the warehouse. All devices that can not be inventoried immediately after arrival to warehouse are stored as unclear devices until customer service personnel has cleared the situation with the customer and corrective actions made in company's operational system NS 4.

The customer service process is strongly dependent on the IT systems functionalities that will be reflected to more closely in chapter 6.4.3. Concerning the customer service process, the contract structure changes and guidelines for handling end-of-lease exceptions were perceived as challenging for sales assistants and customer service specialists. This was due to the fact that the exceptions are generally agreed between account manager and customer or key account manager and customer giving the sales assistants and customer service specialists limited chances to influence. (Hassinen etc. 2008; Musto etc. 2008.) Guidelines to handling end-of-lease exceptions were gone through by researcher, customer service and sales management and a representative from the key account managers. To help ease the management of ending contracts, a set of inner guidelines and instructions for handling end-of-lease contracts was created during spring - summer 2008. These guidelines include summary on the accepted process guidelines and timetable. Guidelines also state the best possible way to handle the exceptions already prom-

ised to customers. In cases where an exception is justifiable from sales point of view, the guidelines on how to add exception details to the contracts are stated in the instructions.

Warehouse operations development

When analyzing the overall process functionalities, the importance of the warehouse operations, receiving and inventory, was clearly stated. Taking this into account a clear demand for improving instructions at handling returning devices at 3 Step IT's warehouse was declared. The efficient handling of returned Pick-Up orders ensures good customer service and also gives the customers a possibility to correct their returns in case they have returned the original pick-up order in good time before the returning deadline to warehouse. If the customer can return the missing devices within the + 4 weeks' deadline, they can make an after delivery and avoid transferring the devices to three months' continuation rent. With the quarterly structure of 3 Step IT's operations, 3 Step IT is forced to use rental workers during the quarterly peaks to balance the required amount of workers. This creates further pressure also to internal instructions as the workers need to be able to handle the warehouse operations with only a short training. Based on the conducted group interviews and observations during daily operations, a plan for required warehouse instructions and process changes was made.

The warehouse instructions update project was started in November 2008. The instructions have been and will be updated by a project group including the researcher, Assistant to EOL Services department and representatives from the warehouse personnel. The instructions project was started with the most crucial instructions: receiving instructions, shelving instructions, inventory instructions and production / data erasure instructions. The instructions earlier used at the warehouse were used as a basis for the new instructions. The earlier instructions were shorter and included only basic guidelines for the warehouse operations. The most vital related to this research are the first three instructions. Correct information regarding receiving dates and inventory are crucial tools for the customer service personnel when handling the returns with the customers. The customer ser-

vice personnel need to be able to trust the data retrieved from the company's information systems. The instructions include a floorplan of the warehouse with places for all individual warehouse operations marked. The warehouse shelves and areas are also marked accordingly. After the launch of the first new warehouse instructions, the instructions project will be taken further by adding the other required instructions for e.g. handling of unclear devices and carrying out quality check for the devices. The second phase of the warehouse instructions project will naturally also include required changes to the new instructions launched in January 2009. Users' comments will be gathered and the project will be monitored on a monthly basis and during quarterly EOL team supervisor meetings.

A clear improvement for the warehouse operations has been the move to new, larger facilities in the beginning of December 2008. The new logistics centre has 1,5 times more space when compared to the earlier facilities. This will assist also the process development remarkably as the new premises offer own individual areas for received devices, inventory, production, quality-check, sorting and sellable devices. The shelves have been marked to visually show what packages the individual shelves contain. The visual warehouse control is indicated also in the new receiving, shelving and inventory instructions. By placing the packages and pallets on to the shelves according to the instructions and using the receiving and inventory tags, the target of carrying out inventory for the returned pick-up orders according to FIFO principle can be obtained.

Customer reporting project

The clear demand for process reporting was declared in the group interviews. The decision in creating customized reporting for customers was made. Many reporting issues can be covered with data retrieved from company's own operational system. During the customer trainings the possibility for new reports was launched to the customers. Especially long-term customers embraced the idea of process reporting. Partly because they wish to receive actual data to show others how their process really functions and partly to find out where the real development points are in their own organization and returning goods management.

The customer reporting project includes data on the process for choosing ending options, process for returning the selected devices and finally the authenticity of the actual returning batches. Concerning rental returns management, the most beneficial report with quickest affects in improving the returning process are the reports on the accuracy of the returns. These include reporting on how well the returned batches have corresponded with the information the customer has transmitted through Asset Management. In other words, this inventory report shows if the customer has returned exactly the devices they have informed 3 Step IT. The report shows amount of devices that have matched according to serial number, amount of devices matched manually, amount of returned extra devices, amount of devices returned too early, amount of devices originally marked for buy-out or lease extension and finally amount of devices that have been returned to customer or devices not leased from 3 Step IT. All these details give the customer and 3 Step IT a picture on where the customer's challenges are. Challenges in Step 3 are always an implication on needed improvements in handling the earlier phases of IT equipment lifecycle.

Although this research is more concerned with returning goods, the planned report on ending option selection process also gives useful information to returning goods management. Delays in selecting ending options have direct effect to returning the chosen equipment. Using resources to ending option selections at a too late stage of the ending devices management process makes the collection and therefore returning of the selected devices more challenging. The aim for this report is to indicate if customers have challenges in the overall process or for example with an individual product group, a location or a cost centre. Most often the problem is related to some specific product group or a specific location. If 3 Step IT can point out the challenging sections to the customer, 3 Step IT is also able to give better customer service and support the customer.

The technical execution of the reporting project will be described in chapter 6.4.3. The first inventory reports have been delivered to customers in Autumn 2008. The inventory report received a positive response from the pilot customer. According to the customer, the report gave them good and valuable information they can use

to develop their own operations. The reports were also perceived as very positive customer service and additional value from 3 Step IT's side.

Another report already tested with customers is a device quality report which shows error codes reported for the customer's returned devices as well as the reduction in final after market sales price when compared to the estimated list prices. This report gives the customer, and 3 Step IT, valuable information on the state of the returned devices. In cases where the devices are returned to 3 Step IT damaged when compared to the normal wear and tear stated in contracts, the equipment can not have worked properly in the customer's personnel's use either. Most likely they have also required extra IT support resources during the last usage times. All this may be an indication on too long rental periods or inadequate equipment configuration for the actual use. With this report clear advantages can be created to both parties, more suited and better functioning equipment for the users at the customer and better conditioned returned equipment for 3 Step IT to sell at the after market.

