Optimization of Logistics and Distribution Processes at Lynx Transport Ltd.

Bc. Iveta Rosová

Univerzita Tomáše Bati ve Zlíně

Fakulta managementu a ekonomiky

Ústav průmyslového inženýrství a informačních systémů

akademický rok: 2013/2014

ZADÁNÍ DIPLOMOVÉ PRÁCE

(PROJEKTU, UMĚLECKÉHO DÍLA, UMĚLECKÉHO VÝKONU)

Jméno a příjmení:	**Bc. Iveta Rosová**
Osobní číslo:	**M11490**
Studijní program:	**N6208 Ekonomika a management**
Studijní obor:	**Průmyslové inženýrství**
Forma studia:	**prezenční**
Téma práce:	**Optimalizace logistických a distribučních procesů ve společnosti Lynx Transport Ltd.**

Zásady pro vypracování:

Úvod

I. Teoretická část

- Na základě dostupné literatury zpracujte literární rešerši pro danou oblast a formulujte teoretické východiska pro zpracování analýzy a návrh projektu.

II. Praktická část

- Proveďte analýzu současného stavu ve firmě Lynx Transport Ltd.

- Zhodnoťte výsledky analýzy a navrhněte ideový záměr pro zlepšení současného stavu.

- Vypracujte projektové řešení vybraných prvků ideového záměru a zhodnoťte z hlediska jejich proveditelnosti.

Závěr

Rozsah diplomové práce: **cca 70 stran**

Rozsah příloh:

Forma zpracování diplomové práce: **tištěná/elektronická**

Seznam odborné literatury:

FRAZELLE, Edward. World-class warehousing and material handling. 1. vyd. New York: McGraw-Hill, 2002, ix, 242 s. ISBN 9780071376006.

CHRISTOPHER, Martin. Logistics and supply chain management. 4. vyd. Harlow: Financial Times Prentice Hall, 2011, xii, 276 s. ISBN 9780273731122.

MARTICHENKO, Robert and GOLDSBY, Thomas J. Lean Six Sigma logistics: strategic development to operational success. 1. vyd. Boca Raton: J. Ross Publishing, 2005, 301 s. ISBN 9781932159363.

STROH, Michael B. A practical guide to transportation and logistics. 2. vyd. Dumont: Logistics Network, 2001, xiv, 184 s. ISBN 9780970811509.

Vedoucí diplomové práce: **Ing. Denisa Hrušecká**
Ústav průmyslového inženýrství a informačních systémů

Datum zadání diplomové práce: **22. února 2014**

Termín odevzdání diplomové práce: **2. května 2014**

Ve Zlíně dne 22. února 2014

L.S.

prof. Dr. Ing. Drahomíra Pavelková
děkanka

prof. Ing. Felicita Chromjaková, Ph.D.
ředitel ústavu

PROHLÁŠENÍ AUTORA
BAKALÁŘSKÉ/DIPLOMOVÉ PRÁCE

Beru na vědomí, že:

- odevzdáním bakalářské/diplomové práce souhlasím se zveřejněním své práce podle zákona č. 111/1998 Sb. o vysokých školách a o změně a doplnění dalších zákonů (zákon o vysokých školách), ve znění pozdějších právních předpisů, bez ohledu na výsledek obhajoby[1];

- bakalářská/diplomová práce bude uložena v elektronické podobě v univerzitním informačním systému,

- na mou bakalářskou/diplomovou práci se plně vztahuje zákon č. 121/2000 Sb. o právu autorském, o právech souvisejících s právem autorským a o změně některých zákonů (autorský zákon) ve znění pozdějších právních předpisů, zejm. § 35 odst. 3[2];

- podle § 60[3] odst. 1 autorského zákona má UTB ve Zlíně právo na uzavření licenční smlouvy o užití školního díla v rozsahu § 12 odst. 4 autorského zákona;

- podle § 60[4] odst. 2 a 3 mohu užít své dílo – bakalářskou/diplomovou práci - nebo poskytnout licenci k jejímu využití jen s předchozím písemným souhlasem Univerzity Tomáše Bati ve Zlíně, která je oprávněna v takovém případě ode mne požadovat přiměřený příspěvek na úhradu nákladů, které byly Univerzitou Tomáše Bati ve Zlíně na vytvoření díla

---

[1] zákon č. 111/1998 Sb. o vysokých školách a o změně a doplnění dalších zákonů (zákon o vysokých školách), ve znění pozdějších právních předpisů, § 47b Zveřejňování závěrečných prací:

(1) Vysoká škola nevýdělečně zveřejňuje disertační, diplomové, bakalářské a rigorózní práce, u kterých proběhla obhajoba, včetně posudků oponentů a výsledku obhajoby prostřednictvím databáze kvalifikačních prací, kterou spravuje. Způsob zveřejnění stanoví vnitřní předpis vysoké školy.

(2) Disertační, diplomové, bakalářské a rigorózní práce odevzdané uchazečem k obhajobě musí být též nejméně pět pracovních dnů před konáním obhajoby zveřejněny k nahlížení veřejnosti v místě určeném vnitřním předpisem vysoké školy nebo není-li tak určeno, v místě pracoviště vysoké školy, kde se má konat obhajoba práce. Každý si může ze zveřejněné práce pořizovat na své náklady výpisy, opisy nebo rozmnoženiny.

(3) Platí, že odevzdáním práce autor souhlasí se zveřejněním své práce podle tohoto zákona, bez ohledu na výsledek obhajoby.

[2] zákon č. 121/2000 Sb. o právu autorském, o právech souvisejících s právem autorským a o změně některých zákonů (autorský zákon) ve znění pozdějších právních předpisů, § 35 odst. 3:

(3) Do práva autorského také nezasahuje škola nebo školské či vzdělávací zařízení, užije-li nikoli za účelem přímého nebo nepřímého hospodářského nebo obchodního prospěchu k výuce nebo k vlastní potřebě dílo vytvořené žákem nebo studentem ke splnění školních nebo studijních povinností vyplývajících z jeho právního vztahu ke škole nebo školskému či vzdělávacího zařízení (školní dílo).

[3] zákon č. 121/2000 Sb. o právu autorském, o právech souvisejících s právem autorským a o změně některých zákonů (autorský zákon) ve znění pozdějších právních předpisů, § 60 Školní dílo:

(1) Škola nebo školské či vzdělávací zařízení mají za obvyklých podmínek právo na uzavření licenční smlouvy o užití školního díla (§ 35 odst. 3). Odpírá-li autor takového díla udělit svolení bez vážného důvodu, mohou se tyto osoby domáhat nahrazení chybějícího projevu jeho vůle u soudu. Ustanovení § 35 odst. 3 zůstává nedotčeno.

[4] zákon č. 121/2000 Sb. o právu autorském, o právech souvisejících s právem autorským a o změně některých zákonů (autorský zákon) ve znění pozdějších právních předpisů, § 60 Školní dílo:

(2) Není-li sjednáno jinak, může autor školního díla své dílo užít či poskytnout jinému licenci, není-li to v rozporu s oprávněnými zájmy školy nebo školského či vzdělávacího zařízení.

(3) Škola nebo školské či vzdělávací zařízení jsou oprávněny požadovat, aby jim autor školního díla z výdělku jím dosaženého v souvislosti s užitím díla či poskytnutím licence podle odstavce 2 přiměřeně přispěl na úhradu nákladů, které na vytvoření díla vynaložily, a to podle okolností až do jejich skutečné výše; přitom se přihlédne k výši výdělku dosaženého školou nebo školským či vzdělávacím zařízením z užití školního díla podle odstavce 1.

vynaloženy (až do jejich skutečné výše);

- pokud bylo k vypracování ~~bakalářské~~/diplomové práce využito softwaru poskytnutého Univerzitou Tomáše Bati ve Zlíně nebo jinými subjekty pouze ke studijním a výzkumným účelům (tj. k nekomerčnímu využití), nelze výsledky ~~bakalářské~~/diplomové práce využít ke komerčním účelům.

Prohlašuji, že:

- jsem ~~bakalářskou~~/diplomovou práci zpracoval/a samostatně a použité informační zdroje jsem citoval/a;

- odevzdaná verze ~~bakalářské~~/diplomové práce a verze elektronická nahraná do IS/STAG jsou totožné.

Ve Zlíně 28. 04. 2014

ABSTRAKT

Cílem této diplomové práce je optimalizace distribučních a logistických činností ve společnosti Lynx Transport, s.r.o. Práce je rozdělena na dvě části, teoretickou a analytickou. Teoretická část poskytuje na základě odborné literatury informace o logistických procesech, skladové organizaci, štíhlá Six Sigma a 3D animaci. Analytická část je přehledem současné situace ve firmě a základem pro optimalizační návrh, který se soustřeďuje na snížení neúspěšných dodávek, zlepšení vizualizace a efektivní reorganizaci skladu. Na konci práce je ohodnocení návrhu z finančního i nefinančního hlediska.

Klíčová slova: logistika, síť, optimalizace procesů, manipulace s tovarem, skladování, štíhlá Six Sigma

ABSTRACT

The aim of this master thesis is to optimize distribution and logistics processes at Lynx Transport Ltd. The thesis is divided into two parts, theoretical and analytical. With use of scholarly books, the theoretical part provides information about logistics processes, warehouse organization, Lean Six Sigma and 3D animation. The analytical section is an overview of current situation at the company and a base for an optimization proposal, which focuses on reduction of failed deliveries, visualization improvement and efficient warehouse reorganization. The end of the thesis is a proposal valuation from a financial and non financial point of view.

Keywords: logistics, network, process optimization, freight handling, warehousing, Lean Six Sigma

ACKNOWLEDGEMENTS

I would like to thank the entire team at Lynx Transport Ltd. for their willingness to cooperate and share their knowledge with me. Special thank to my tutor Karolina Rygulska who motivated and helped me throughout the process of writing my master thesis.

I would also like to thank to Ing. Denisa Hrušecká who provided me with a valuable feedback and had a patience to guide my project while I was abroad.

I hereby declare that the print version of my Bachelor's/Master's thesis and the electronic version of my thesis deposited in the IS/STAG system are identical.

"You can't do today's job with yesterday's methods and be in business tomorrow"

Anonymous

CONTENTS

INTRODUCTION

There is enormous pressure put on organizations to handle a competitive business environment, accommodate individual needs of their customers and improve processes. Process approach with focus on the customer's needs is majorly important nowadays. In order to provide a high standard of service and quality with low costs, companies aim to determine the main processes throughout the entire organization and optimize multiple activities involved within them.

Efficient storage, getting freight from point of origin to the customers on time with the correct quality, and excellent customer service from the beginning to end of the process are the main goals in logistics processes.

Another phenomenon that has an impact on logistics and other businesses is 3D animation and simulation. 3D animation has proved to be a excellent marketing tool which also helps to win over the audience while presenting your organization. More complex and detailed 3D simulation can help with planning the warehouse operation for improved efficiency.

Lynx Transport Ltd. has recently been experiencing waste and unnecessary expenses in freight distribution and warehousing. The company is aiming to eliminate imperfections and improve the current operation system. Therefore, it is facing the task of efficiently optimizing certain processes and maintaining these changes.

The objective of my thesis is to analyze the current state of distribution and logistics activities, detect possible causes of waste, imperfections and inefficiency and suggest improvements that will lead to better organization and savings of the company's money.

The first part of my thesis provides theoretical background about logistics, freight handling, warehousing and different methods for process improvement. The analytic part gives a detailed description of Lynx Transport Ltd. and an analysis of the current state of certain processes at the company. There is a 3D model of the premises included in the analysis sections for better understanding and visual image of the organization. I am analyzing how the inbound freight is handled and how it is distributed to the right warehouse location and to the final customer with all necessary paper work. This part is followed by the administration process flow analysis while organizing transport. The final area analyzed is the warehouse. The 3D model allows for very good layout and rack organization analysis, and ABC analysis shows which customers and stock the company needs to focus on the most.

The first goal of optimization proposal is to improve freight distribution to prevent unnecessary costs for the company and avoid upsetting the customers. The next goal is to reduce any time wasted in the busy administration office and ensure proper visualization throughout the company. And lastly, the organization of the warehouse for improved efficiently, to reduce the waste of time and space, is of high importance.

I. THEORY

1 OVERVIEW OF LOGISTICS

According to the Council of Supply Chain Management Professionals: *"Logistics is that part of Supply Chain Management that plans, implements, and controls the efficient, effective forward and reverse flow and storage of goods, services, and related information between the point of origin and the point of consumption in order to meet customers' requirements."* (MURPHY & WOOD, 2008, p. 6)

The mission of logistics management is to plan and co–ordinate activities that are fundamental for achieving high level of service and quality at lowest possible cost. Customers' needs are satisfied thank to good organization of material handling and information flows that extend from the marketplace, through the firm and its operations and beyond that to suppliers. (MARTIN, 2011, p. 11)
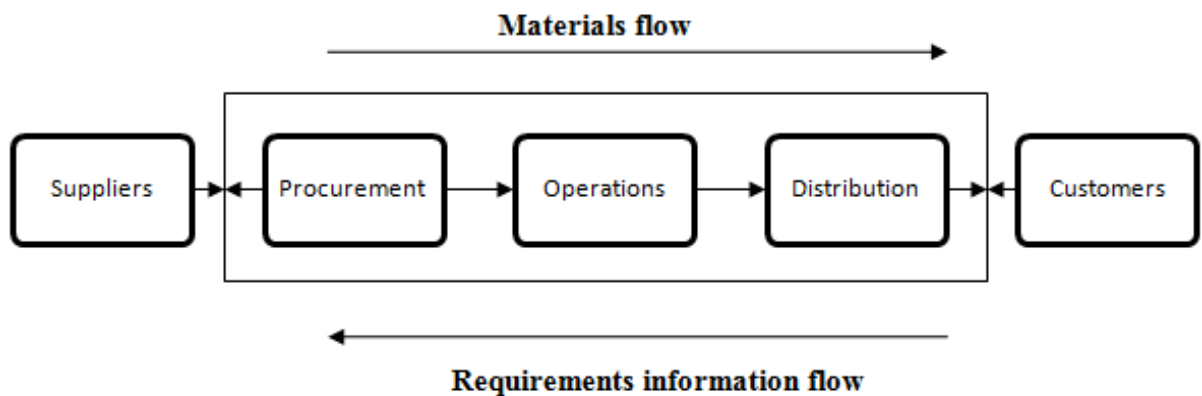
Figure 1: Logistics management process (MARTIN, 2011, p. 11)

1.1 Supply chains in logistics

Traditionally most organizations have thought that they need to exist independently from others and compete with them in order to survive. Unwillingness to co–operate can lead to self–defeating. (BRANDIMARTE & ZOTTERI, 2007, p. 9–11)

Supply Chain could be defined as: "*A network of connected and interdependent organisations mutually and co–operatively working together to control, manage and improve the flow of materials and information from suppliers to end users.*" (MARTIN, 2011, p.4)

1.1.1 Partnerships

The new competitive paradigm places the firm at the centre of an independent network which competes as an integrated supply chain against other supply chains. To achieve suc-

cess in the world of network competition it is necessary to focus on network management as well as upon internal processes. These are perhaps the most important issues and challenges organizations face in a network. (MARTIN, 2011, p. 217–218)

1. **Collective strategy development** – network members must collectively agree strategic goals and the means of attaining them to achieve high level of joint strategy development;

2. **Win–win thinking** – co–operation and effort to help each other with solving potential problems lead to improved performance generally;

3. **Open Communication** – internet is making the exchange of information between network partners very easy and advantageous. It is essential to provide all relevant information with high level of visibility and transparency. (MARTIN, 2011, p. 217–218)

There are different types of partnerships with different levels of sharing information and strategy. Characteristics of partnership types are explained in the following table.

Partnership type	Activities	Time horizon	Scope of activities
Cooperation	Fewer Suppliers Longer term contracts	Short–term	Single functional area
Coordination	Information linkages Electronic Data Interchange linkages	Long–term	Multiple functional areas
Collaboration	Supply chain integration Joint planning Technology sharing	Long–term with no fixed date	Firms see each other as extensions of their own firm

Table 1: Partnership types (HARRISON & VAN HOEK, 2002, p. 226)

Advantages of partnerships

- Competitiveness
- Increased quality and productivity
- Shortened lead times and cycle times

- Conditions that enable long term investments (BRANDIMARTE & ZOTTERI, 2007, p. 9–11; HARRISON & VAN HOEK, 2002, p. 226)

Disadvantages of partnerships

- Possible disagreement about the strategy
- The need to gather essential and veracious information about potential partner on which to decide about co–operation
- The risk of releasing sensitive information to competitors
- Sharing blame for possible failure caused by one of the partners. (HARRISON & VAN HOEK, 2002, p. 226–227)

1.2 Logistics and information technology

Effective utilization of information is beneficial for the company and brings:

- greater knowledge and visibility across the network;
- greater awareness of customer demand via point–of–sale data;
- better coordination of manufacturing, marketing and distribution;
- more dynamic order processing and reduced time thank to coordinated logistics IT systems. (MURPHY & WOOD, 2008, p. 58)

The heart of an information system is converting data to information that are processed and displayed in a manner useful for decision making. These information need to be connected with another decision–assisting methods as well. Logistics information systems are directed to the particular problems of logistics decision making. There are three elements that make up the system: 1. *the input*, 2. *the data base and its associated manipulation*, and 3. *the output*. (BALLOU, 1999, p. 122– 127)

The Input

The first activity is careful identification and collecting data that are important for decision–making process. A lot of important data as volumes, dates, addresses, etc. are captured during order entry. Freight bills, purchase orders, delivery documents and invoices are additional sources of this type of primary data. (BALLOU, 1999, p. 123)

The Database Management

Database management involves selection of the data to be stored, choice of analysis to include, and choice of basic data–processing procedures to implement. Data analysis is very

sophisticated use made of the information system but maintenance of data can be expensive and organizations must consider:

- how critical the information is to the decisions;
- how rapidly the information needs to be retrieved;
- how frequently it is to be accessed;
- how much effort is required to manipulate the information into the form needed. (BALLOU, 1999, p. 125)

The Output

Output is the interface with the user of the system. There are several forms of output:

1. summary reports of costs or performance statistics, status reports of inventories or order progress, exception reports that compare desired productivity with actual productivity, purchase or production orders, transport bookings;
2. prepared documents such as transportation bills of landing, freight bills;
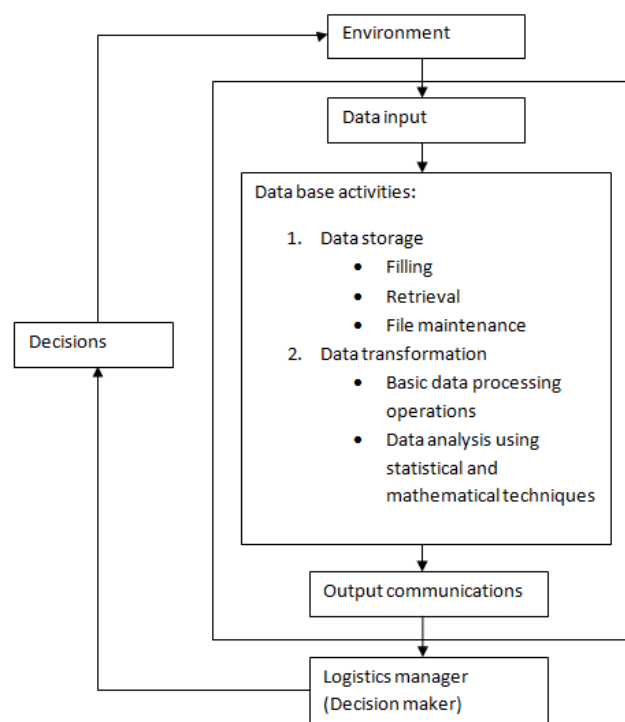3. results of data analysis. (BALLOU, 1999, p. 126)

Figure 2: Overview of the logistics information system (BALLOU, 1999, p. 123)

1.3 Order management and customer service

*"**Order management** refers to management of the various activities associated with the **order cycle**; the order cycle (which can also be referred to as replenishment cycle or lead time) refers to the time from when a customer places an order to when the goods are received."* (MURPHY & WOOD, 2008, p. 84)

Activities associated with order processing represent major part of the total order cycle time in many industries. Therefore, organization aim to provide high level of customer service in short and consistent order cycle time. Managing order–processing activities carefully and effectively is essential to reach high quality and shorter cycle time.

Main order processing activities at most of the organization are shown in the picture below.
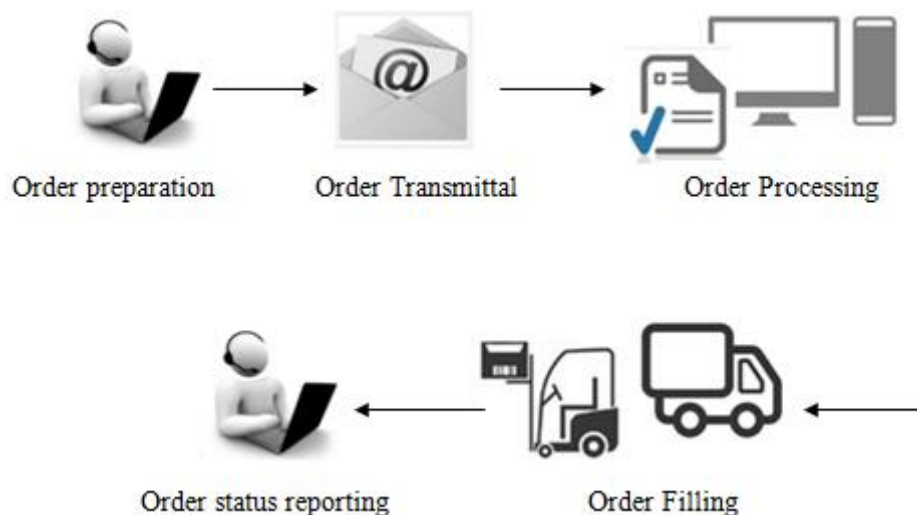
Figure 3: Typical elements of order processing (BALLOU, 1999, p. 112)

- ***Order entry and preparation*** – gathering information needed about the product or service, filling out order forms;
- ***Order transmittal*** – transferring the order request from its point of origin to the place where order processing can be handled;
- ***Order processing*** – order entry, checking availability, preparing documentation, checking the customer's credit status, billing;
- ***Order filling*** – picking item, packing, scheduling delivery, preparing shipping documentation;

- *Order status reporting* – tracing and tracking the order and communicating with the customer. (BALLOU, 1999, p. 112; MURPHY & WOOD, 2008, p. 85–91)

1.3.1 Customer service

"*Customer service refers specifically to the chain of sales–satisfying activities which usually begins with order entry and ends with delivery of product to customers, in some cases continuing on as a equipment service or maintenance or other technical support.*" (BALLOU, 1999, p.81)

Customers are very important in highly competitive business environment. It is more expensive to develop new customer than retain an axisting one. Organizations seek to keep their customers happy, and persuade them the organization is credible and easy to do business with. (MURPHY & WOOD, 2008, p. 91–92)

Good customer service can be strong weapon and it is also more difficult for competitors to imitate than other elements of marketing mex as price or promotion. It is important for employees to have excellent knowledge about the services and communication skills. (MURPHY & WOOD, 2008, p. 92–93)

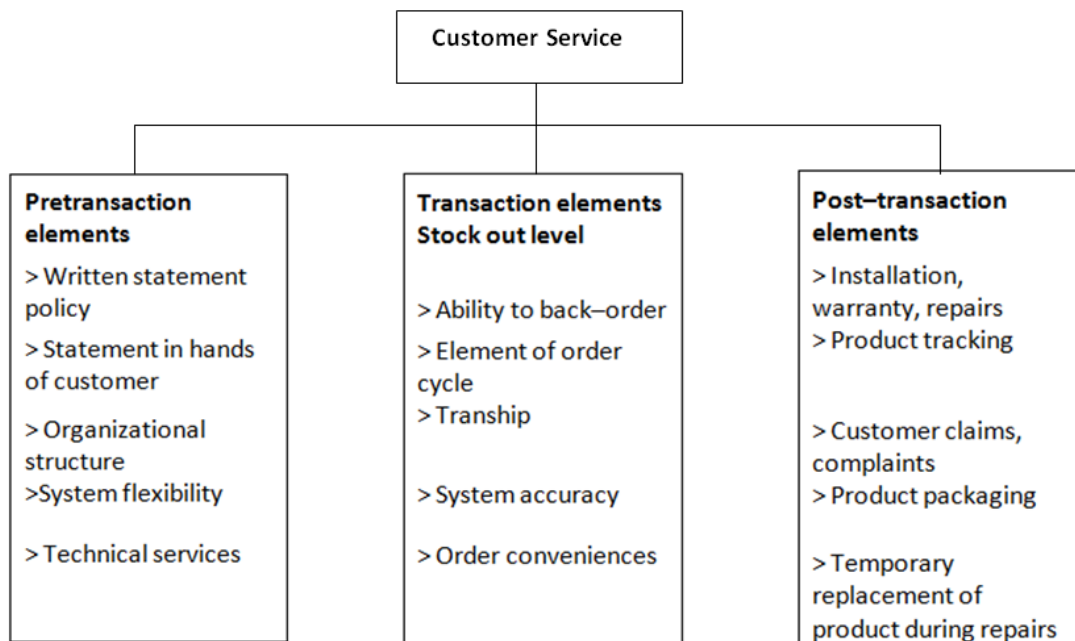Elements of customer service are shown in the figure below.

Figure 4: Elements of customer service (BALLOU, 1999, p. 82)

Rules for good customer service:

- Answer the phone – make sure the phone is answered even if you just put it on hold or answering service. It should never ring out;

- Don't make promises that cannot be fulfilled – reliability is the key to good customer service;

- Make sure you pay attention properly while talking to customer;

- Deal with complaints – make customers feel you genuinely care about their problem and take it seriously;

- Be helpful – do your best to help even without immediate profit, take an extra step to help;

- Train your staff to have excellent knowledge. (WARD, ©2014)

According to Shycon Associates survey that has been done in America, these are the most common service failures.
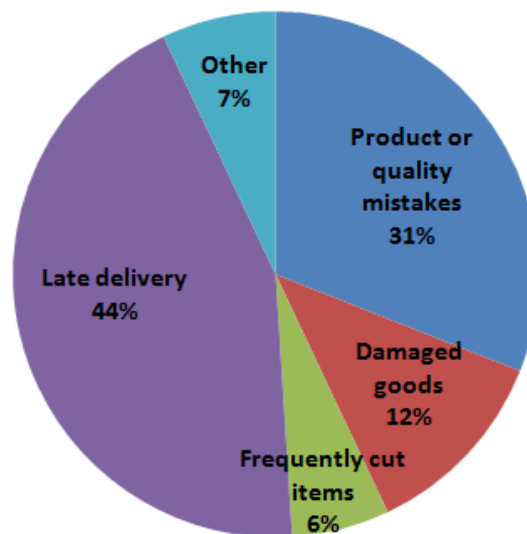
Figure 5: Common Customer Service Complaints (BALLOU, 1999, p. 85)

"One stop shop"

One is a term used for organizations that provide multiple services to their customers. The aim is to offer complex and convenient services and increase a chance to sell more products to clients. For example transport company may be able to offer also storage, order pick and pack, inventory management, dedicated specialist vehicles and international transport. (Investopedia, 2014)

1.4 Process management and improvement

A process takes inputs and performs value–added activities to create an output. Each process has specified the beginning and the end, and certain amount of defined steps between them. There is always a person (process owner) who is responsible for the process. He coordinates and organizes the process and employees involved in it, and he also controls results. Key processes are the processes that have the greatest impact on customers' value opinion about the product or service and the greatest impact on customer retention. (JESTON & NELIS, 2008, p. 4–8; SUMMERS, 2011, p. 99)

In order to effectively improve process it is important to:

1. Determine the objective;
2. Determine the boundaries;
3. Involve representatives from each major activity involved;
4. Identify the process owner;
5. Create a process map;
6. Separate the value–added activities for non–value–added activities;
7. Eliminate non–value added activities;
8. Identify, analyze and eliminate variation;
9. Determine whether the remaining value–added activities are truly the best practice;
10. Redesign process using the knowledge gained in the previous nine steps. (SUMMERS, 2011, p. 101)

Process mapping

Process mapping is very useful tool for better understanding of a process. It provides graphical overview of all the activities involved in it. Creating a process map helps to identify waste and non–value–added activities. (HARMON, 2007, appendix I)
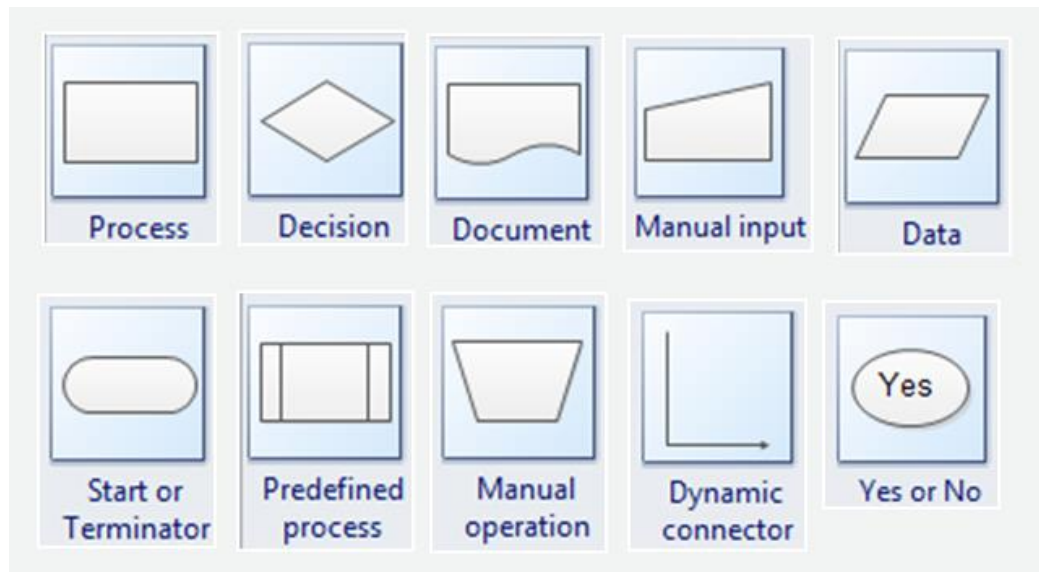
Figure 6: Common process map icons

1.5 Freight handling and distribution

1.5.1 Different types of freight handling functions

Consolidation

Customers sometime don't buy enough of goods from one source (manufacturer). In this case it is more economical for these sources to arrange collection point (warehouse) to consolidate the small shipment into larger ones. The collection point should be located close to sources. (BALLOU, 1999, p. 249)
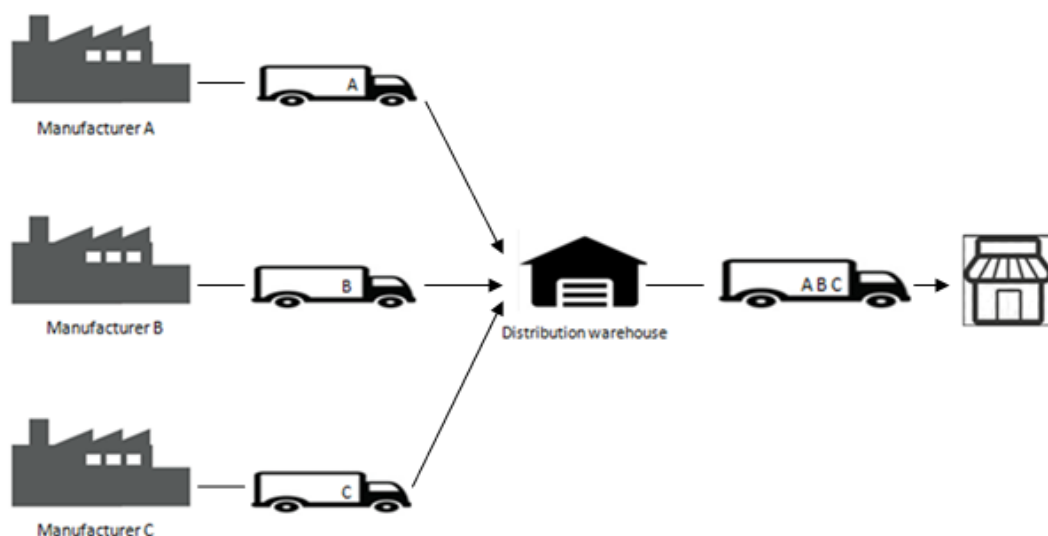
Figure 7: Freight consolidation (BALLOU, 1999, p. 249)

Break–Bulk

Break–Bulk is the opposite of consolidation. Large shipments with lower rates are moved to the warehouse and then redelivered to customers in smaller quantities. Break bulk is common when the distance between manufacturers and customers is long. It is effective to have a distribution warehouse near the customers. (BALLOU, 1999, p. 252)

Figure 8: Freight break–bulk (BALLOU, 1999, p. 252)

Mixing

A mixing point allows large shipments to be collected at one point and then gather them into small shipments according to customer requirements. Without a distribution warehouse, the manufactures would need to fill customers' orders by sending small volume shipments with high transportation rates. (BALLOU, 1999, p. 253)

Holding/Warehousing – further explanation of the most obvious use of storage facilities is explained in the further part Warehousing.

Figure 9: Freight mixing (BALLOU, 1999, p. 253)

1.5.2 Cross–Docking

When organizations don't want to ship directly to customers and don't want to keep their freight in storage, the best option is Cross–Docking, where:

- The need for material handling and storage is reduced to minimum;
- Inbound freight is immediately sorted into outbound orders;
- Outbound orders are located at their outbound docks;
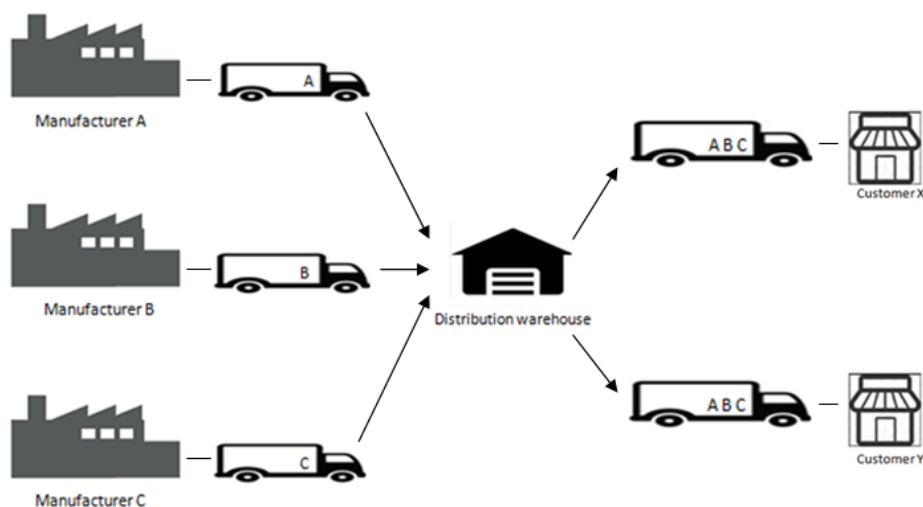- Freight quality inspection is not required, operators check only volumes and possible damages caused by transportation.
- Storage space required for material handling needs to be well organized to avoid confusion and wrong location of freight. (STROH, 2001, p.82–83; FRAZELLE, 2002, p.75–76)

The Benefits of Cross–Docking:

- As freight no longer need picking and put away (storage), staff costs are decreased;
- The time needed to get products to the final customers is reduced which leads to better customer service;
- Storage space is reduced as there is no longer need for storage. (MURRAY, ©2014)

Types of Cross Docking:

- Manufacturing Cross–Docking: receiving purchased products required by manufacturing company and preparing sub-assemblies for the production orders;
- Distributor Cross–Docking: consolidation of inbound products from different sources and preparing mixed pallets for the customers;
- Transportation Cross–Docking: combining shipments from a number of different carriers into delivery areas. (MURRAY, ©2014)

1.6 Warehousing

Despite the fact there are different types of warehouses, they all share fundamental set of activities.

- **Receiving** – assuring the quality and quantity are as manifested, disbursing materials to storage or other organizational functions requiring them;

- **Putaway** – placing freight in storage, includes material handling, location verification, and product placement;

- **Storage** – physical containment of freight while it is awaiting a demand;

- **Order Picking** – removing items from storage;

- **Packaging** – optional step after the picking;

- **Unitizing and shipping** – checking order for completeness, preparing documents, weighing and loading trucks. (FRAZELLE, 2002, p.10–11)

These tasks are also indicated on a flow line in following picture.
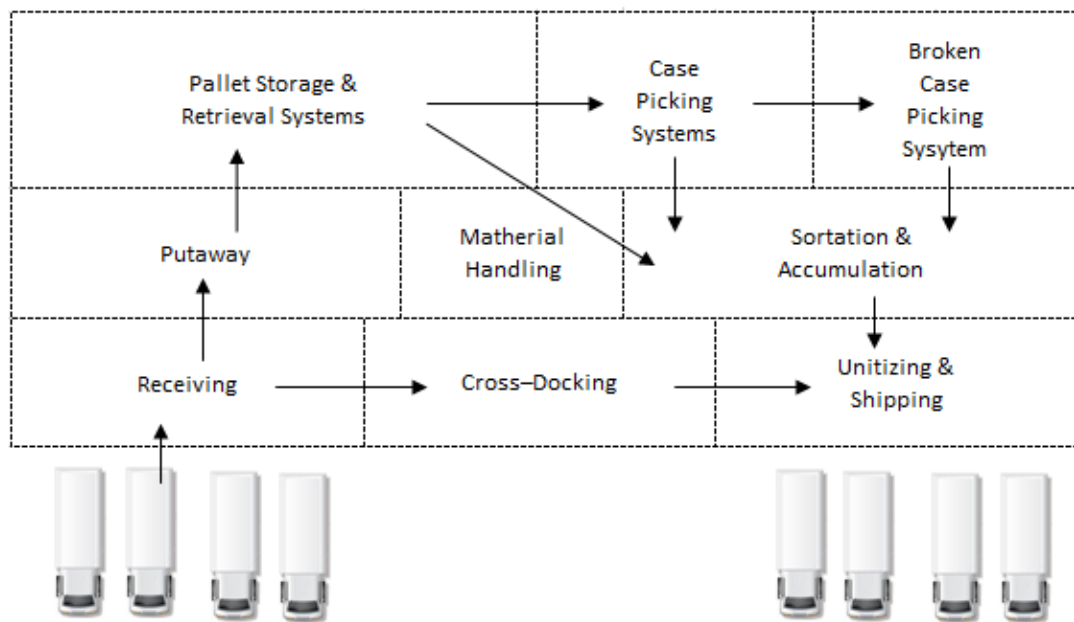
Figure 10: Common warehouse activities (FRAZELLE, 2002, p.10)

1.6.1 Pallet racking systems

Single-Deep and Double-Deep Pallet Rack

Single-deep pallet racking (see figure 7 on the left) provides access to each pallet stored in the rack. When a pallet is removed the space is immediately available for a new pallet. The major advantage is full access to all pallet locations and possibility to configure racks in different heights and ways. The major disadvantage is the amount of space devoted to aisles – typically 50 to 0 percent of available space. This type of racking is the most common at warehouses.