Transportation process development

Although the transportation process has been decided to be left mainly outside this development project, some changes have been made to the co-operation with logistics partners. 3 Step IT operates with one main logistics partner in Finland. The operations are monitored by EOL team and all related topics are covered in quarterly meetings with logistics partner's representatives. The target for the quarterly meetings has also originally been to improve the functionalities both at 3 Step IT and at the logistics partner. The structure of the meetings will be transferred more towards developing the co-operation from discussing the problem issues and developing from there to preemptive development. Naturally the problem cases are handled but more emphasis will be given to finding ways to prevent problems from occurring.

A key element in developing the co-operation is to gather all required information in co-operation with the CRM teams, modifying the data in regard to logistics

framework and finally finding ways to bring the plan into action with the logistics partner. There are some clearly challenging areas in Finland especially in regard to the packing service function offered by 3 Step IT to its customers. The packing service is carried out by the logistics partner's personnel and subcontractors. 3 Step IT has arranged training to the logistics partner's personnel regarding the packing service. This training will be developed further as well as the packing instructions which are an important tool for the packers, as well as for the customers who pack the devices themselves.

During this development project the emphasis will be made in proactive operations and increasing information flow to both directions. Both the logistics partner and 3 Step IT have much information that can be used by the other party to develop the functionalities and help prevent further problems. Logistics is a crucial part of 3 Step IT's ending lease contract management process, hence 3 Step IT has a strategy to build long-term partnerships and concentrate in securing the guaranteed service level.

6.4.3 IT Systems development

With the amount of automation in 3 Step IT's processes, the systems development forms a large part of the development project. The customer reporting project described in earlier chapter is one form of system support to process development. As described in chapter 6.4.2, the reports will be in the first phase coordinated by EOL team and created by the company's IT personnel according to agreed standardized SQL queries. After receiving experiences from using the reports, the decision will be made on which reports will in the future be available straight from company's operational systems, Asset Management and NS 4. This will then enable customers to choose the desired report restrictions and download the report at the time point best suitable to the customers themselves. Before fine tuning the reports according to received users' experience, it is most advantageous to control the authenticity of the report data by the EOL team before delivering the reports to CRM teams to be then delivered further to the customers. EOL team controls the

reports with the use of random test and double checking the data from the company's operational systems.

An important feature in the systems and process development is 3 Step IT's own warehouse management system. The warehouse management system is used to collect e.g. the receiving and inventory information online to the company's operational system. This means that from the point where the customer's rental devices arrive at the warehouse, the customer should see the inventory details straight from Asset Management within one week from equipment's arrival to warehouse. The only exception being the quarterly peaks when 3 Step IT can receive approximately 8.000 devices to the warehouse within a two weeks period.

The warehouse management system was launched in June 2007 and has undergone smaller developments each quarter. At the moment the system development for the warehouse management system has been detained to gather information from a longer period. After gathering the information and retrieving information from the service development point of view, all required features will be included in the second phase of the warehouse management system project. Naturally all possibly encountered errors will be collected but all new features will be gathered to the second phase of the warehouse management system project.

From the experiences retrieved from daily work and the results from the group interviews and customer trainings, there are clear development requirements regarding the EOL functionalities in Asset Management reporting system. When discussing the handling of ending lease equipment in Asset Management, the customers need improved functionalities for choosing the ending options for the devices. The EOL management page in Asset Management has a large amount of data making the page very wide and hard to use. This problem had been brought to IT department's attention already earlier but requires a larger transform of the entire page. The development to improve the usability of EOL management page in Asset Management will be made at a later stage.

When carrying out the group interviews with sales assistants and customer service specialists, they brought to discussion the need to develop the transportation order management page further in Asset Management. The transportation order page was considered difficult to use due to the amount of various information portrayed on the page. All pick-up orders the customer has made are listed on the transportation order page with different details listed in columns. Especially the amount of different columns was seen unnecessary as they cause the page to be too wide. Also they stated that customers find the timetables for ordering transportation and delivering devices to 3 Step IT's warehouse to be difficult to understand from the transportation order page. The functionality where customers order the pick-up or pick-up and packing service was, however, considered to function well. They did request that the required information for ordering only pick-up compared to ordering pick-up and packing service would be stated more clearly. They also requested the possibility for customers who return the devices by themselves to the warehouse to create the pick-up order and related cover documents by themselves in Asset Management. At the moment the pick-up order where customer doesn't order pick-up from 3 Step IT must be handled in NS4 by 3 Step IT's own personnel. (Hassinen etc. 2008; Musto etc. 2008.)

The development needs for the transportation order page in Asset Management have been documented and the development has been started. The first phase of the development included removing the unnecessary columns from the transportation order page. The removed columns included amounts of devices from various product groups. The new transportation order page includes the following information from each pick-up order: pick-up order number, pick-up location name, desired pick-up date, accepted pick-up date, type of pick-up order, amount of devices to be returned, amount of devices returned according to inventory process, ordering date and name of the orderer. The earlier columns with amounts per individual product group were removed and the column with the total amount of devices returned according to inventory was added. This addition enables the customers to see directly from the transportation order page the pick-up orders that had not matched in inventory when compared to the originally informed returning device amount.

The other developments to the transportation order page have been planned and are scheduled to be conducted during 2009. The development project includes changes to the texts on the transportation order page to better answer customers' requirements and open questions. The creating of the pick-up order itself will be changed to work in two phases. In the first phase the customer will be required to choose the requested returning type. The customer may either order only pick-up, order both pick-up and packing service or choose to return the goods to the warehouse by themselves. After choosing the returning type in the first phase, the customer will move to the second phase which will not be tailored according to the chosen returning type. This will enable us to mark the obligatory information more clearly to the transportation order form and also to mark the required instructions better as we can tailor also the instructions according to the returning type.

6.4.4 Summary of achieved development tasks

A short summary of the development tasks covered in chapters 6.4.1 – 6.4.3 concerning matters related to service portfolio, process and IT systems aspect is portrayed in figure 13. The figure describes the situation in January 2007, January 2008 and January 2008.

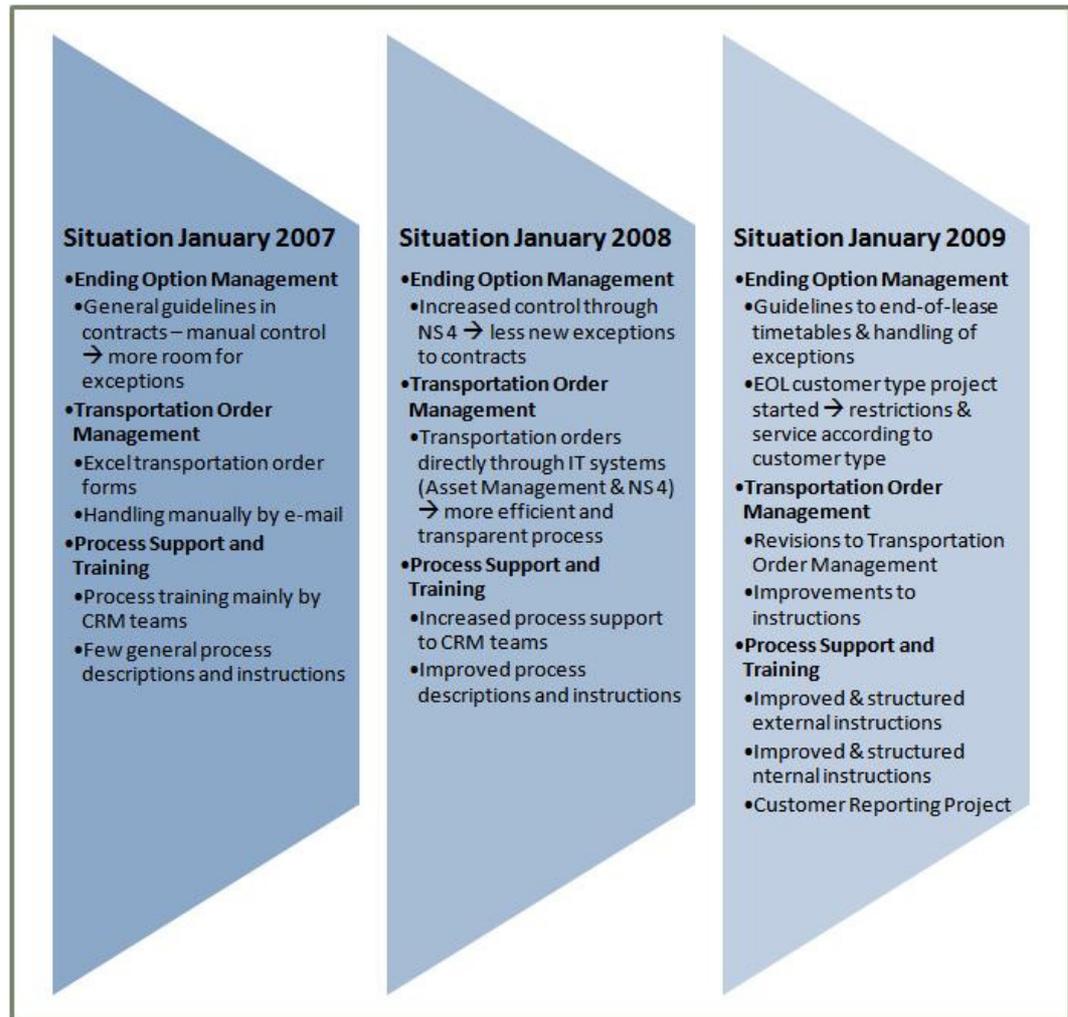


Figure 13. Summary of development tasks from January 2007 to January 2009

The figure aims to give a quick picture of the situation starting from January 2007 when the systems automation had not been taken into force continuing to when the development project was started in January 2008. Finally a clear picture on the major changes conducted up to January 2009 has been summarized. The change from January 2007 and a less uniform and very manual handling of end-of-lease devices to the situation in January 2009 has been significant. The direction and larger picture achieved gives more support to customers and own personnel.

6.5 Improved rental returns management system for 3 Step IT

Based on the developments made with regards to service portfolio, process and system, an improved rental returns management system for 3 Step IT was formed. The most important factor to understand is that rental returns management is a part of the entire service portfolio regarding EOL and further a part of the service portfolio for entire company. From a marketing and sales perspective, the rental returns management is not merely an obligatory task but a source of competitive advantage to 3 Step IT. The essential aspects in 3 Step IT's rental returns management system have been described in figure 14. These aspects are ending option management, returning devices management and process support and training.