Double-deep pallet racking (see figure 7 on the right) is two pallet positions deep. The advantage is that the fewer aisles are needed. 50 percent of aisle space should be saved compared to single-deep selective rack but we cannot expect such a big space savings because we can only anticipate 70 to 75 percent utilization of available openings due to ***honeycombing*** (80 to 85 percent utilization is common for single deep racking). This racking is used when product is received and picked frequently in multiples of two pallets. Double rack forklift is required for storage. (FRAZELLE, 2002, p. 85–95; MURRAY, © 2014)

Honeycombing in this case means when only one pallet is stored, empty pallet space cannot be utilized until the whole opening is emptied.
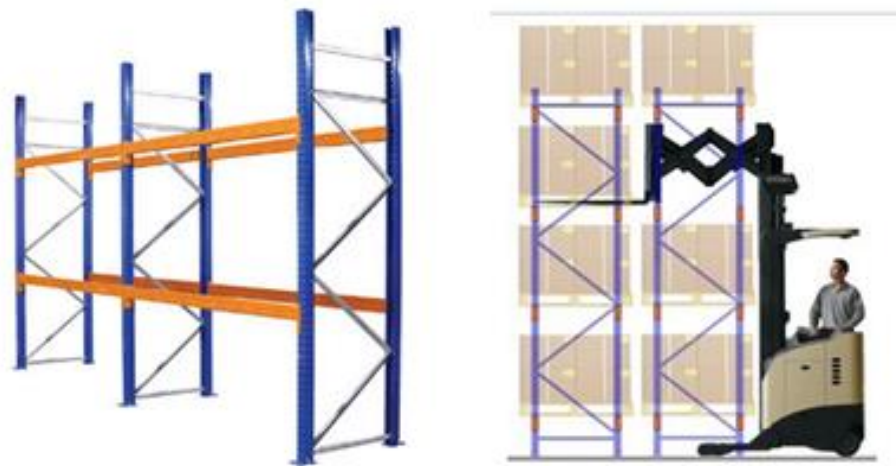
Figure 11: Single & Double deep pallet rack (India MART, © 1996–2014; Word of Design ©2012)

Drive-In racks

Drive-In racks (see figure 8) are similar to the double-deep racking and they provide five to ten pallet spaces which decrease isle space. Drive-In racks enable a lift truck to drive into the rack. However the forklift has a limited space to maneuver and the speed is limited for safe navigation. Another disadvantage is LIFO principle used for pallet retrieval. (FRAZELLE, 2002, p. 85–95; MURRAY, © 2014)
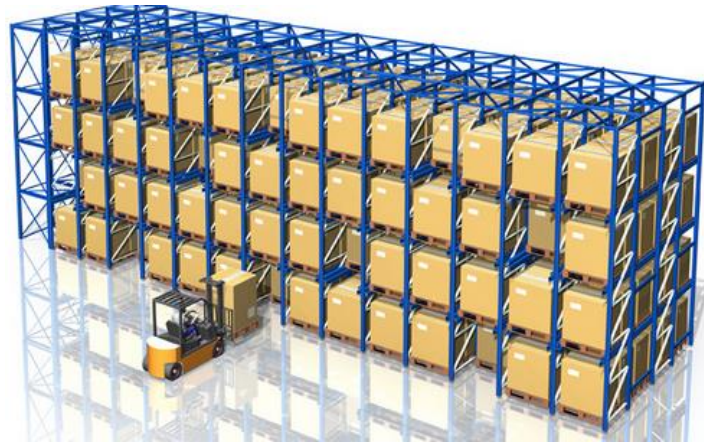
Figure 12: Drive–in/Drive–thru rack (SACMA SPA)

Pallet flow and Push back storage system

Loads in Pallet flow rack (see picture 9 on the left) are conveyed (FIFO) on rails from one end of a storage lane to the other. The main purpose is to provide height throughput and retrieval, and good utilization. The disadvantage of this system is the expense. (FRAZELLE, 2002, p. 85–95)

Push back system (see picture 9 on the right) provides LIFO deep lane storage using rail–guided carrier for each pallet load. As pallet is loaded into the storage, its weight and the force of putaway vehicle pushes the other pallets in the back. As the pallet is removed from the front, the weight of remaining pallet automatically advances remaining pallets to the rack face. (FRAZELLE, 2002, p. 85–95)
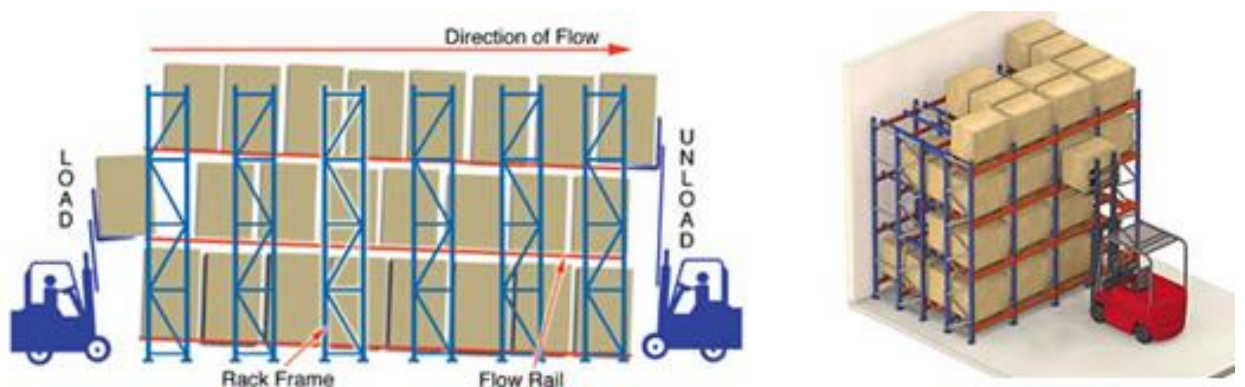
Figure 13: Pallet flow & Push back storage system (Cisco–Eagle, © 2014; Ziglift)

1.7 ABC Analysis

ABC analysis is one of the inventory categorization methods. It is based on Pareto principle which states that 80% of your outcomes come from 20% of your inputs. In logistics it can mean that 20% of your warehouse items take over 80% of the space. (CÁDEROVÁ, 2010, p.29)

The fundamentals of the analysis and the Pareto principle is division of a stock into three groups according to their share on annual consumption, revenue, storage space, movement etc. (CÁDEROVÁ, 2010, 29–31)

1. *Group A* – the highest annual consumption value – 70-80%. It typically accounts for only 10-20% of inventory items. Managing items from Group A is the most important. The aim is to decreased inventory turnover time with preserved process flow.
2. *Group B* – medium consumption value – 15-25%. It typically accounts for 30% of inventory items. Managing these items is less intensive.
3. *Group C* – the lowest consumption value – 5% and it typically accounts for 50% of total inventory items. Least important items.(COLLIGNON, 2012)
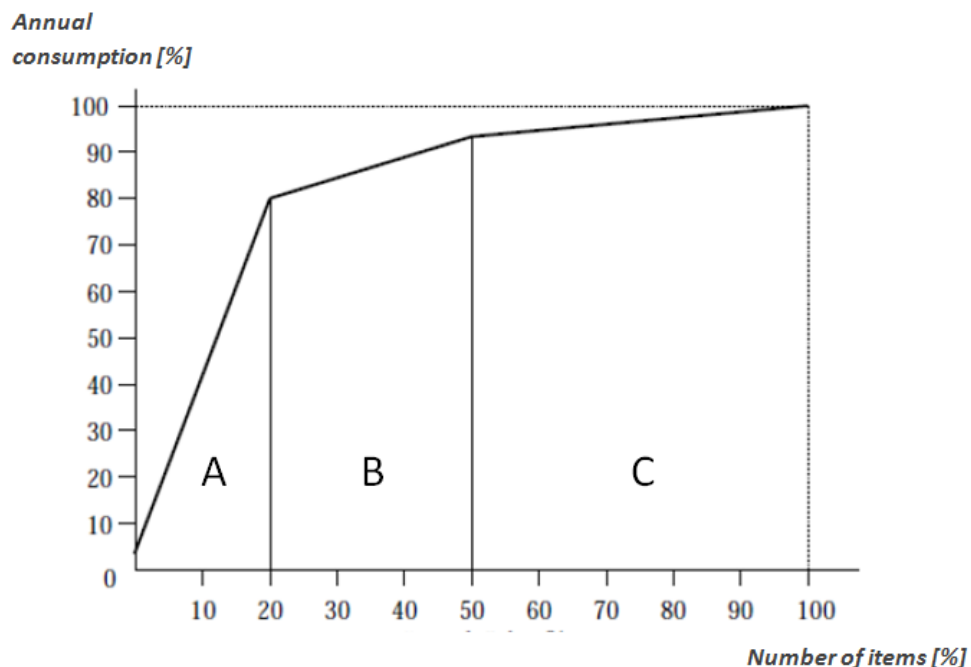
Figure 14: Graphic representation of ABC analysis

ABC analysis procedure:

- determine the annual consumption of each item;

- size down these values and get the cumulative volumes of consumption;

- divide the cumulative volumes by the total annual consumption to reach the percentage of the cumulative volumes in total consumption;

- calculate percentage of amount of items on total amount of items;

- define borders between groups A, B, and C. (CÁDEROVÁ, 2010, p.29–30)

2 LEAN SIX SIGMA LOGISTICS

Lean and Six Sigma used to be separated initiatives in most of the companies. Nowadays organizations see that Lean and Six Sigma do not compete against but rather complement each other and combine continuous improvement activities. The union of these disciplines with their strengths and weaknesses creates the model which improves operations and contributes to business success at all levels. With term Logistics previously explained, I am going to explain Lean and Six Sigma. Knowing each area individually is important for understanding of the whole concept. (MARTICHENKO & GOLDSBY, 2005, p. 3–4; STRUPE, 2009)

2.1 Lean

Lean concepts are deeply rooted in the Toyota Production Systems. Lean itself is about the elimination of waste and the increase of speed and flow. The ultimate objective of Lean is to eliminate waste from all processes. Lean focuses on eliminating wasted time, effort and material. Time is particularly crucial but there are many sources of waste. (MARTICHENKO & GOLDSBY, 2005, p. 4; SUMMERS, 2011, p. 2)

Waste:

- **Waiting/Idle time** – waiting for next activity, process step or information;
- **Overproduction** – over producing products or services can lead to product expiration or excess inventory;
- **Rework** – correcting mistake or errors;
- **Motion** – excessive movement of people, operators;
- **Over Processing** – doing unnecessary activities;
- **Inventory** – maintaining unnecessary amount of materials or excessive amount of supplies that could potentially expire;
- **Transport** – equipment, materials, and documents;
- **Intellect** – unused creativity, talent knowledge of the organization. (STRUPE, 2009)

Lean thinking generates process improvement by following five key steps:

- Study the process directly – observe the work activities, their connections and flow;
- Systematically eliminate waste activities

- Establish agreement about what the process needs accomplish and how the process will accomplish it;
- Analyze and solve problem using systematic method;
- Integrate the about approach throughout the company. (SUMMERS, 2011, p. 3)

Lean tools:

- Kaizen;
- Value Stream process Mapping;
- 5S;
- Kanban (pull inventory management);
- Error proofing (poka–yoke);
- Productive maintenance;
- Setup time reduction (SMED – single minute exchange or dies);
- Reduced lot sizes (single piece flow);
- Line balancing;
- Schedule levelling;
- Standardized work;
- Visual management. (CHIARINI, 2013, p.19; STRUPE, 2009)

The objectives of lean logistics:

1. Deliver the materials that are needed, when they are needed and in the right quantity and quality to production (inbound logistics) and to customers (outbound logistics).
2. Pursue the elimination of waste in the logistics as long as you don't diminish delivery. (BAUDIN, 2004, p. 30)

2.2 Six Sigma

"Six Sigma is about results; enhancing profitability and reducing costs through through improved quality, productivity, and efficiency. Six Sigma emphasizes the reduction of variation, a focus on doing the right things right, combining of customer knowledge and with core process improvement efforts, and a subsequent improvement in company sales and revenue growth." (SUMMERS, 2011, p. 3)

Six Sigma methodology is based on knowledge of trained professionals (black belts) and delivers problem–solving model armed by "voice of the customer" utilities and statistical process control tools. (MARTICHENKO & GOLDSBY, 2005, p. 5)

Six Sigma professionals:

Different levels of training in Six Sigma are expressed as follows:

- **Master Black belt** – trains and coaches Black Belts and Green Belts, works as development advisor, works with senior executives to ensure the overall Six Sigma project is meeting strategic direction of the business.
- **Black belt** – leads complex projects and provides expert help with the tool and techniques to the project teams. Trains and coaches project teams;
- **Green belt** – trained on the basic tools and lead fairly straightforward projects, helps Black belts with data collection and analysis;
- **Yellow belt** – project team members, basic level of most commonly used tools, can carry out mini projects themselves in their local work environment under guidance of Black belt;
- **White belt** – can work on local problem–solving teams but may not be part of Six Sigma project team, understands basic Six Sigma concepts from an awareness perspective. (MORGAN & BRENIG-JONES, 2012, p. 38)

Six Sigma Performance:

Sigma	Defects per million opportunities	Yield (%)
1	690 000	30,9
2	308 000	9,2
3	66 807	93,3
4	6 210	99,4
5	320	99,98
6	3,4	999,997

Table 2: Six Sigma Performance (SUMMERS, 2011, p. 6)

DMAIC:

DMAIC (Define, Measure, Analyze, Improve and Control) provides the framework to improve existing processes:

- Define – projects begin with the identification of the problem and describing what you think needs improvement;

- Measure – use facts and data to understand how your process work so that you can describe the problem more efficiently;
- Analyse – use facts and data to determine the root causes of the problem;
- Improve – identifying potential solutions, selecting the most suitable and testing;
- Control – you are ready to implement the solution in control phase, check if your customers feel the difference in your performance, and maintain changes. (MORGAN & BRENIG-JONES, 2012, p 25–37)

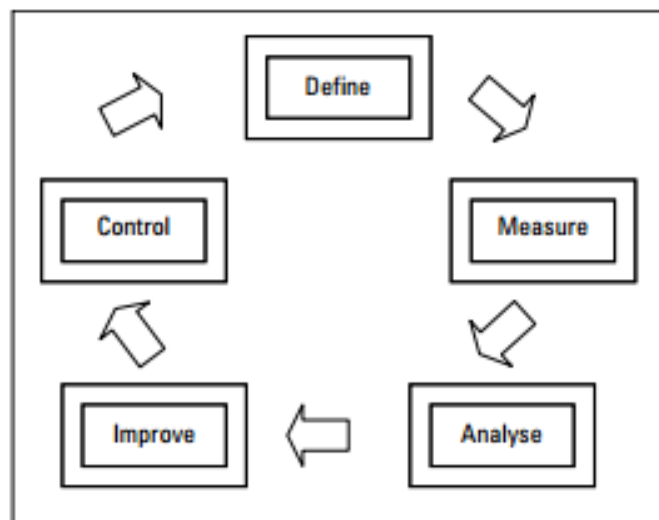*Figure 15:The five phases of DMAIC (MORGAN & BRENIG-JONES, 2012, p 26)*
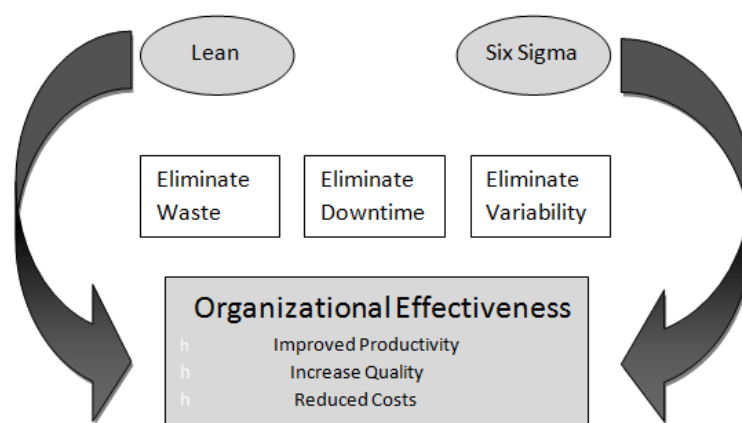
2.3 Lean Six Sigma

Figure 16: Lean Six Sigma (SUMMERS, 2011, p. 2)

Effective organizations realize that using new methods to cut production costs, improve quality and save time are vital to staying competitive. The Six Sigma approach blends nicely with Lean techniques, enhancing the effectiveness of both. Six Sigma strengths

company performance by reducing process variation and Lean focuses on reduction of waste. These methodologies work together so that each step in process is:

- Valuable (customer focused);
- Capable and reaching high quality (Six Sigma tools);
- Available (lean: total productive maintenance);
- Adequate (Lean tools and techniques);
- Flexible (Lean tools and techniques). (SUMMERS, 2011, p. 7)

2.4 5S

It is very important for each company to have organized, standardized and clean environment. All these parameters are covered by methodology **5S.** The most difficult operating procedures have to start with the 5S. This methodology is often underrated tool of process improvement but *if you can't do the 5S, you can't do the other work*. (OSADA, 1991, p.3)

5S's activities:

Seiri = Organization

In general use this mean to put thing in order–to organize them. In 5S terms, it means to distinguish between the necessary and the unnecessary, to make hard decisions, and to implement stratification management to get rid of unnecessary. Stratification management means dividing things and grouping them in order of importance. (OSADA, 1991, p.25–26)

Seiton = Neatness

This means having things in the right places or the right layout so they can be used in a hurry. It is a way of eliminating searches. Once everything is functionally placed for quality and safety, you have a neat workplace. (OSADA, 1991, p.27)

Seiso = Cleaning

It means getting rid of a waste, grime, and foreign matter and making things clean. Cleaning is form of an inspection. With higher quality, higher precision and finer processing technologies, even the smallest detail can have big importance. (OSADA, 1991, p.29)

Seiketsu = Standardization

In 5S terms, standardization means continually maintaining your organization, neatness and cleaning. The emphasis is on visual management and 5S standardization. Good visualization and standardized conditions allow you to act quickly. (OSADA, 1991, p.31)

Shitsuke=Discipline

It means having the ability to do things the way they are supposed to be done. The aim is to create a workplace with a good habits and discipline. Bad habits are broken and good habits are formed. (OSADA, 1991, p.32)

2.4.1 Visual management

Visual management has come to the limelight as part of 5S methodology and effective means of effecting Kaizen. It is now being used for production, quality and safety. Visual management makes sense because people gain 80 percent of information from their vision, 18 percent from their hearing, and just 2 percent from their other senses. It provides visual checks that allow anyone viewing an area to determine whether objectives are being met. (SUMMERS, 2011, p. 153; OSADA, 1991, p.31)

Visual management can be described by the word transparency. *"Transparency refers to enabling anyone to have the ability to see, in real time, what is happening with a process. From the instantaneous information they gather, they should also be able to determine whether anything has changed or has to be changed."* (SUMMERS, 2011, p. 153)

There are different types of visualization tools as information boards, marks on the floor, cards, photographs, graphical marks on the walls, signaling equipment etc.