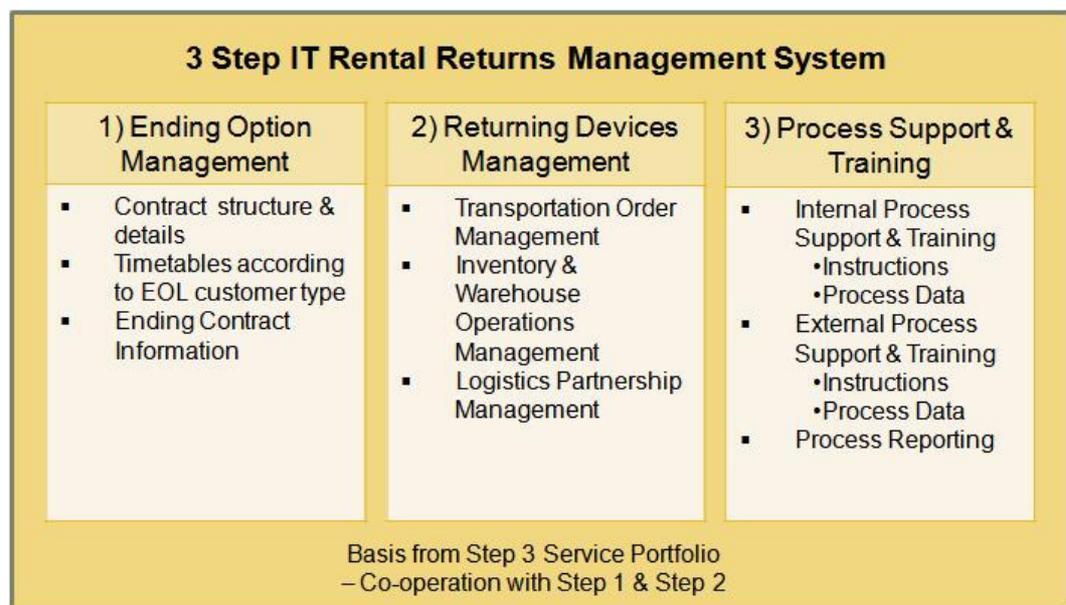


Figure 14. Contents of 3 Step IT's Returns Management System

The rental returns management system has been divided into the functions in above figure. Rental returns management is not merely involved with handling the transportation orders as generally assumed. It is a question of developing and handling a uniform process where ending option management and internal and external support and training are ever as vital as the transportation process itself. By providing customers with suitable process reporting to support their operations, their ending option management can be facilitated, hence their returning devices management can be handled successfully. No parts of the rental returns manage-

ment system can be developed separately. Instead it must be developed as a complete system where the individual parts are linked with each other.

Although major part of the visible returning devices process is involved with transportation order and warehouse operations, successful ending option management and suitable process support and training are integral parts of the system. No part of the rental returns system can be successfully managed without the other. The linkage between step 1 and step 2 of IT equipment lifecycle management must also be taken into account. Aspects in the earlier steps affecting the rental returns management system must be developed in co-operation with the other departments in the company.

To ensure the continuous developing of 3 Step IT's rental returns management system, the reporting of customer process will be continued. End-of-lease team has followed up the customers' process regarding ending option selections also earlier. New additions to following the customers' end-of-lease process are team based reporting on following the timetable for ending option selections and making transportation orders. Also reporting on the amount of ending devices lacking chosen ending option is followed up. These devices are transferred to automatic 3 months lease extension contract. The amount of unchosen ending option gives valuable information about customers' challenges and helps develop the process further.

6.6 Future developments

The process for returning goods management at 3 Step IT will most likely never be totally finished and ready. To summarize the development tasks that have been outlined from this development project at this stage, there are further development tasks related both service portfolio, process and IT systems matters. The most crucial ones are the changes that will be made to service portfolio during next years since these changes clearly affect both process and IT systems development and give direction to the overall development.

The future developments will also include further studies on the transportation order process and services. There is potential to improve the entire rental returns management with a more efficient transportation process and cooperation with the logistics partner. This way we could also prepare ourselves better for the growing returning device amounts. Also the question of increasing environmental protection through 3 Step IT's returning goods management and after sales concept is a topic for further development. By increasing customers' awareness for environmental aspects, 3 Step IT can differentiate themselves from competitors and decrease overall energy consumption.

7 SUMMARY

The development of reverse logistics taking into account requirements of rental returns management is a complex equation to be solved. Development requires details from supply chain management, services management and the attributes of reverse logistics concept itself. To make matters more challenging, developing reverse logistics specifically in rental returns management creates own challenges. Reverse logistics is in usual context handled from the view point of handling undesired product returns or waste shipments, whereas in rental returns management the returns can be foreseen and are desired. Especially when considering the case company, 3 Step IT Group Oy, the returning products are essential to the company's operations. The theoretical background for the research was gathered from three main areas: services management, supply chain management and developing reverse logistics.

The goal for the research project was to find ways to develop a company's reverse logistics operations and hence intensify the performance of order-supply chains. When determining the most efficient operational procedures for reverse logistics, this research had a target to find out customers' expectations from an efficient reverse logistics process and to take the customer perspective into account when developing the processes and IT systems. Largely due to the desired customer perspective this research has addressed the questions on managing the service offering for companies.

To answer the research questions, the ratio of standardization versus customization has been studied to determine whether returning rental devices can be managed according to standard procedures or if some range of customization will be required to keep the customer and revenue promises. Also connected to achieving the customer promise is the question related to managing service productivity. The balance between perceived service quality and productivity is a key target of a successful reverse logistics company. An important aspect in managing productiv-

ity in services is the question of cost efficiency and managing costs. It is naturally important also in the manufacturing industry but due to the nature of services, in services contexts cost efficiency is a more complex issue. The balance between creating a value-adding service to customers and doing it cost-effectively will according to this research be best achieved by applying a degree of standardization and making processes as uniform as possible. However, as the customer portfolio is diverse, there must be a combination of customization and standardization to offer customers an appropriate service level. In 3 Step IT this has now been solved by determining end-of-lease customer types and determining different process guidelines according to these end-of-lease customer types.

The research project included changes made during a period of one year. The data retrieved by functional observation, group interviews, observations from customer trainings and the studied topic literature was used as a basis for the improved rental returns management system for 3 Step IT Group Oy. The improvements made to returning devices management have enabled a more efficient process for handling the transportation orders. The emphasis now has been and will be on improving the process prior to handling the transportation orders and also on improving the inner and outer instructions on returning device and ending option management. Naturally not to forget the customer reporting project that aims to give customers detailed information on how their own process and also 3 Step IT's own process functions. The different reports give valuable information both to 3 Step IT's customer and also to 3 Step IT themselves. When developing 3 Step IT's services and the rental returns management system, it can not be conducted without having adequate information on how the customers' process functions and where the possible challenges lie.

As a result of the conducted development during the research project, 3 Step IT's improved rental returns management system has been defined to include three main aspects: ending option management, returning devices management and process support and training. These three parts form a unity which, in co-operation with earlier steps of 3 Step IT's IT lifecycle management process, creates additional value to customers and enables both companies to develop their operations

to correct direction. The earlier presumption of reverse logistics dealing mainly with managing returning devices proved false during the development project. The development aspects that can be directed to returning devices management can not by themselves create an efficient rental returns management system. An efficient rental returns management system requires support from an efficient ending option management and applicable process support and training functionalities.

The improvements conducted have been extensive taking into account that the research project was conducted in connection to normal daily operations. In the fast growing world of 3 Step IT, the need to improve processes and systems is intense. When developing the rental returns management system, a clear message to management are the possibilities reverse logistics offers to improve profitability and to differentiate in the market. Also a question to be directed to management is the service level the customers will be offered taking into account productivity level and process, personnel and IT systems requirements. A balance between these factors and targets must be achieved and long-term overall targets must be assigned for the development of the rental returns management system.

This research in the field of reverse logistics amongst other research literature offers a new perspective to handling reverse logistics. Although the main ideology of reverse logistics is the same also with rental returns management, there are some aspects that require a totally different viewpoint. A topic for further research in the field of reverse logistics would be to study whether the nature of rental returns management systems varies with different types of rental equipment. The viewpoint of this research has been from handling rental returns for IT equipment.

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Instructions for returning equipment management at 3 Step IT

Instructions for handling unclear returns at 3 Step IT

3 Step IT's returning instructions to customers

3 Step IT's packing instructions

3 Step IT company presentation

APPENDICES

APPENDIX 1/1

3 Step IT Group – Company presentation



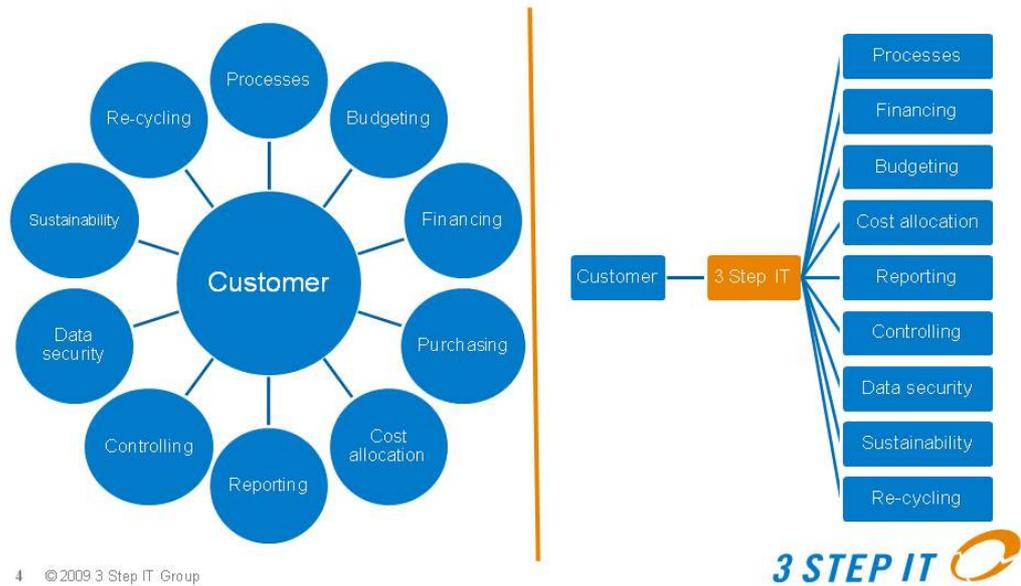
3 Step IT in a nutshell

- International service company
- Specialized in management and financing of IT equipment and other fixed assets
- Founded in Finland 1997
- Operating countries 9
- Number of employees 135
- Turnover EUR 219 million in 2008