Logistics use visual management for example to label racking and locations, mark walking paths, label outbound docks and put away areas, etc.

3   3D MODELING FOR BUSINESS IMPROVEMENT

The 3D modeling and animation is a growing industry nowadays. Demonstrating products and premises in 3D gained high popularity. Researches show that people are more likely to buy product when it is presented three–dimensionally and they also see companies that use 3D technologies as more reliable suppliers. It is obviously new trend and it will continue for many more years.

New concept may be difficult to describe in words. You want to show the client what it will look like. 3D modeling technology enables you to show your new idea from all angles, or even create a video that moves around the model. (HAWKINS, 2012)

SketchUp

SketchUp is a 3D modeling program which is used by hundreds of thousands of professionals in architecture, construction, engineering, commercial interiors, light construction, landscape architecture, game design, etc. use SketchUp Pro all the time, every day. It's the all-purpose antidote to complicated, expensive CAD software. (SketchUp, c2013)

SketchUp was released by the company *@Last Software* in August 2000 and gained huge success. Reason for success: **simple** to use, **quick** modeling (push-pull) and well-thought out **graphical** display styles. (BOEYKENS, 2013)

Google took over SketchUp in 2006 and overall the result was very positive: a **free** version became available, the **3D Warehouse** was only in its infancy, but grew at a huge speed, integration into **Google Earth.** (BOEYKENS, 2013)

Trimble took over in April 2012, changed the SketchUp logo and in 2013 released a really new version. They kept Pro and rebranded the free version into **MAKE**. But while functionally, they deliver a good new version, they introduced an important difference in licensing. The MAKE version of SketchUp is not for commercial use. If you produce any model or illustration that is used in a commercial context, you need a Pro license. (BOEYKENS, 2013)

II. ANALYSIS

4 COMPANY INTRODUCTION

LYNX comprising of LYNX Transport and LYNX Logistics, based in Oranmore, Co. Galway, Ireland has evolved from its origins in 1985 as a courier company into the leading transport and logistics provider in the west of Ireland. (Lynx Transport and Logistics)

Figure 17: Lynx Logistics and lynx Transport logo

The company is a Shareholder and founder member of group Pall-trans Limited. Thanks to membership in this group, Lynx can **provide 24 hour nationwide delivery service.**

It operates from its **55 000 SQ FT** (5 110 m^2) facility and today it employs **46 people**. The premises have 7 dock levelers and 1 roller door to maximize throughput. The yard is fenced and is approx. 2020 m^2 in size. (Lynx Transport and Logistics)
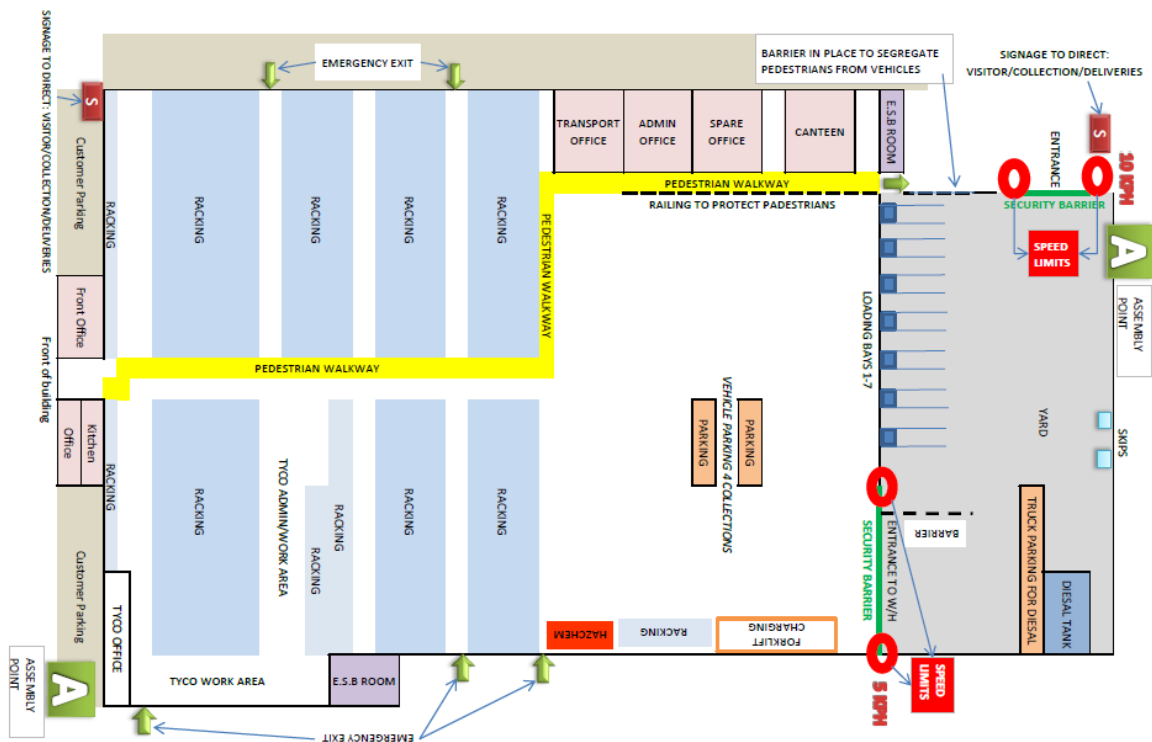

Figure 18: Simple layout of company premises

Lynx is 100% Irish owned. The responsibilities are shown in the overall company organization structure.
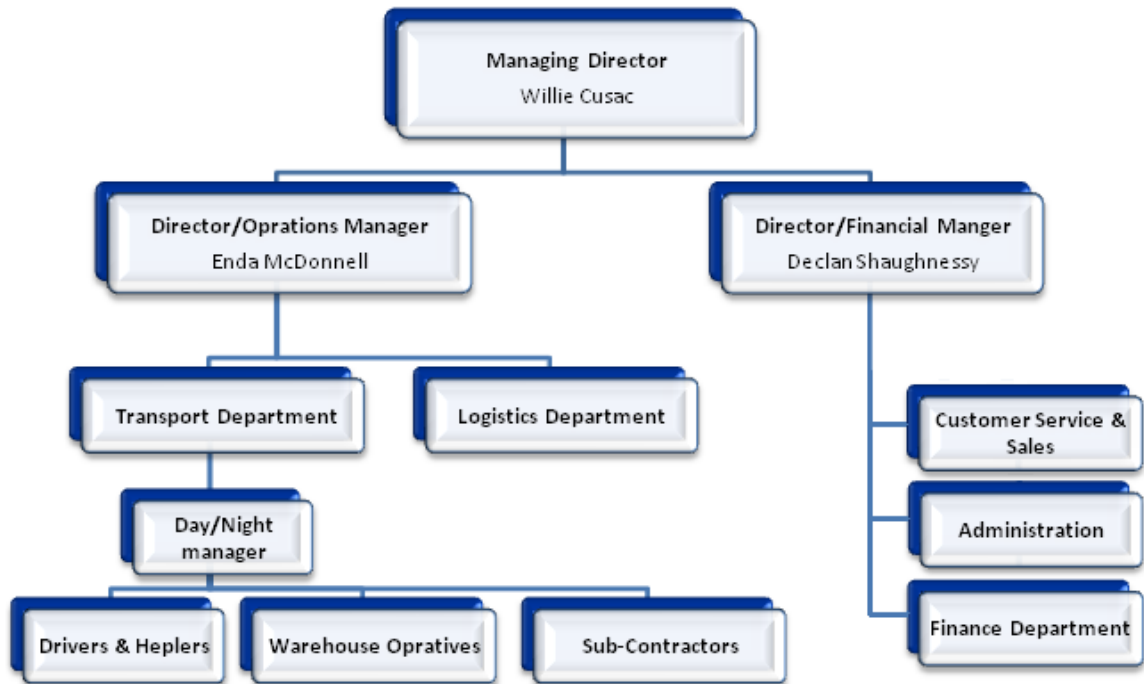
Figure 19: Organization Structure

4.1 History

Key milestones in the History of Lynx:

Figure 20: History of Lynx (Lynx Transport and Logistics)

4.2 Services

The company's aim is to be a **"1 stop shop"** supply chain for all customers.

4.2.1 Transport

Lynx Transport offers an **overnight nationwide delivery service**. Connacht, County Clare and part of Tipperary (as shown in the picture 4) are covered by Lynx itself and overnight deliveries to the rest of Ireland are carried out by other Pall-trans members.

Figure 21: Area covered by lynx Transport

The company also offers **European import and export**, which is achieved by outsourcing another courier companies.

Another important service is **dedicated transport** of hazardous and sterilized freight.

Administration staff are able to arrange special **same day delivery** through regular subcontract drivers.

4.2.2 Logistics

A big part of the company's premises is the warehouse that offers **storage space** for the customers. The Logistics department also accommodates **inventory management** and **order pick and pack**.

4.3 Lynx Guarantee of services

The prime reason people contact Lynx is, of course, when they need to organize transport or rent storage space. However, providing these services successfully, involves many more activities and responsibilities (see the picture below).

Figure 22: Lynx guarantee of services

4.4 Customer Portfolio

4.4.1 Transport

Lynx currently organizes transport for approx. *405 customers*. Companies or people are considered customers after they fill in a credit application form and set up an account with the company. Some of them are very regular and some occasional. These customers and Pall-trans members pay for these services online.

There is another group of so-called *cash customers* who use Lynx for their first time and some that use Lynx services rarely. They have to pay by cash or check on delivery/collection. The company doesn't own chip and pin devices.

The customer portfolio includes mainly another courier and medical companies which are a big part of the local industry.

The customers that Lynx organizes the most consignments for are: JMC Van Trans Ltd., Landbridge Ltd., Medtronic Ltd., Aramex Ltd., Ace Express Ltd. and Production Equipment Ltd.

Figure 23: Biggest Transport Customers

4.4.2 Logistics

Approx. 39 customers are using storage at Lynx. There are currently not any cash customers at logistics. A major part of storage space is taken by medical companies. The top 5 customers are: Covidien ltd., Mylan Ltd., Vista Med Ltd., Smurfit Kappa Ltd., Massbrook Ltd.

Figure 24: Biggest Logistics Customers

4.5 Pall-trans group

As I previously stated, the company is a founder member of the Pall-trans Group. For better understanding of freight flow through Lynx, I need to address the structure of the Pall-trans Group.

The Pall-trans Group consists of 10 members. Each of these members covers certain areas in Ireland (see below). There are standard procedures they have to follow and responsibilities to adhere to. All of them are defined in the contract.
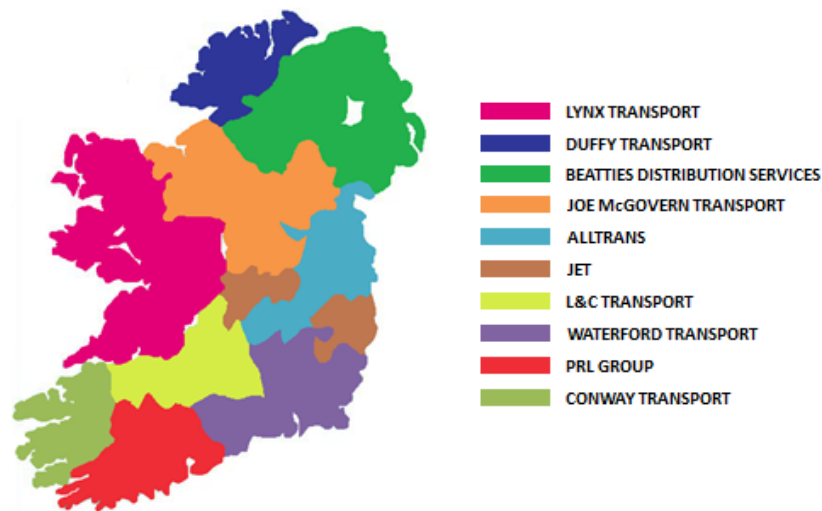
Figure 25: Areas of Pall-trans members

Each member has its own customers. If collections or deliveries for these customers need to be done out of the area, they are organized by another member.

Freight gets to customers overnight thanks to freight exchange in the Dublin hub. This is the meeting point for the trucks arriving during the night from all members, carrying collected freight to be delivered in other areas. The hub's operatives off load these trucks, divide freight and load them back with pallets belonging to their areas.

Obviously, if some consignment is to be collected and delivered in one area, pallets do not travel to Dublin.

5 START POINT ANALYSIS

Before I get to analyzing and pointing out possible deficiencies, I need to briefly explain certain processes at the company. I am going to describe organization of transport, focusing on freight flow through the network, administration activities, and handling freight. I am also going to describe warehouse organization at the logistics department. Good understanding of the company is fundamental for further evaluation.

5.1 Distribution

Each member's distribution area is actually bigger when they organize transport for their own customers. Focusing on Lynx, the picture below shows the extended area, where the companies can do collections and deliveries for *their own customers*. Unlike general layout, Lynx also covers Sligo, Leitrim, Roscommon and part of Tipperary. If another member, for example Conway Transport in Kerry gets a booking for collection in Sligo, they ask Joe McGovern Transport, not Lynx.

Figure 26: General Layout and The area Lynx covers for its customers

5.1.1 Freight flow through Lynx Transport

As previously mentioned, the company operates a *24 hour delivery service*. The following pictures show, how very simply Lynx freight travels from collection point to the final destination through the Pall-trans network. Customers are other Pall-trans members and Lynx's own customers.

In the picture below we can see freight flow *within Lynx area*. Collection bookings are received from the customers on a daily basis. Drivers know what to collect from the driver sheets (runs), listing all deliveries and collections for the day. They are handed to them

every morning together with all paper work. Many additional collections are booked on the day of collection and administrators have to contact the drivers to deliver details. They write it down on their sheets and administrators add it to their load list in the system as well. When trucks come back to the warehouse, operators off-load collected pallets and place them directly beside bays reserved for particular delivery areas. All freight gets to Lynx during the night and after that, various area delivery trucks are loaded and are ready for the drivers. They have to come back with POD's (Proof of delivery), which needs to be uploaded to the system and sent to the customers. Some customers have their own paper work to be signed and some use only Lynx delivery dockets.
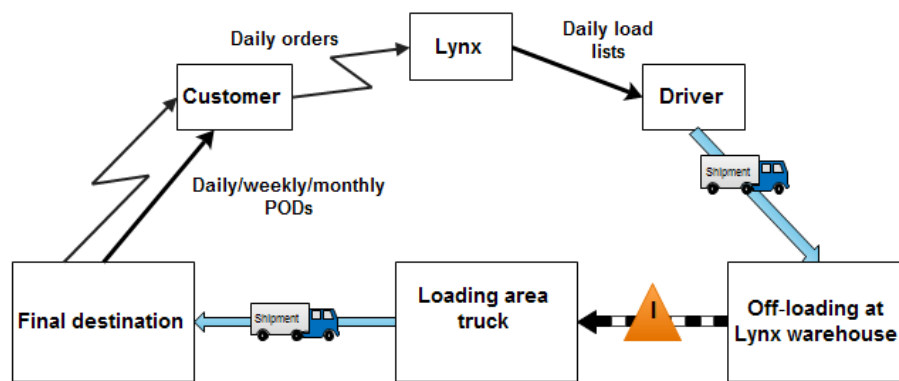
Figure 27: Freight collected and delivered within Lynx area
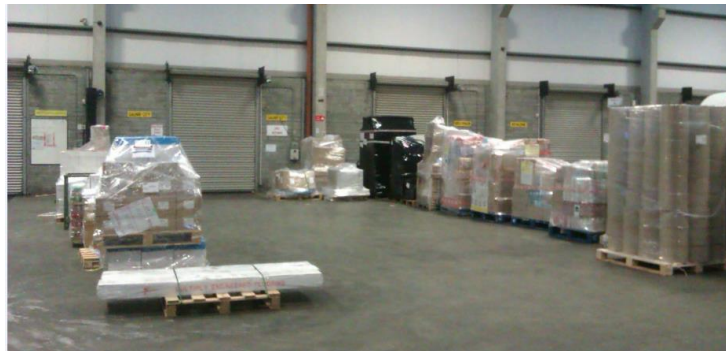
Figure 28: Loading bays

Freight travelling nationwide that return in evening hours are off-loaded from trucks at Lynx. The Freight waits at the warehouse to be loaded on a larger Lynx trailer that leaves for the Dublin hub at about 7.30 PM. The larger trailer is off-loaded and loaded back with freight from other members at the hub. It needs to be in Dublin before a certain time to meet other members' trailers and pass collected pallets onto them. They wouldn't delay departure because they need to be loaded in Dublin and be back at their depots early enough to be off-loaded again for the day deliveries. It means if some Lynx driver had a

significant delay, the freight would need to stay at Lynx until the following evening. Once freight is delivered nationwide, the member needs to provide Lynx with POD's. However, if freight is collected by Lynx on behalf of this member, the company only needs the collection docket. Lynx's job in this case is done once freight is collected, it doesn't need to be concerned with the delivery.
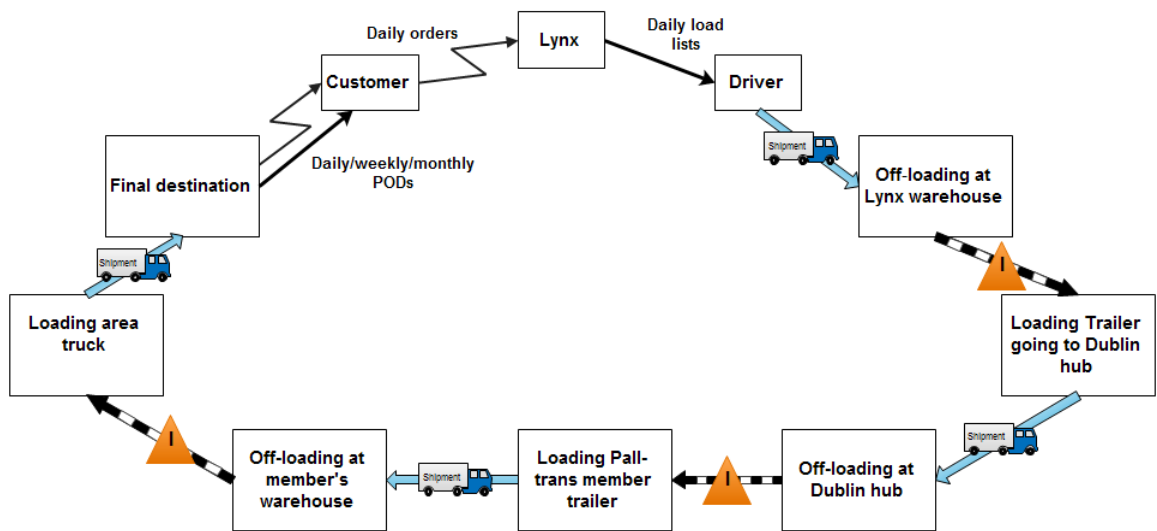
Figure 29: Freight going from Lynx to nationwide