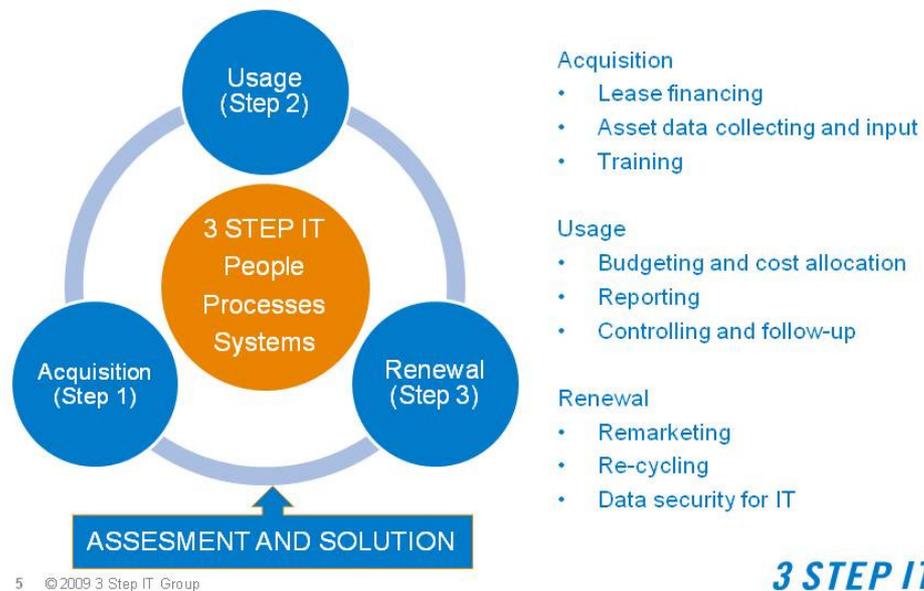


Make sense, not waste
Smart services for your asset management

Smart services for asset management

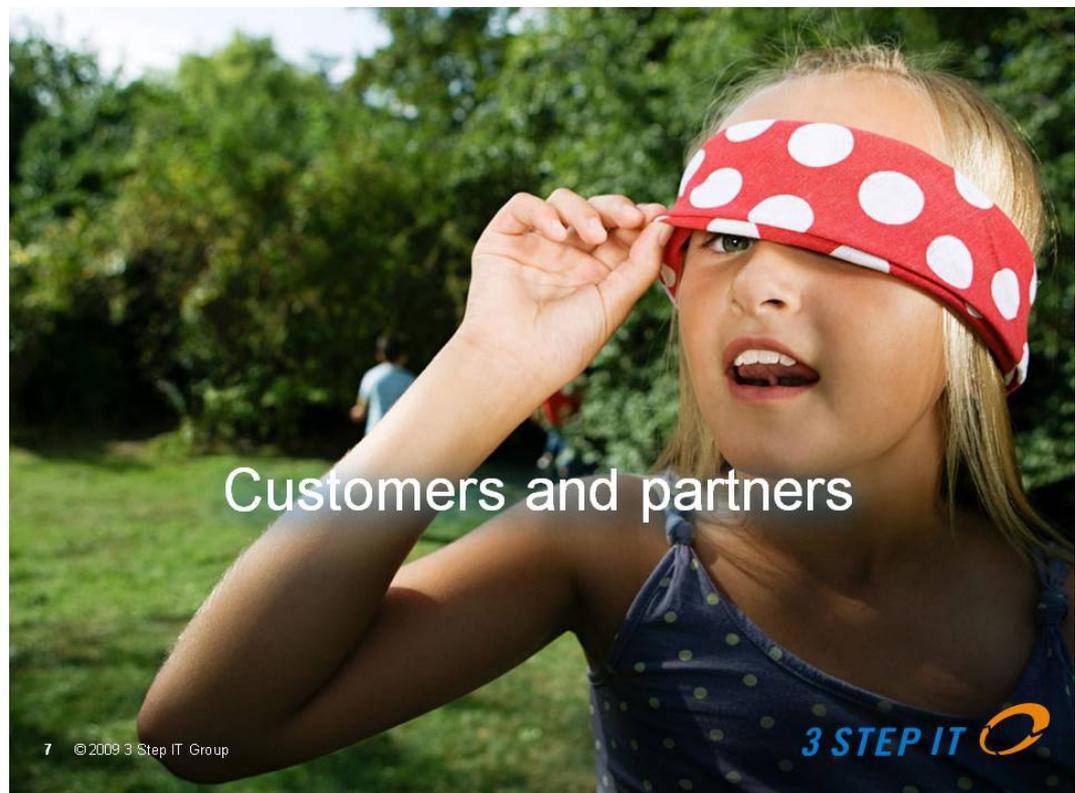


Asset management model



Make sense, not waste

- We make better sense for our customers
 - Financial status: result, cost-level, capital
 - Efficiency in asset usage
 - Easiness in asset management
 - Data security
- We help our customers to
 - Not to waste money
 - Not to waste time
 - Not to waste natural resources



Financing partners

- HSBC
- Nordea Financing
- Pohjola Bank
- IBM Global Financing (IGF)
- Danske Bank

Customers

Corporate customers

- Customer name
- Customer name
- Customer name
- Customer name
- Customer name
- Customer name

Public sector

- Customer name
- Customer name
- Customer name
- Customer name
- Customer name
- Customer name