Collections out of the area are booked with Pall-trans members on a daily basis. The members bring collected freight to the Dublin hub every night. A Lynx trailer collects this freight and brings it to its depot. Here it is off-loaded and freight is placed beside certain bays together with freight that was collected by Lynx drivers during the day. When freight is delivered, drivers need to come back with all POD's.
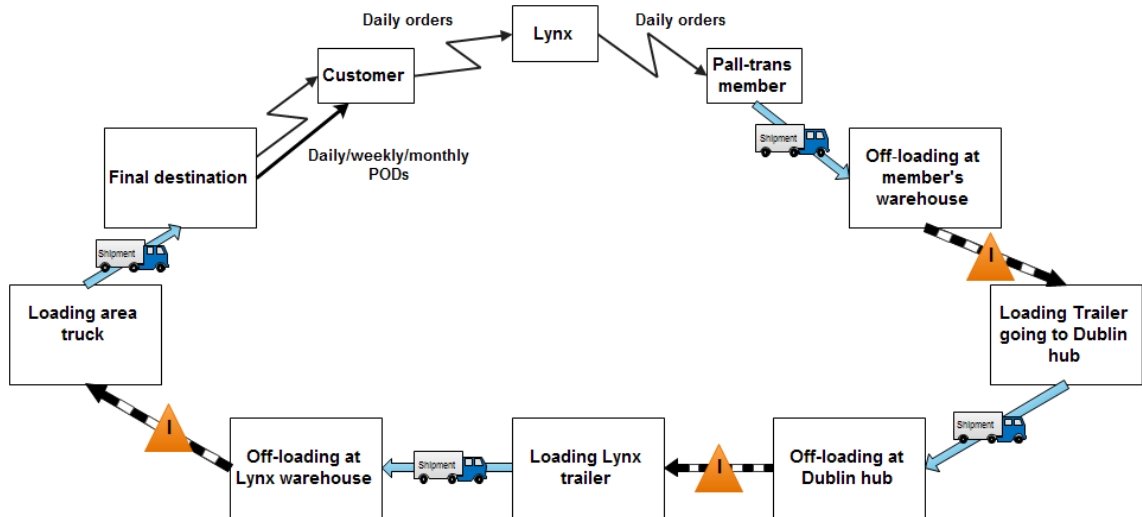
Figure 30: Freight coming to Lynx from other members

Six large customers of the company are not part of the Pall-trans network. Their freight doesn't come from Pall-trans hub. ACE Express and Landbridge have their own trailers that bring all pallets straight to Lynx depot. Collections at companies JMC, DSV, ANTALIS and ARAMEX are organized from their own premises by Lynx, using Lynx owned trailers or outsourcing the company "IGGY MADDEN". Area tucks are loaded once all freight from Lynx drivers, Dublin hub and these 6 customers arrives are completed.

Lynx is commonly asked by customer to organize both collection and delivery out of the Lynx area. In this case freight exchange in Dublin happens between two other Pall-trans members. In this case, the company which receives an order makes a small profit even when it only places a booking with other Pall-trans members and never physically moving the freight. Delivering Pall-trans member needs to provide Lynx with POD's.

5.1.2 Freight

Lynx Transport is focused on heavy freight therefore its majority are pallets and skids (smaller pallets). It does provide carton transport as well but focusing on heavy weight, carton rates are not the most competitive among competitors in the area.

Standard pallets used in the network are shown in the picture bellow. Price of delivery is the same for both of them. The maximum height of pallets is approximately 2000mm.
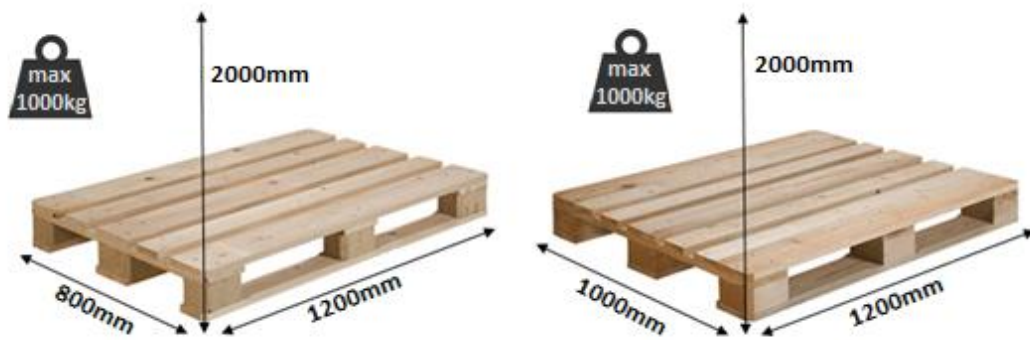
Figure 31: Standard pallets used in Pall-trans network.

Skids are used quite often as well. They are basically just smaller pallets, approximately 600mm x 900mm but they often come in different sizes. Maximum weight is 500kg.

Each truck at Lynx has a tail lift to get heavy pallets and skids from the board down to ground level while delivering, and lift them up while collecting. Pallet trucks are used for maneuvering pallets on the ground and around the truck board. See tail lift and pallet truck in picture below.

Figure 32: Lynx truck with tail lift and pallet truck.

Cartons that travel loose must have maximum 20 – 25 kg so they are easy to lift and move for drivers.

The freight which is not often carried in Pall-trans network is glass, and furniture that is not in original flat pack. Trucks are not designed for delivery of windows, glass doors, expensive furniture, and so on. Another reason is that Lynx's insurance covers only the weight of the freight, not its actual value. In the case of damage, customers get 1.80 EUR

per 1 kg. Therefore companies contact Lynx with fragile and high value freight only if they have their own insurance. For example there are boxes of wines and tiles carried in the Pall-trans network on daily basis.

5.1.3 Administration and Transport office

<u>ADMINISTRATION</u>

The administration department primarily provides a customer service and supports the transport office. It functions mainly during normal working hours from Monday to Friday night, with limited support services during off hours (midnight).

Key tasks carried out in administration are as follows:

***Customer Care – Sales & Customer contact*:** answering and transferring all incoming phone calls.

Processing Bookings & Special Requirements: received via phone/fax/email/electronic manifest. Amending bookings if any changes from customer.

On Line Booking: downloading online bookings which were uploaded directly onto Lynx Transport IFMS System, amending them and checking special requirement if there are any.

Enquiries from clients: ETA's (Estimated time of arrival), POD's (Proof of Delivery) -

Hard copies & verbal.

Dealing with problematic deliveries/collections: advising customer immediately. Documenting all detail about complication that may arise, name of the person to be advised. Communication with drivers about customer's instructions. If needed, rescheduling delivery/collection or arranging return of refused goods.

Pricing & Quotations: general rates, special rates for same day collection and delivery (liaise with management). Every job needs to be priced.

COD checks & process: Advising cash customers about terms and conditions of carriage. Payment from customers who are not on Lynx account are checked & completed on a daily basis.

Phone Calls to drivers: providing additional info/directions if required, advising them about any changes, reporting problematic jobs.

Allocating collections until 12 PM: phoning driver to provide additional collections booked with Lynx. These are allocated depending on area & volume.

Liaising with transport office: checking special requirements such as AM deliveries with transport, before committing to customer.

Advising customers about discrepancies: following up on discrepancy reports created by night shift with customers, answering potential queries, sending pictures of damaged freight.

Managing freight on hold & freight that needs to be booked in: checking delivery date of freight on hold with customers, phoning companies that need to know about arriving pallets in advance.

Stationary checks & orders: orders placed approx. once a month with suppliers.

Processing signed POD's (delivery dockets): processed by 1 employee during an evening shift. Dockets are bar-coded, scanned onto EI-Trax, uploaded onto the integrated system and returned to the customers.

TRANSPORT

The transport department primarily provides a professional collection and delivery service to the customers, and outbound/inbound freight management. It liaises with admin on an ongoing daily basis to ensure customer satisfaction. This department functions as a 24 hour service Monday to Saturday morning (day & night shift).

Key tasks carried out in transport are as follows:

Documentation: managing all delivery/collection documentation in office. Documents are received from customers or created by Lynx administrators. Documents always travel with pallets.

Allocation of deliveries/collections: Creating driver runs − segregating different areas for deliveries on a daily basis, calculating volumes on load depending on truck capacity.

Allocating collections after 12 PM: transferring additional collection details booked with Lynx to drivers. These are allocated depending on area & volume. Administrators only book collection with customer, print paper work and give it to the transport office for allocation. Collections after 3PM need to be permitted transport office before committing to customer, in case drivers in the area don't have enough space or time.

Driver management: problem solving – problems with trucks/breakdowns, problems with deliveries/collections. Driver holiday requests organization.

Pall-trans Upload: list of all consignments leaving Lynx on a daily basis

Off-loading freight received during a day and night: **see appendix PIX**

Discrepancy reports: all goods that are off-loaded are checked and compared to a customer manifest received earlier, outlining what exactly they were sending to Lynx. Office uploads this information to the system (Customer Discrepancy Record) and sends reports to the customers. Typical discrepancies: No Goods Received/ Damaged/ Received more than expected/ Goods received but no paperwork/ 1 pallet received but taking 2 pallet spaces.

Vehicle maintenance: looking after trucks, organizing repairs etc.

Taco Graph: regular spot checks on driver Taco Graphs

Special requirements: all special requirements requested from admin by customers are discussed with the transport office first. Same day specials/ AM deliveries/ large loads etc.

5.1.4   Technology and integrated systems

The integrated system that the transport and administration office currently use is **IFMS (Integrated Freight Mangement System)**. It has significant importance in managing delivery services. First of all, every job the company does is created in this system under Lynx and customer's reference number. Jobs are entered into IFMS system manually by administrators or uploaded online by Lynx's largest customers.

The system is used by administration and transport office constantly day and night. The night shift uses IFMS mainly for downloading online bookings, entering debriefs and assigning jobs to load lists. Debriefs is a term used at the company for all damages or wrong delivery amounts noticed by night shift employees while receiving freight.

While logging job into IFMS, admin enters all important details as we can see in the picture below.
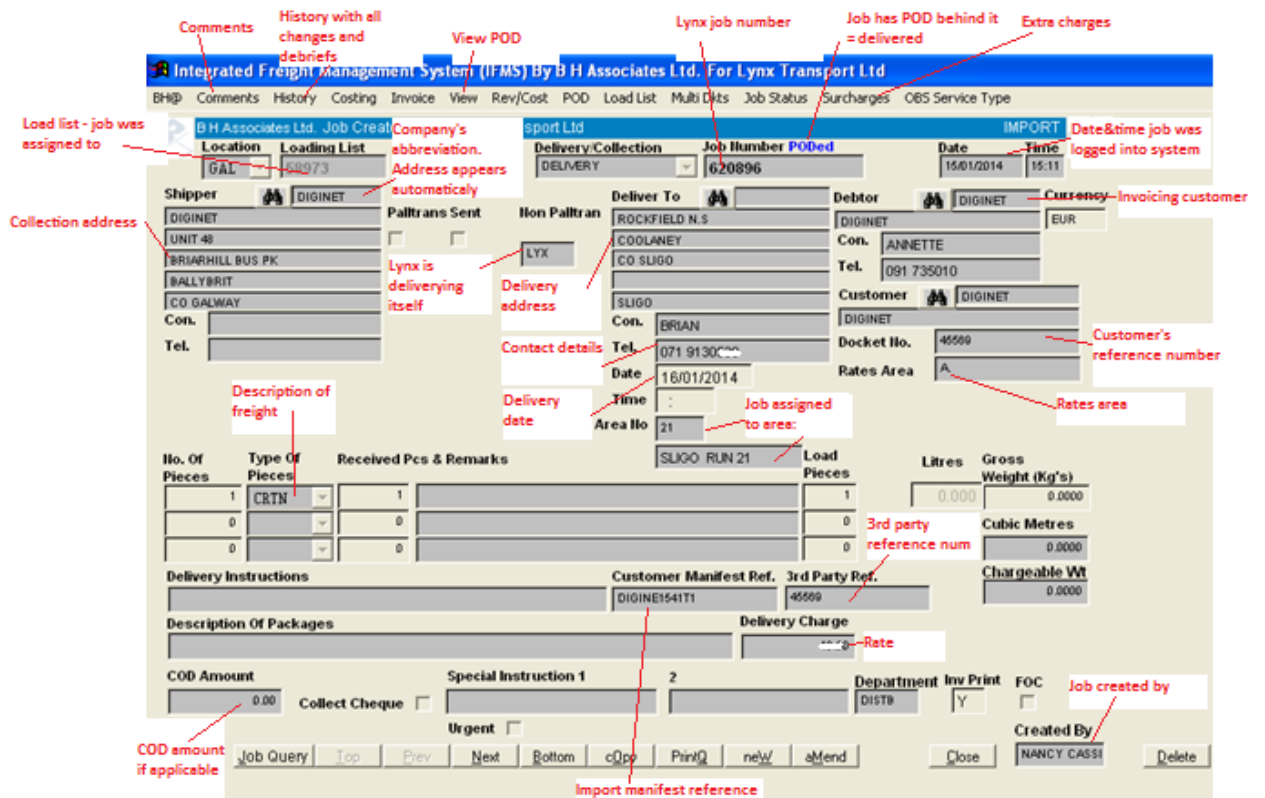
Figure 33: Job screen in IFMS

There are nearly 100 **area numbers** set up in IFMS. Most of them are numbers for a certain parts of the Lynx area. Some of them belong to special runs or particular customers. Area number 94 means freight goes from the Lynx area nationwide. Number 91 means freight is being collected nationwide and travels nationwide as well. Area numbers don't affect prices.

Rates areas are used for pricing. Most used are: A- collection and delivery within Lynx area, B –collection in Lynx area with delivery to Dublin or from Dublin to Lynx area, C – Lynx to nationwide or nationwide to Lynx. The system allows automatic pricing and it is used for bigger customers. Price appears after entering rate area, type of freight and amount. Prices for customers without automatic pricing are in their Excel rate sheet. Prices are the same for cash customers within one rate area.

Figure 34: Rates areas used at Lynx

If there is any issue with a delivery or collection, admin needs to type all the details into comments section and advise customer. There is huge importance placed on imputing detailed comments. These comments enable any employee who answers the phone call to search the job and view previous comments made (person who was dealing with the problem and placed the comment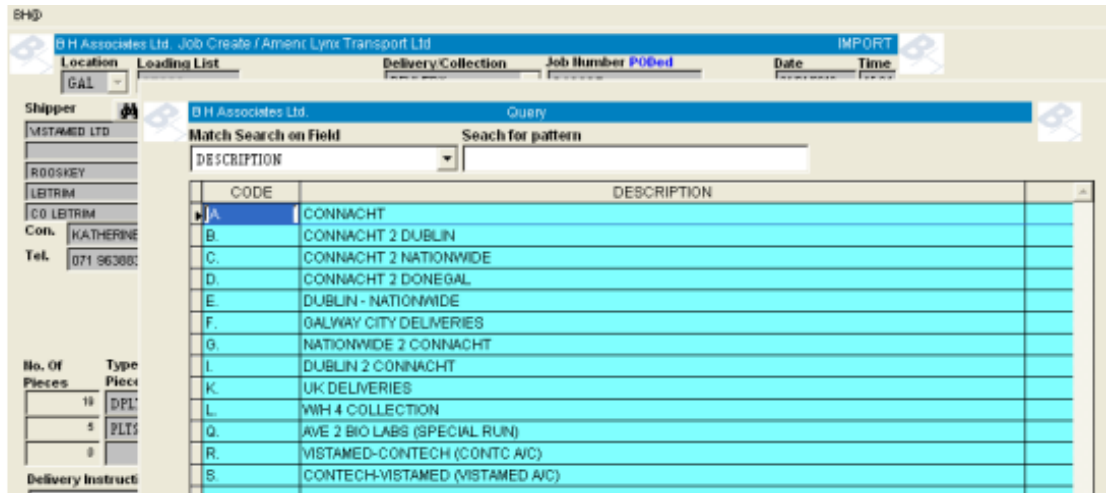 may not be at work or may be kept busy by another customer). Another reason is that employees deal with lots of issues every day and they need to know the whole story about problematic jobs whenever they are asked by customer or management. Problems that arise are usually not caused by Lynx, therefore good explanation of situation and name of the person who the admin advised about the problem, prevents anger, complaints and unwillingness to pay re-delivery or any extra charges.

Customers often ring the office to check on their delivery. They query if it was already completed or when it is going to be. Admin can search a job according to number or name. Once the job is done, POD (Proof of deliver) is scanned and uploaded. Admin can open the POD and see the signature of person who accepted the freight. If the freight is only out on delivery admin can see which driver has it on board. Drivers are always able to give details over the phone, for example, estimated time of arrival or the signature if he completed the delivery earlier that day.

Administrators can search in IFMS for jobs with missing PODs and jobs that haven't been priced yet.

There are many other important functions in IFMS used by administration:

- abbreviations with automatic company's name and address (used only for regular companies);

- creating delivery/collection documents;
- job history with all debriefs and changes;
- creating manifests, different kinds of reports;
- creating invoices by finance department;

We can find all kinds of regular technology and IT (computers, printers, internet, etc.) at the company. On important device is the **scanner** which can read barcodes and upload all scanned PODs to the IFMS. The company owns **barcode printers** and **pallet label printers** as well.

The GPS vehicle tracking system used at the company is called **Fleetmatics**.

5.2 Logistics

There is 5110 m^2 dedicated to Transport & Logistics. The building has high ceilings and is divided into a number of sections for different types of operation. The company can cater for up to 4000 racked pallets under the current configuration. Handling equipment include: 2 turret trucks, 3 forklifts and 1 reach truck. (Lynx Transport and Logistics)

Logistics department functions 9AM – 6PM service Monday to Friday.

Part of the warehouse is rented by a company called TYCO for storage and administration, and a small part is rented by company called WESTERN MANAGEMENT CENTRE for a forklift training course.

Figure 35: Warehouse premises

Key tasks carried out in logistics are as follows:

Receiving loads for storage: logistics customers can either arrange their own courier for shipment or arrange Lynx to carry the goods. Driver delivering loads to Lynx for storage will have the final stock check sheet. This is checked off against freight unloaded into Lynx warehouse. This is also compared against previous notice by Fax/Email from customer.

Storing pallets: logistics assign each pallet to its own location in the warehouse. This is noted on a hard copy first and then transferred onto the system.

Bulk receipt dockets: they contain company name & details, date incoming load was received, pallet numbers, pallet location, quantity of pallets from particular load. Once plts are entered to the system a Bulk Receipt Docket is printed. It is filed and stored for records.

Pick list: generated once an order is placed. Orders received from customers are attached to picking lists. Freight can be picked and delivered by Lynx or another courier company/person arranged by customer.

Freight picked for delivery by Lynx: once freight is picked & prepared for delivery it is left aside in the transport warehouse. A delivery docket is created by logistics and issued to the transport office. This freight is then sent for delivery via Lynx driver the following day.

Weekly Stock Balance Reports: when a pick list is generated this changes the quantity of plts stored at Lynx in the system. Reports are then sent to customers. These changes are also noted on the hard copy – these are weekly IN/OUT check sheets which are used by accounts employees for accurate counts on invoicing.