Customer satisfaction 2008



Awards



Service provider of the year
in Europe 2008



Entrepreneur of the Year 2007

Founder Jarkko Veijalainen
Entrepreneur of the year in
Finland 2007



General category 3rd place

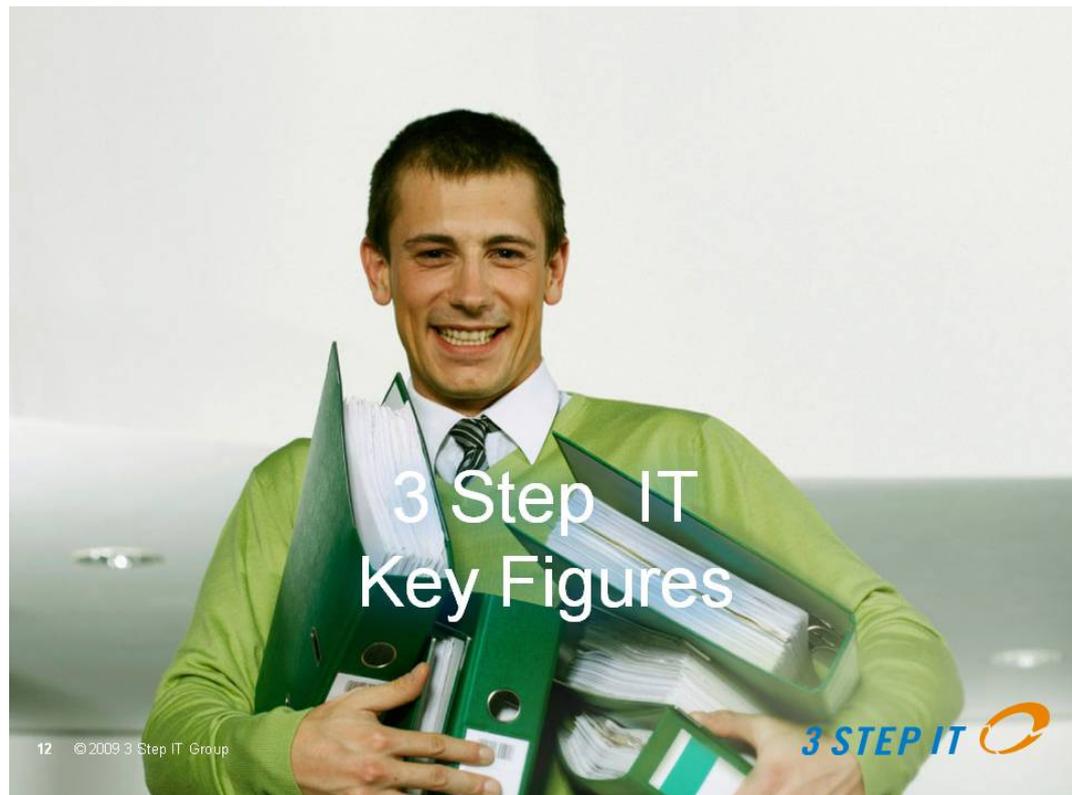


General category 6th place



General
category 8th
place

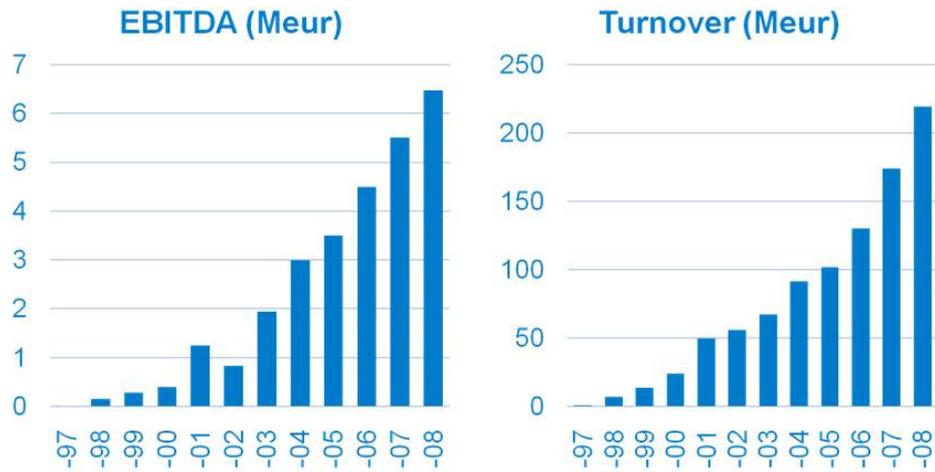
APPENDIX 1/7



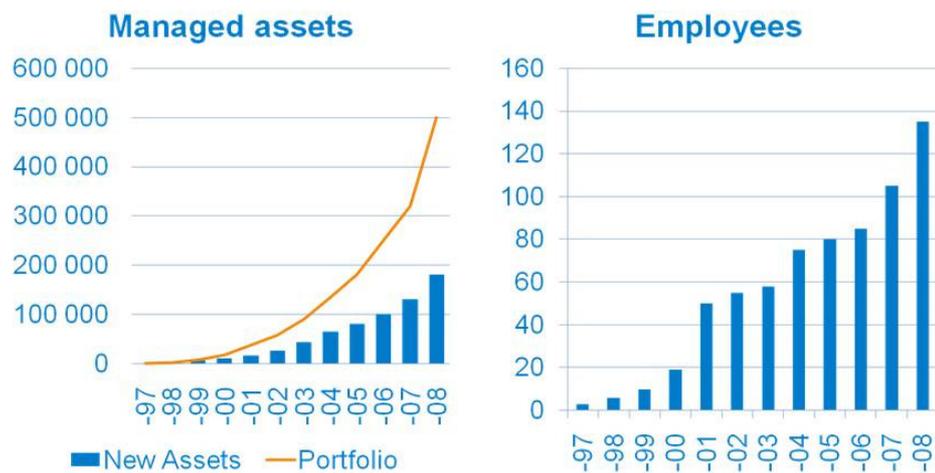
3 Step IT Group Key Figures

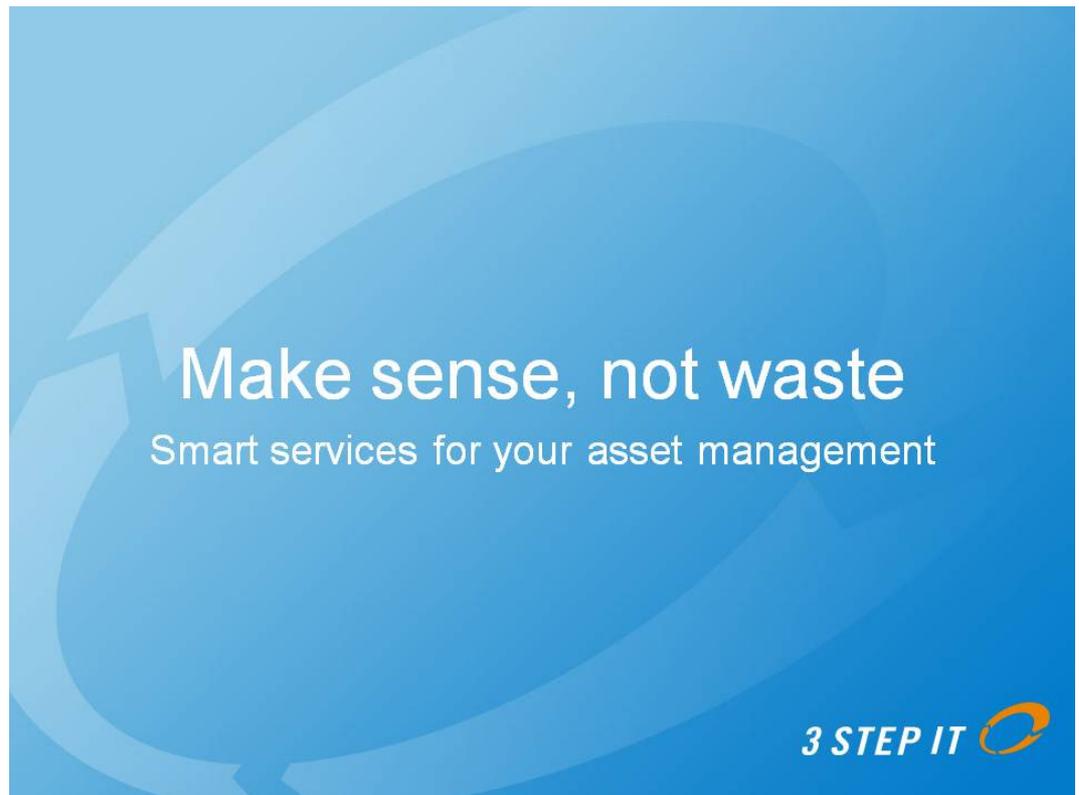
	2004	2005	2006	2007	2008
Turnover (Meur)	91.4	102.0	130.0	174.0	219.0
Change	+ 36.0%	+ 11.6%	+ 27.5%	+ 33.9%	+ 25.9%
EBITDA (Meur)	3.0	3.4	4.5	5.5	6.5
Change	+ 53.8%	+ 13.3%	+ 32.4%	+ 22.2%	+ 18.2%
Managed assets	135.000	180.000	250.000	320.000	500.000
Change	+ 50.6%	+ 33.3%	+ 38.9%	+ 28.0%	+ 56.3%
Employees	75	80	85	105	135
Change	+ 29.3%	+ 6.7%	+ 6.3%	+ 23.5%	+ 28.6%