5.2.1   Organization of storage

There are utilized racking configurations with narrow and wide isles in the warehouse. Racking beams are set up in various ranges to fit pallets with different sizes and heights. Very tall pallets are placed on the ground (Row 0). Each racking line is marked by a letter and numbered pallet spaces along the row. Most of them have 14 locations (from 01 to 14). Racking lines are also divided into rows (floors) between red frames (mostly five – from 0 to 4). These rows in certain locations have 2, 3, or 4 columns. We can fit smaller Euro Pallets (800mmx1200mm) into each column. It means bigger pallets take 2 plt spaces as we can see in the picture bellow.
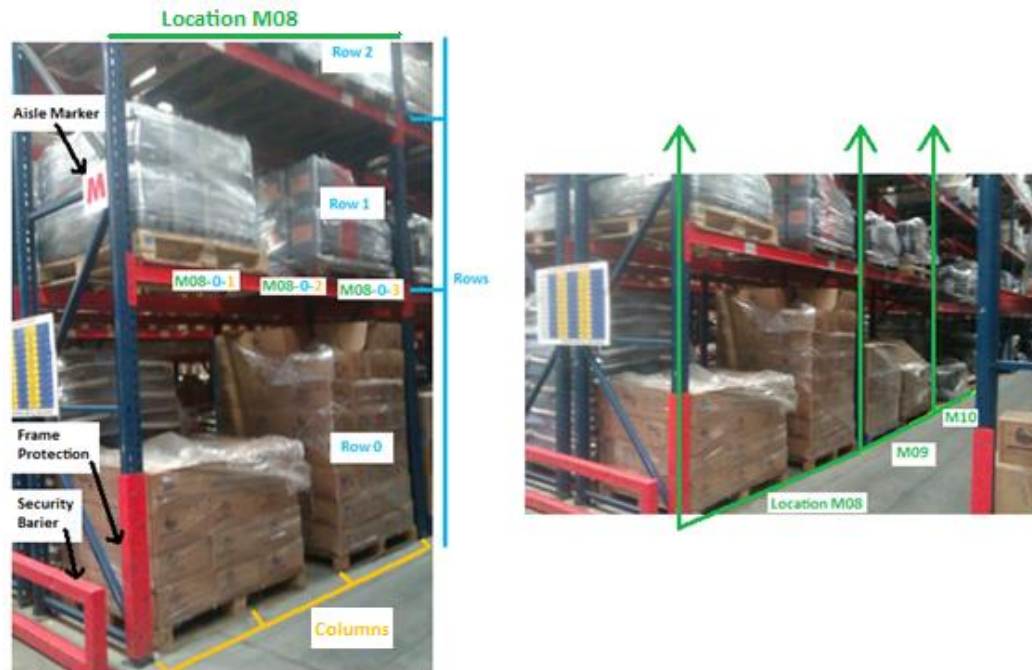
Figure 36: Rack organization

5.2.2 Administration and integrated system

The integrated system implemented by the logistics office is **known as IMS – Inventory management system**. Received pallets are first placed to the warehouse and then the administrator enters the position and other information (customer code, plt number or name, amount of plts, amount of goods on the pallet, date of arrival) into the system. Some pallets are marked with date of production as well. This information must be entered into the system because customers often have various pallets with the same reference and they ask for the pallets that have been in storage for the longest time. When the load is entered into IMS, a Warehouse Receipt Note is created and filed. If customers need their freight, they just place an order. Administrator creates picking list for each placed order separately and delete this freight from IMS.

Figure 37: IMS – Inventory management system

6 CURRENT STATE ANALYSIS

In this part of my thesis I am going to analyze certain processes in distribution and logistics. I am going to focus on handling inbound freight, administration activities and warehouse organization. I will examine layout analysis of the transport area and warehouse racking. I will explain the distribution process and create a process flow chart of organizing collections. Using ABC analysis I try to find out possible deficiencies in storage management. Analysis of current the situation at this company is fundamental for possible improvements.

I have created the following 3D model of the premises using the program Trimble Sketch Up. This model is designed according to accurate measures; therefore it provides good overview of the premises and can be used for possible reorganization. Existing Lynx racking has the exact same layout and same number of pallet spaces at each position.
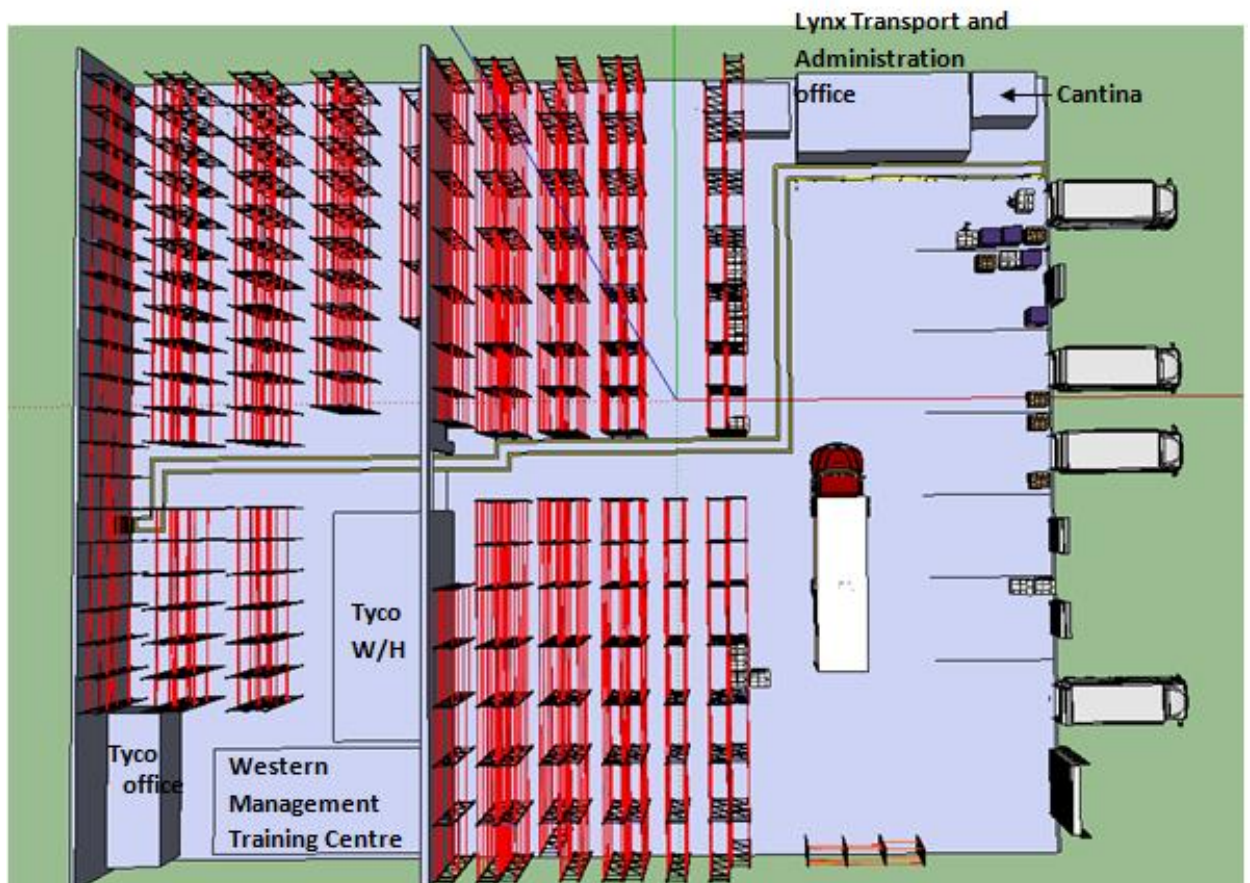
Figure 38: 3D model of the Lynx premises

Pallet spaces and frame positions are accurate in my 3D model when compared to existing Lynx rack setup. Comparison is shown in the following picture.

Figure 39: 3D model in comparison to real racking

6.1 Freight distribution

In freight distribution, I am going to analyze how all incoming freight is managed and how it gets to its correct destination with right paper work. Often special requirements such as delivery time must be followed as well.

Handling inbound freight

Most of the freight arrives to Lynx depot from Pall-trans hub, JMC Van Trans, Aramex, DSV, Landbridge and ACE Express. Trailers arrive during the night and operators off-load

one trailer at the time. They are provided with manifest reports before trailers get to Lynx. While off-loading, one employee checks if freight corresponds with manifest, and if there is any discrepancy he documents details.

The driver, who brings the freight, brings all paper work as well. The administration employee always checks the paper work against the manifest. Any extra or missing dockets are written down. Manifests amended by the warehouse operator and administrator are compared against each other. Sometimes the extra paper work matches extra pallets received and freight can be delivered. All discrepancies are sent to customers every night. If any freight is missing, admin keeps documents aside. Freight with missing paper work is sent out for delivery anyway with a docket created by a Lynx employee. Customers have a chance to send original dockets in case they are needed in the morning. Administrators then email them to the company the driver is delivering to.

The space that is mainly used by night shift is shown in the picture below. All trailers drive into the warehouse through the vehicle entrance to be off–loaded. Operators then divide all pallets into delivery areas.

Figure 40: Premises used for off–loading

Dividing inbound freight

Administrator devides all papework that arrives with freight into so called "pigeon holes" as shown in the picture below. Each of them represents a certain area. Documents in each area are organized into order after all freight arrives at Lynx. The order depends on usual

routs and special requirements. If there is not enough freight to be delivered within one area, admin just adds it to another.

Figure 41: "Pigeon holes"

Off–loaded freight is divided directly into delivery areas as shown in the following pictures. As there are only seven bays, operators have to use the front racks of the warehouse as well.

The first picture shows how each bay represents a certain Lynx area. Pallets are placed in lines and wait to be loaded on the board of the area trucks. Pallets are not organized in any particular order. Operators put them in a line as they arrive.
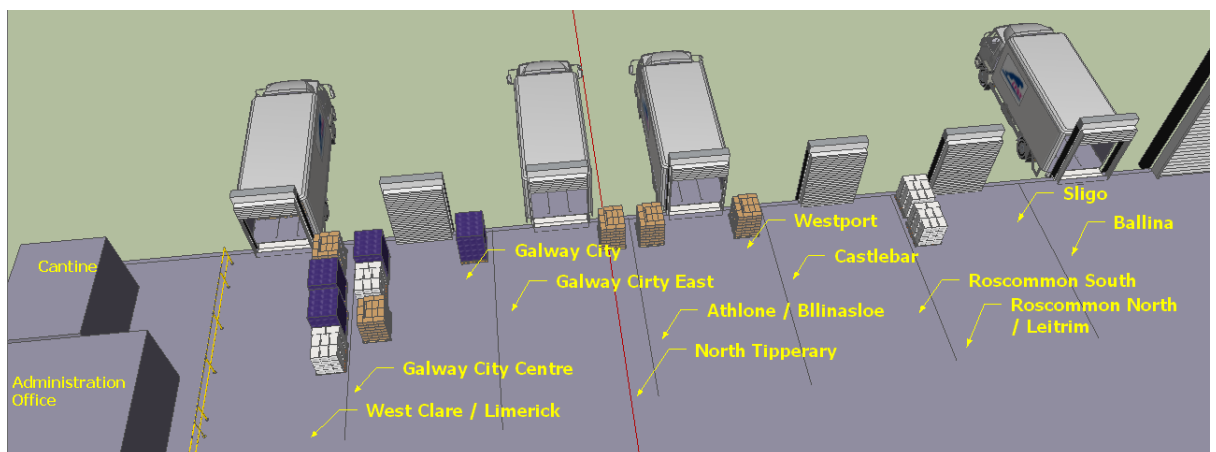
Figure 42: Loading bays and delivery areas

Ground colums of the front racks are used to divide freight as well. Trucks going to Costello and Clifden are curtain siders so they can be driven in and loaded inside. Freight from other areas must be moved to loading bays once any of them become free. Moving freight around like this is time consuming but unfortunately employees don't have a choice. Lack of space doesn't allow creating more areas at the bays.
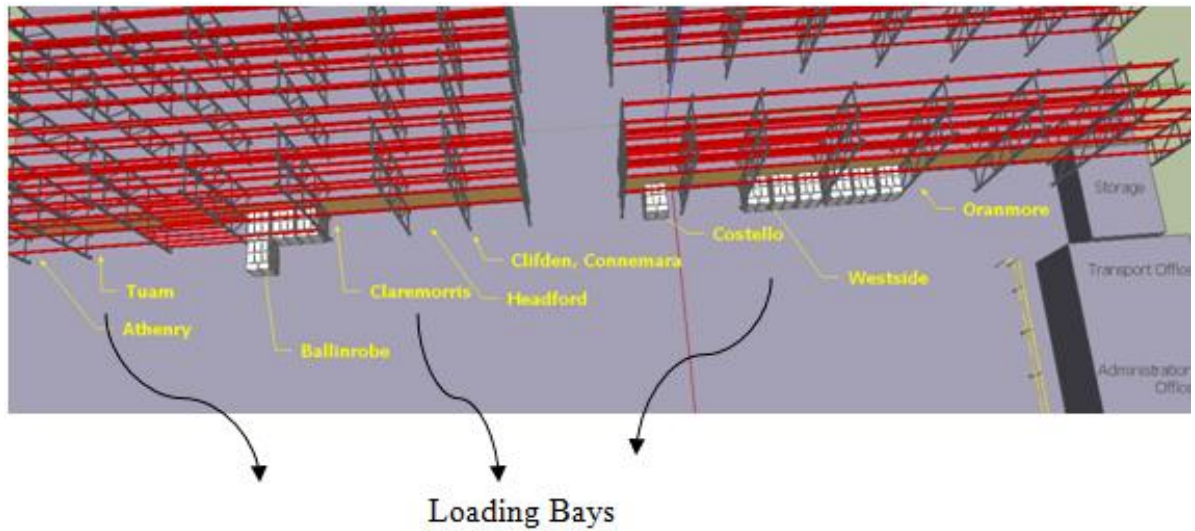
Figure 43: Delivery areas at the racks

Loading

Operators start loading the trailers once most of the freight is at Lynx wearhouse. They know the routes the will travel so they can load the pallets in the order that they will be delivered. The supervisor is aware of arranged AM deliveries so these pallets are loaded at the back of the truck board. Freight going to hospitals is loaded in the back of trucks as it is mainly delivered early in the morning.

Pallets are loaded in horizontal positions in order to fit in as many as possible. That is why they are placed in lines in vertical position. Operators can move them with the pallet truck from line to the board without turning them around.

Figure 44: Loading pallets

Cartons from the customers arrive to Lynx palletized. These pallets need to be broke down in order to divide boxes on empty pallets according to area they are going to. Operators use the wide isle between rack R and P to manage this freight. Once all freight is in, these pallets can be loaded onto trucks.
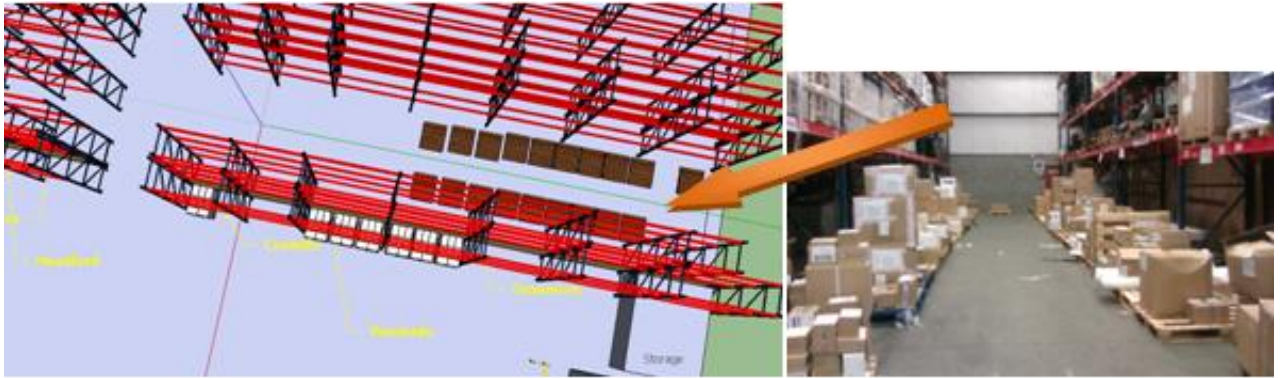
Figure 45: Managing inbound cartons

6.2 Administration process flow analysis

Following flow charts show the whole process of organizing collections by administrators. Because there are different steps involved in arranging collections within the Lynx area and outside of this area, I drew up two different process flow maps.

It is very important for administration to be well organized as little mistakes can cause failed orders. In extremely busy environment at the office with many phone calls and bookings, it is very easy to forget certain steps, for example: print documents, email collection details to Pall–trans member, enter wrong data into IFMS, etc. Administrators have certain ways how to notice mistakes, which are also mentioned below.

It takes a long time for new employees to get used to these processes, especially how to log the jobs into IFMS. That is why I believe the process flow maps I have drawn up are not only simple explanations on how the collections are organized but also a standardization tool which helps new employees.

6.2.1 Organization of collections within Lynx area

Figure 46: Process flow map of administration activities – collections within Lynx area

The picture above shows administration process while organizing collection within Lynx area. After receiving an order from customer, admin logs it into IFMS. A lot of customers ring and ask for collections during the day. After 3PM, they need to be discussed with the transport office before a commitment is made. Drivers may not have space or may have left the area. **Collections to be completed today** are logged directly as a deliveries following day if they are to be delivered within the Lynx area (see the picture 16) or today's date if freight travels nationwide. Drivers don't need collection dockets as delivery dockets with signature are the main importance. Printed delivery dockets are handed to the person looking after all collections. She rings drivers, give them all the details, advice about possible cash to be collected, and amends Excel collection sheet with details and

name of the driver doing the job. Dockets are piled up according to the area in which they are going to be delivered to.

Collections to be completed following day are logged as a collection. If there is cash to be collected, COD abbreviation is visibly stamped on the dockets. Then, they are placed into area pigeon holes where the night shift adds more collections and delivery dockets received during a night. Night admin organizes dockets from each pigeon hole according to special requirements (some del. & coll. must be done in the morning). Jobs from each pile now in this particular order are assigned to loading lists in IFMS. After this is done, driver run sheets can be printed and attached together with previous dockets. The following morning the person looking after collections prints report, creates new Excel file and types in all collections and names of drivers collecting. This report is an overview of all collections while allocating jobs to drivers and is used for comments (report and collections are the responsibility of transport office after 12 o'clock). Collection status is changed into delivery status - today's date if it leaves for Dublin depot in the evening, and tomorrow's date if it is to be delivered within Lynx area following day.

Discrepancy procedure

When there is a different amount of freight ready at a collection point or something is damaged (for example thorn packaging), drivers need to contact the admin office before they take anything. Admin needs to ring customer, confirm the amount of freight and get permission to collect. Customers are always given at least 15 minutes to sort any problem out before the driver leaves. If the amount originally booked by customer changes, admin has to amend IFMS, dockets, collection report and place comments with name of the person who changed the amount or gave permission to collect something damaged.

Once collected freight matches the booking, the driver can bring it to the warehouse and transport admin checks the amount of freight and quality. He also applies Lynx pallet labels and moves it to certain delivery area at the W/H.

Dockets for jobs to be delivered in the Lynx area are divided into pigeon holes during the evening and night shift assigns them to loading lists later. **Collections going nationwide** are assigned to Dublin loading list during the evening and sent with all paper work attached to this list/run. All consignments leaving Lynx are also uploaded to Pall-trans hub online software.

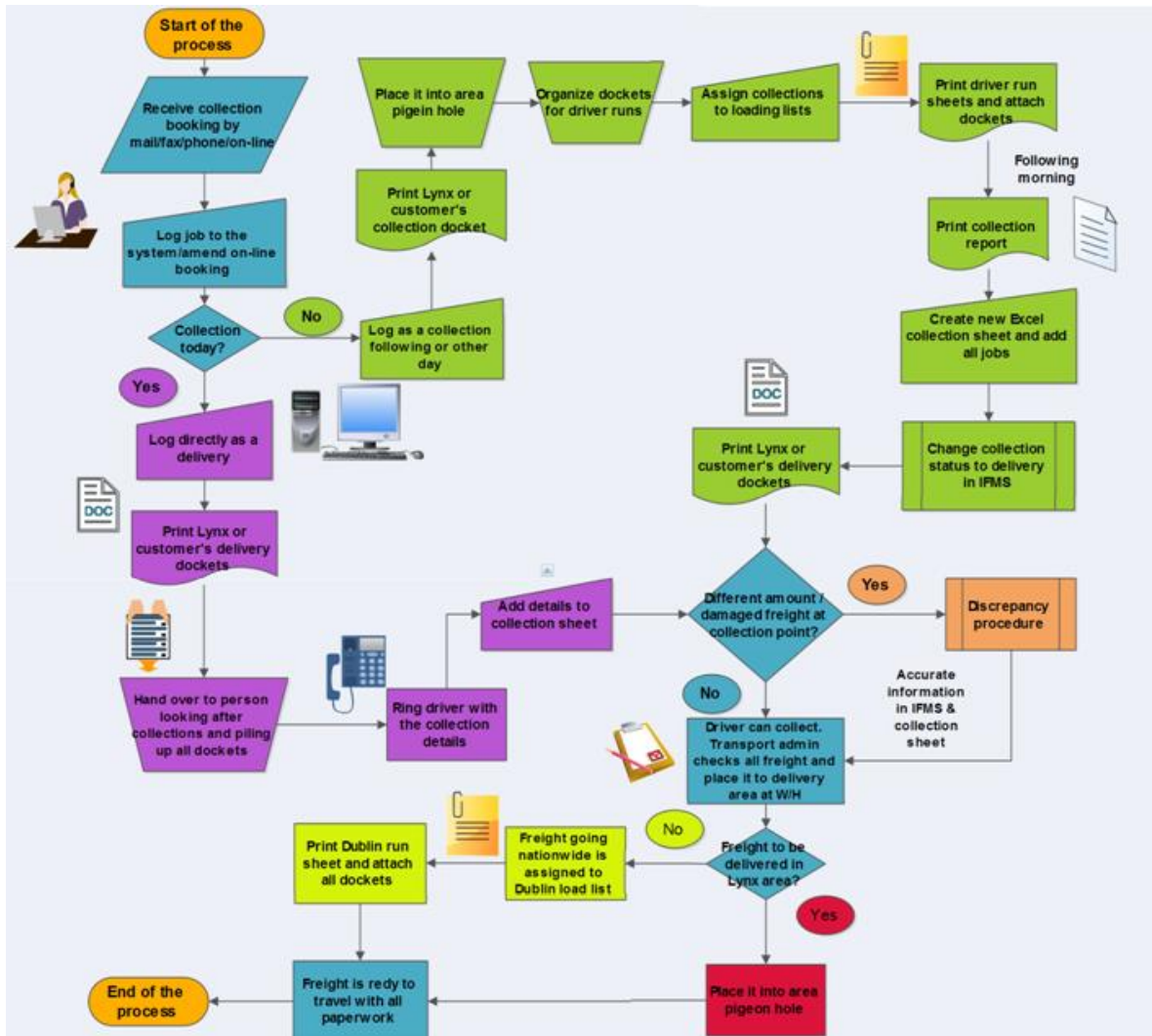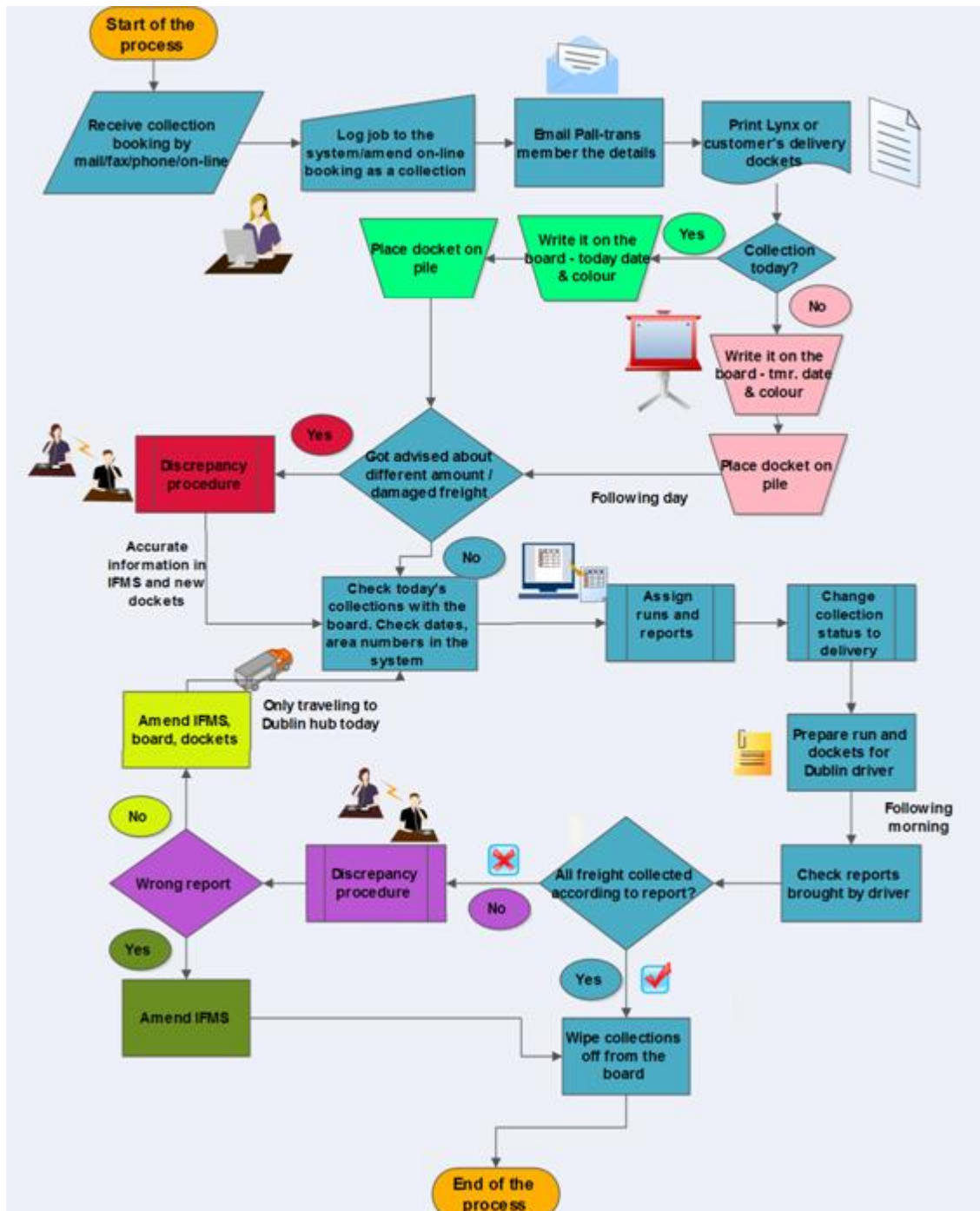### 6.2.2 Organization of collections out of Lynx area

Figure 47: Process flow map of administration activities – collections out of Lynx area

The picture above shows the administration process while organizing collection out of the Lynx area. Each received and logged collection order is emailed to Pall–trans members. Even though they are logged as a collection, admin prints delivery dockets and organ-

ises them together. She also writes all details on the board according to the collection area, and with suitable blue/green colour which represent the date (see picture below).
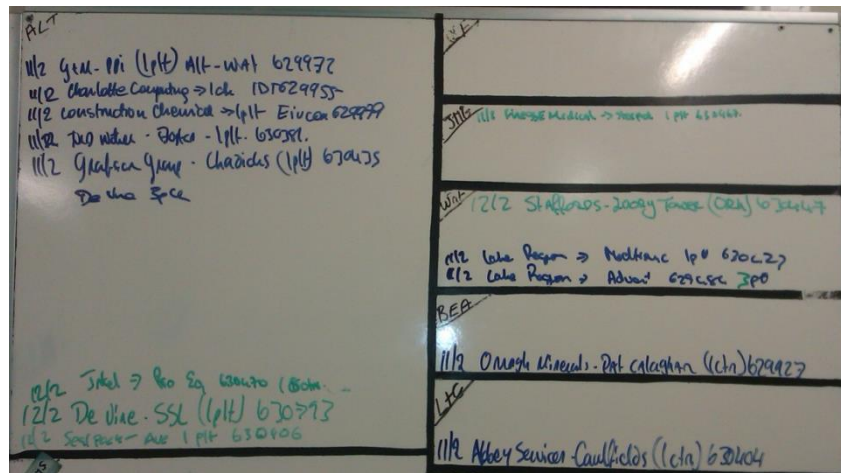
Figure 48: Collection board

This board is very simple but very effective overview of all collections being booked with other members. If they are not booked for today/tomorrow, they are kept by admin and added to the pile and on the board another day. If admin receives phone call from some Pal–trans member about any discrepancy at the collection point, **discrepancy procedure is followed** and everything is cleared with customer. Meanwhile, the member waits for permission to collect or cancel the job.

At about 4PM, one of the administrators starts to check if all dockets mach the board and IFMS report. This way, none of the collections are missed and all of them are assigned to report which is used by the driver collecting in Dublin hub. (Delivery dockets are attached to the report so they can travel with the freight already from Dublin.) Employees double-check all collections because amount of freight or other details often change during a day and different details on dockets and report would be confusing. Also, with the huge amount of phone calls, administrators sometimes enter wrong area number and IFMS report doesn't contain this collection.

Driver always has to check if freight waiting in Dublin corresponds with the report. After he brings Lynx's freight and freight from other members, dockets are placed to pigeon holes and assigned for runs as explained previously.

Admin needs to check every morning if there were any discrepancies at the report. If no, she can wipe collections off the board. **If yes, she needs to find out what happened and why the office wasn't advised about it.** In case **collected amount is right** in the end, she

just needs to amend IFMS. If **Pall–trans member fails on collection**, freight arrives to Dublin hub following night.

6.2.3   Processing drivers' runs

Dockets brought back by drivers must be bar-coded, scanned, uploaded to IFMS system, divided and sent to customers. All this is done by one employee, who arrives at 6PM. It takes her approximately 7 hours. She must also process all collected CODs.

The record of all received CODs is kept in Excel file. Checks collected for another member or customer are scanned together with documentation and sent to them. Cash for them is not sent straight away. Employee puts it into cash box together with its dockets. She brings the box to finance office every night where check is issued instead of cash. After check is brought back to admin office, POD and check can be scanned and sent to customer/member.

All checks and cash that belong to Lynx can go to cash box without scanning. Finance department also tick received money off from Lynx COD book. This book is filled in by administrators. Every time they log job with COD, they have to write the details into the book. It is overview of all payments the company is expecting.

6.3   Logistics

In logistics I am going to focus only on warehouse organization as administration activities are very straight forward compared to transport. I am going to use ABC analysis to find out which customers take over most of the storage space and more importantly which of them cause the biggest movement.

6.3.1   Layout analysis

Following picture shows how the warehouse is organized and how many plt. spaces are in each rack. When warehouse operator receives freight, he tries to keep it together but there are not any specified areas for each customer. As I mentioned before, one plt space is 80cm wide and wider pallets or double pallets take two plt spaces. The system doesn't allow entering information that some pallet takes 2 plt spaces, therefore operator cannot rely on available space this system shows. He needs to go and see where in the warehouse is free space to place the pallets.
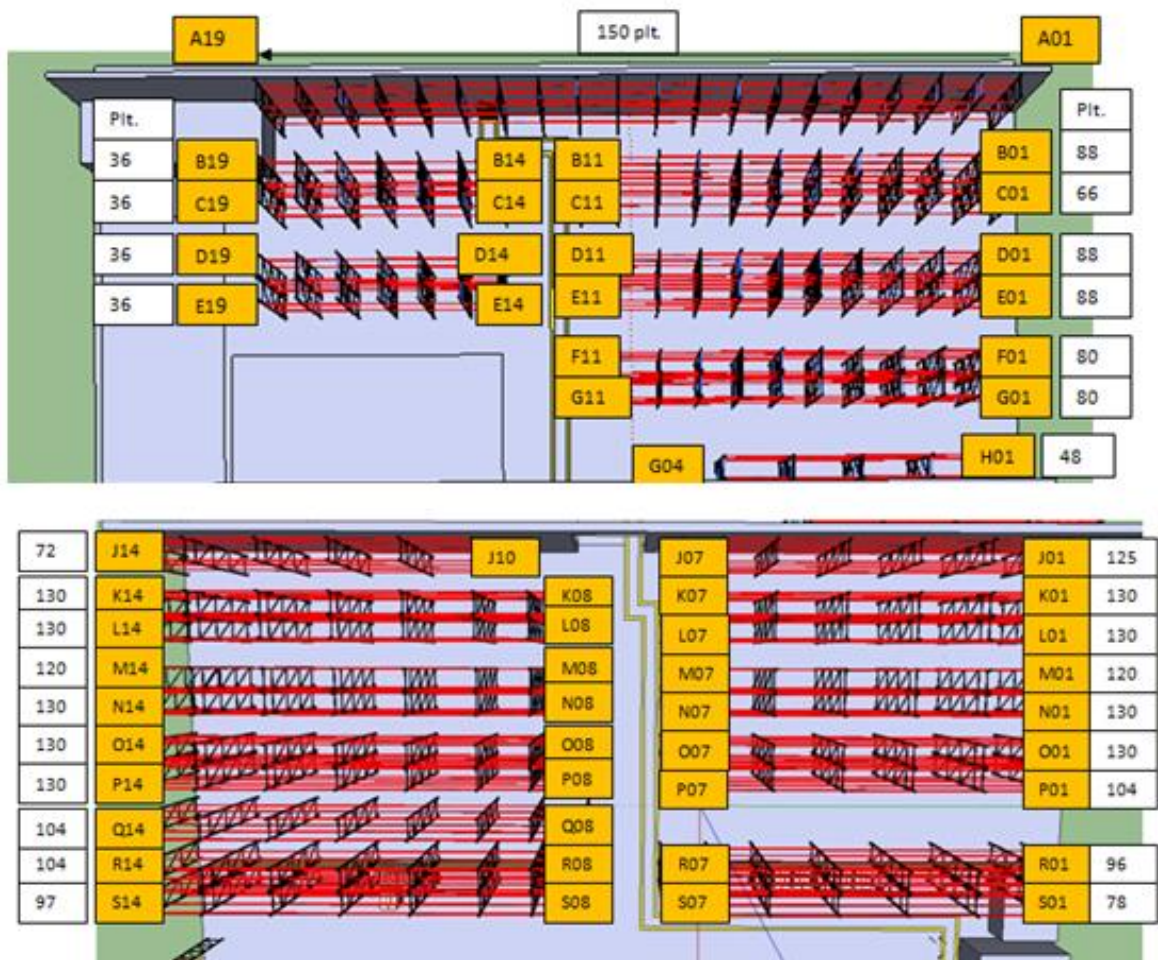
Figure 49: Decomposition of pallet spaces in the warehouse

Isles in the front part of the warehouse are narrow except the isle between P01–P07 and R01–R07. It means that warehouse operator has to use narrow turret truck to pick any pallets. Forklifts and reach truck are not able to turn around at these isles. Narrow aisles save the space and enable to create more pallet space.

Only disadvantage here is the fact that the operator uses big, heavy turret truck just to get the pallets from the isle between racks. Ones he has all ordered pallets at the main isle (for example between N07 and N08), he moves them and load them with forklift. Loading and moving pallets around the warehouse with turret truck would take too long. It is easy to move it further and back (for example along the whole isle L, M (L01–L14 and M01–M14), but it is time consuming to get it from line L, M to N. For this reason, there are 2 turret trucks to decrease movement between isles.

Figure 50: Turret Truck and Forklift used at W/H

6.3.2 ABC analysis

I am using ABC analysis to find out which customers Lynx needs to focus on while organizing the storage space. There is not any system at the moment. The operator just goes and sees where enough free space is for inbound freight. My aim is to start organizing pallets according to rules of effective warehousing by application of ABC analysis results.

First graph just shows which customers have the biggest average amount of freight in the W/H. This graph is useful for example if we want to move customers from group C to the back of the W/H and we need to know how many pallet they usually have in.

The following graph shows that 82% of pallet space in the W/H is taken by 4 customers. That is only 12% of all customers that are in the group A. There are 7 customers (21%) in the group B taking 13% of storage space. The rest of the customers (nearly 67%) are in the group C and take only 5% of storage space.

This percentage is not exactly according to Pareto figures. High amount of customers in the group C is caused by the fact that 12 customers have less than 3 pallets in the W/H.
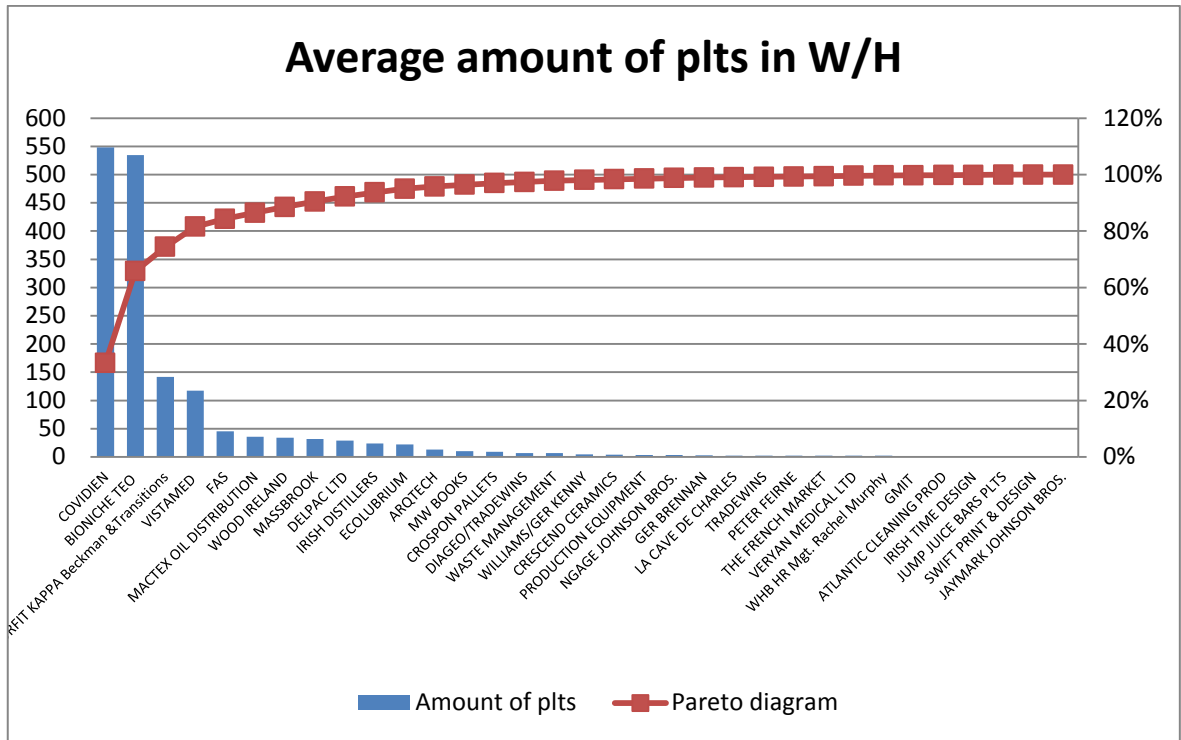
Figure 51: Average amount of pallets in the warehouse

More important graph is second one. It shows average amount of freight movement per week for each customer. As you can see in the graphs, some companies have smaller average amount of freight in the warehouse then the others, but they have higher amount of movement per week.