3 Step IT Group Key Figures



3 Step IT Group Key Figures



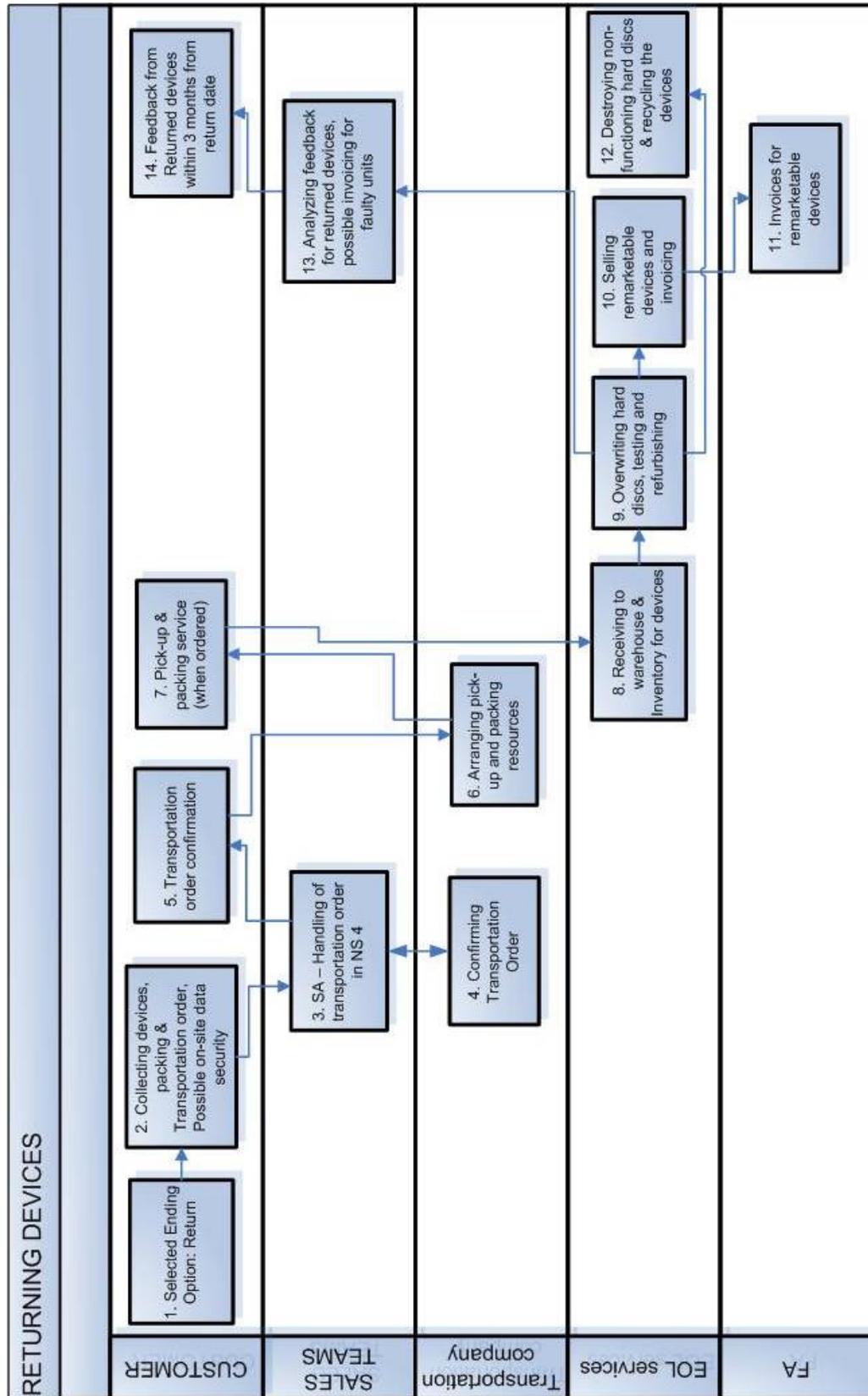
A blue rectangular graphic with a gradient and abstract white shapes. The text is centered in white. The logo is in the bottom right corner.

Make sense, not waste
Smart services for your asset management

3 STEP IT 

APPENDIX 2

Detailed process for returning of rental devices at 3 Step IT



APPENDIX 3

Rental returns management: discussion topics for group interviews

EOL process:

- Support to customer service personnel
- Support to customers
- Requirements for future

EOL Management functionality in Asset Management:

- Usability
- Development needs
- Good features / bad features

Transportation order management functionality in Asset Management:

- Usability
- Development needs
- Good features / bad features

EOL Management functionality in NS 4:

- Usability
- Development needs
- Good features / bad features

Logistics / pick-up and packing service:

- Process
- Support
- Instructions
- Customer service at logistics partner
- Development needs

Warehouse operations – Receiving and inventory:

- Process
- Development needs
- Good features / bad features

APPENDIX 4/1

RENEWING RENTAL DEVICES

This set of instructions determines the operational procedures used to assure the returning of IT equipment leased from 3 Step IT, and their replacement with new equipment.

Renewal process for rental equipment:

1. 3 Step IT informs customer's contact person about ending rental devices 3 months prior to lease contract end date.
2. Customer's contact person checks which departments/offices have rental equipment whose rental contracts are ending. The contact person informs the supervisors of the individual departments/offices about ending rental devices.
3. Customer's contact person informs 3 Step IT latest one month prior to contract end date which devices are returned, which are transferred to lease extension and which will be bought from 3 Step IT (buy-out).
4. The basic guideline is to return all rental devices to 3 Step IT after contract end date. Any divergent operations must be accepted by IT manager. Lease extension and buy-out are used only in exceptional cases.
5. Regarding equipment scheduled to be returned to 3 Step IT, the customer is responsible for ordering replacing equipment in good time before contract end date.
6. At lease contract end date the returning device will be released from use and transferred to wait for pick-up
7. 3 Step IT picks up the equipment according to contract. Customer can also order packing service for the returning devices according to separate price list when needed.
8. Step IT takes care of data security for the returned equipment by handling their hard discs with an overwriting software. Defective hard drives are destroyed by crushing. Recycled products and parts are disposed off according to 3 Step IT's environmental system which operates according to ISO 14001 principles.

Returned devices:

1. The devices can not have BIOS password protection
2. Original configuration
3. Devices must be in normal working condition taking into account normal wear and tear
4. In case you know the device is defective/deficient, you must inform 3 Step IT in advance
5. 3 Step IT allows 5 % of returned devices to be defective or deficient.
6. Devices can not be returned before lease contract end date.

APPENDIX 4/2

Devices set to lease extension:

1. In cases where the device can not be returned after lease contract expires, the device can be set to lease extension.
2. The possible lengths for lease extension contracts are 3, 6, 9 or 12 months. The maximum total time to use lease extension is 12 months.
3. The device will be returned or bought after lease extension term.

Buy-Out devices:

1. The buy-out prices are available in Asset Management reporting system 3 months prior to lease contract end date.