It is effective to place pallets that move in and out frequently to the front of the warehouse, close to loading area.

Allocation of the customers into the groups is as follows:

Group	Number of Customers	% Share of Week Movement
A	4	79%
B	3	16%
C	26	5%
SUM	33	100%

Table 3: ABC analysis
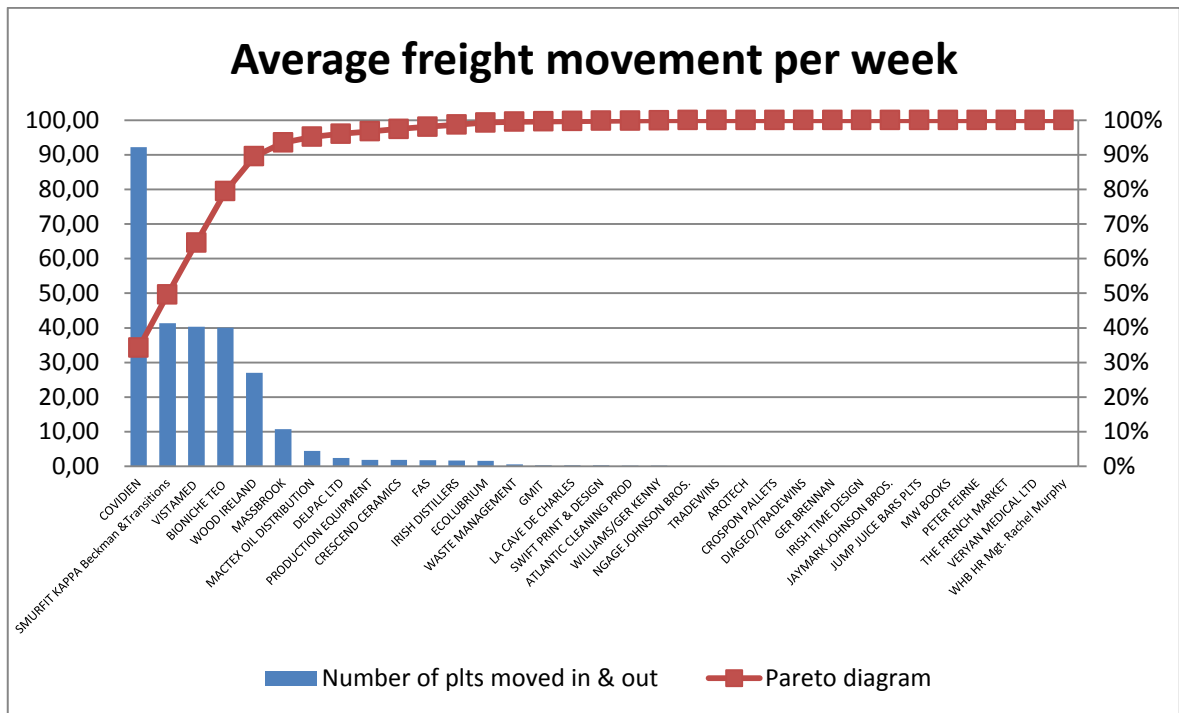
Figure 52: Average freight movement per week

Group A – customers with highest share in weekly pallet movement – only 12% of all customers. These customers are most important in terms of W/H organization and they need to be focused on. Position of freight in this group needs to be optimized. It should be easy to pick and close to loading area. To reach high efficiency, I am analyzing location of the most moved freight in this group below.

Group B – customers with 16% share in weekly pallet movement. These 3 customers are only 9% of all customers. The importance of optimization for freight in this group is lower than in the group A.

Group C – customers with 5% share in weekly pallet movement. There are 26 customer in this group. It means there is low importance to have efficient location for 78% of all customers.

The reason why there is huge number of customers in the group C is that many companies have only few pallets at the Lynx W/H. Some of them are never moved because companies currently don't need them at all. There are also accompanies as The French Market which rent few pallet spaces and never move the freight because they only come and collect few boxes of wine from their pallets or bring wine in.

This analysis really shows that the main group to be focused on is Group A. According to ABC analysis, the company which moves its freight in and out most frequently is

COVIDIEN. W/H supervisor was able to tell me certain types of Covidien pallets that are moved most frequently out of all freight in the warehouse. They get in and out on daily basis. These pallets are:

- 10001545
- 4–070523–00
- G–060216–00
- 4–076200–00
- 4–076201–00
- 4–076205–00

I have checked current stock balance of these pallets on 2nd of February 2014. Position of all of them is shown in the picture below.
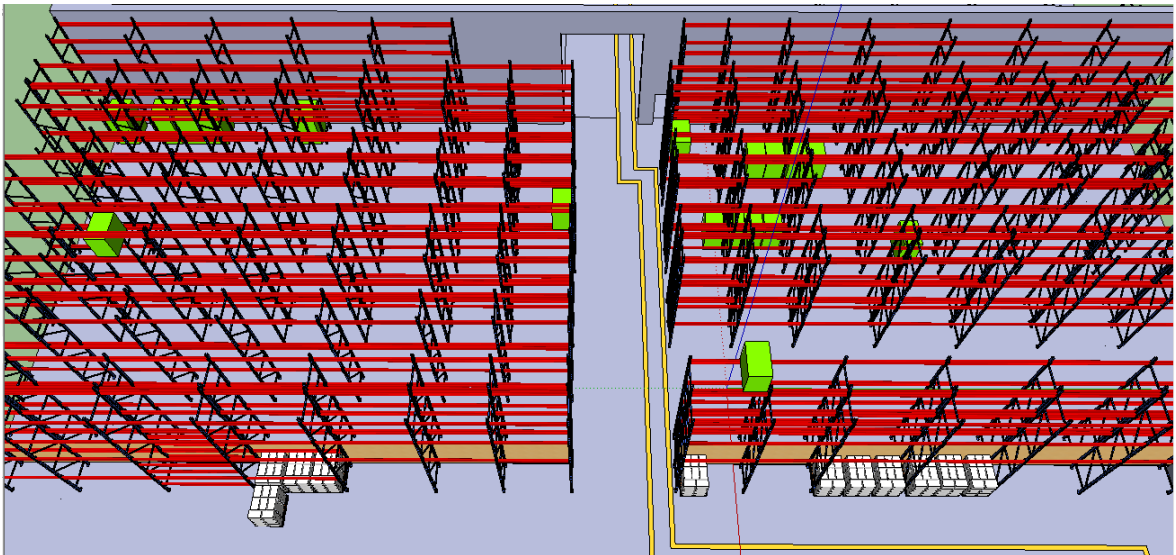
Figure 53: Current position of the most moved pallets

Location of these pallets is not the most effective. They are in the front part of the warehouse but nearly all of them are at narrow aisles. Positioning of this freight needs to be optimized as moving it in or out needs to be done in two steps.

Inbound process:

1. Step – unload a truck using forklift and place pallets beside the rack you want to place it into
2. Step – place pallets into the rack using turret truck

Outbound process:

1. Step – pick pallets using turret truck and place them beside the rack
2. Step – use forklift to collect the pallets and load them on board of a truck

I have also found out a lot of freight from Group C is situated in the front racks by checking current balance sheets. They can be definitely situated at the different area of the warehouse.

6.4 Analysis evaluation

At this part I am going to point out few imperfections I have noticed while analyzing processes at Lynx. This analysis valuation and summary is also start point for further optimization proposals.

Freight distribution

During the distribution process observation, I have noticed one major deficiency which cost company money. I have experienced ***failed deliveries*** because companies are closed early or don't accept deliveries during certain day/time. When Lynx is not advised about this fact by customer, administrators charge them anyway. The problem is that big customers as Landbridge very often refuse to pay for failed deliveries. This company usually claims that Lynx should be aware of companies within lynx area. Lynx of course cannot know everything about every company but Landbridge knows that it is second biggest customer and Lynx cannot object. Some customers also don't want to pay for failed deliveries in case they have been failed before. Even, if it was months/year ago.

Failed deliveries cost company time and money and this problem needs to be reduced.

Administration

When drivers collect a freight there are often discrepancies or misunderstandings that need to be solved by the administration office before the freight gets on board. I have noticed when organizing collections out of the Lynx area, administrators are ***missing information***. For example, difficulties can arise when contacting a customer regarding a problem when you don't know who the driver was dealing with at the collection point. This is very important information which is often missing. Customers need to know the employee who claims there is no freight for them, so they can contact the company straight away and talk to the employee. This happens very often at big companies where one person arranges a collection and another doesn't know anything about it. When administrators don't have all needed information ready, it's a waste of everyone's time.

I have noticed very busy environment brings in a lot of tension between employees. It is very important to keep team spirit at the company. It is crucial especially in customer services.

Visualization

Part of my optimization proposal is visualization improvement. Clear visualization is important step of 5S methodology and step closer to standardized working environment.

Warehouse organization

I am going to reorganize freight location at the warehouse according to ABC movement analysis to reach effective storage and decrease waste of space.

These are the areas I am focusing on in my optimization proposal. Of course there are other complications that could be solved at the company. IFMS system is not faultless and processing CODs is very time consuming. Purchasing new system and chip and pin devices would be too costly under current financial situation.

7 LOGICAL FRAMEWORK OF OPTIMIZATION PROPOSAL

	Tree of Goals	Objective, verifiable indicators	Information resources	Assumptions and risks
Main goal	Increase company competitiveness	Increased efficiency through the company	Statistics	
Project goals	Optimization of freight distribution	Reduction of failed deliveries	Knowledge of employees	Acceptation implemented changes by employees, proper using of collected information, continuous updating
Project goals	Optimization of administration activities	Better information flow, better use of IFMS potential, increased team work	Personal experience	Willingness of administrators to update IFMS regularly, willingness of management to enforce stricter rules within the Pall-trans group and raise team spirit within the office
Project goals	Optimization of warehouse organization	Reduction of waste and non-value adding activities	Companies data, IFMS reports	Willingness of management to invest money into warehouse reorganization, motivation of the warehouse supervisor towards continuous improvement
Outputs	Process analysis across the company and stock analysis	Standardized processes and work environment, increased productivity and reduced waste, visualization improvement	Process observation and analyzing company's data	My detailed knowledge of the processes, employees cooperation
Outputs	Optimization proposal	Project feasibility	Regular discussion with operation manager	Good understanding of analyzed data and activities, communication with employees
Outputs	Implementation and maintaining changes	Continuous improvement	Regular updates and statistics	Sufficient control and continuous improvement
Activities	Distribution process observation	Process, visualization and layout analysis	15.11.2013 – 20.12.2013	Busy environment and cooperation. Good understanding of the process
Activities	Administration process flow analysis	Process flow maps, visualization analysis	01.11.2013 – 20.12.2013	Willingness of administrators under pressure to cooperate. Good understanding of the process

		Tools	Time frame work	Prerequisites
	Logistics analysis	Layout and visualization analysis, ABC analysis of freight	05.01.2014 – 31.01.2014	Sufficient data
	Analysis evaluation and optimization proposal consideration	Analyzing results, designing 3D model of premises	20.01.2014 – 28.02.2014	Proper analysis and satisfactory 3D model
	Consultation of analysis with management	Discussion with management about results	03.03.2014 – 05.03.2014	Management support. Inexpensive and efficient improvements.
	Optimization proposal	Cooperation with employees, 3D simulation of warehouse organization	06.03.2014 – 21.03.2014	Employees' knowledge and cooperation.
	Implementation	Visualization improvement, using collected information about special delivery requirements	17.03.2014 – 24.03.2014	Right implementation of results from analysis
	Inspection	Efficiency control of implemented changes, comparing to previous state	25.03.2014 – 28.03.2014	Advantageous proposal. Maintaining changes
		Tools	**Time frame work**	**Prerequisites**
				My knowledge about processes and analysis
				Good cooperation with employees
				Knowledge and skills of employees
				Management support

8 OPTIMIZATION PROPOSAL

8.1 Reducing failed deliveries

Administrator who looks after freight delivery and organizes driver runs definitely cannot be blamed for not knowing closing time of all companies. He keeps in mind a lot of them but this information should be printed out and available for all employees. There should have been list of companies with these special requirements a long time ago. I have asked employees about any requirement they know and put together excel file which allows updating this list. You can see list of companies that require morning deliveries below.

GALWAY CITY RUN			
ABC Books	AM	Joyces Knocknacarra	PRE 2 PM
B & Q	AM	Kelly office	AM
Bathroom World	AM	Medtronic	AM
Bon secours Hospital	AM	Merlin Park Hospital	AM
Boston Scientific	AM	Mileage Tyres	AM
Castle Print	AM	Peter Murphy Westside	AM
Dunnes Terryland	AM	Production Equipment	AM
Galway Clinic	AM	Right Price Tiles	AM
Ireland raw Kitchens	AM	Termo King	AM
		UCH Hospital	AM
COSTELLO RUN			
Mylan Teo	AM		
CLIFDEN RUN			
Abbey Glen Hotel	PRE 12 Thursday		
Super Valu	PRE 11 AM		
WESTPORT RUN			
Acorn Kitchens	PRE 10 AM Thursday		
Mayo General Hospital	AM		
Michael Guiney	PRE 10 AM		
TUAM RUN			
Garveys Bakery	AM		
Joyces Supermarket	PRE 2 PM		
Transitions Optical	AM		
Tuam Heating & Plumbing	AM		
Western Hygiene	AM		
BALLINASLOE			
Portincula Hospital	AM		

Table 4: Special requirements

Lynx administrators always ask if customers require any delivery time while taking booking. This problem appears with all freight coming down from another transport companies.

Night shift already finds this list very helpful during organizing inbound freight and runs. The company was experiencing failed deliveries without getting paid at least once a week. When delivery is refused because customers didn't provide important information or sent a freight wrong day, they should normally pay full price for these refused consignments. If they don't, it means petrol costs and loosing approximately 60 EUR of revenue per pallet. Customer price vary.

Even if a customer does admit a mistake and pays for refused delivery, it is still better to deliver everything in a first attempt in a busy transport environment.

I am expecting major decrease in failed consignments while using and regular updating of this Excel file.

8.2 Administration

In the case of ***missing information*** while reporting discrepancies, the management should enforce stricter rules within the Pall–trans group. If Lynx administrators can provide all needed information, the rest of the group should be able to carry out task to high standards. I suggest sending e–mail saying Lynx doesn't accept any reports unless the following information is provided:

- Job number
- Explanation of the problem occurred
- Name of the person driver was dealing with at the collection/delivery point

In case of ***busy environment at the office***, I would have few suggestions that will definitely save time.

First of all, administrators don't use full potential of IFMS system. As I mentions before, there can be automatic prices and addresses set up for each customers. Neither of them was updated in years. There are lots of new regular customers that can be added into automatic price list and a many companies that can be added into automatic addresses.

Another time consuming activity at the office is trying to read scribbled signatures on PODs. This is waste of time for girls during the day and especially for lady doing scanning in the evening. She needs to apply all signatures from Aramex PODs on their manifest.

The solution is very easy. The drivers need to have personal responsibility for readable signatures.

Team spirit and tense atmosphere at the office could be improved by organizing night out gatherings or team building activities. Company used to put more effort into these activities before the recession kicked in Ireland.

I believe all these suggestions would save time and decrease the tension at the office.

8.3 Visualization

First thing I have decided to improve is visualization of pigeon holes. As you can see in the picture below, names of the towns belonging into certain areas are only roughly hand written. Some of them are crossed out and some towns are missing, therefore it is hard to know where the dockets belong.

Figure 54: Pigeon holes before optimization

I have printed new name tags for each area and created lists of towns that are situated at each area.

Figure 55: Pigeon holes after optimization

Another imperfection in visualization is storage space labels. Some of them are thorn and some of them are not up to date (for example LA13 00 in the picture below). Many labels at the back part of the W/H are in yellow color which doesn't make them visible at all.

Figure 56: Labels with poor visibility

I have printed new labels using Lynx labels and printer. As most of the storage positions are not reachable from my height and I cannot operate turret truck, I couldn't apply these stickers on the racks myself. They can be applied by warehouse operator whenever he has spare time or manager gives him extra time to do so.
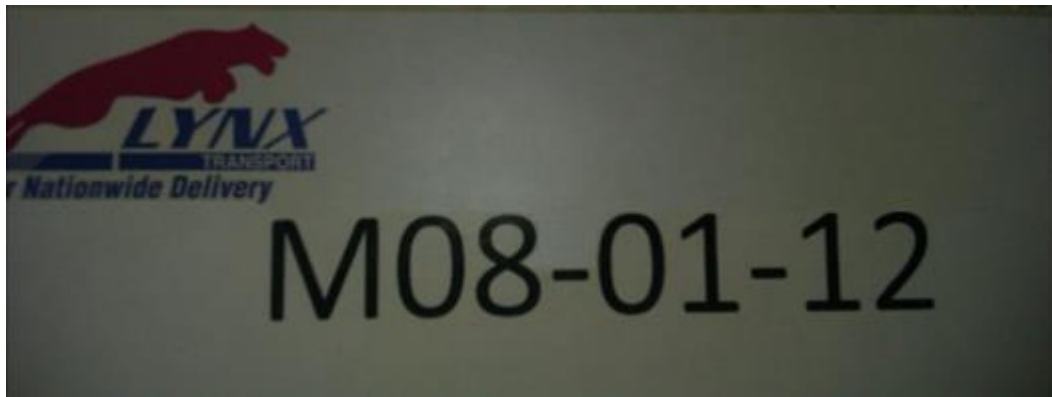
Figure 57: New labels

Walk path on the warehouse floor needs to be re–painted. All emplyees know what way they are obliged to walk through premises and all forlift operators are aware of it as well. The problem is that according to safety regulations, this unclear path could cause a problem during up coming audit.

Figure 58: Unclear walk path

8.4 Warehouse organization

According to previous analysis, the most important freight from Group A is not placed in the warehouse efficiently. I am going to use my 3D model to show more effective way of organizing frequently moved pallets. I am also going to relocate some goods that are unnecessarily placed at locations with easy access.

8.4.1 Reduction of waste in storage space

At first, I would like to pay attention to the freight that can be found at the only wide isle in front of the warehouse. As you can see in the picture below, ground floor of these racks is taken by unused office equipment, goods on hold and goods for customer's collection. Storage space used by Lynx to get unused items out of the way certainly doesn't need to be kept at this area.
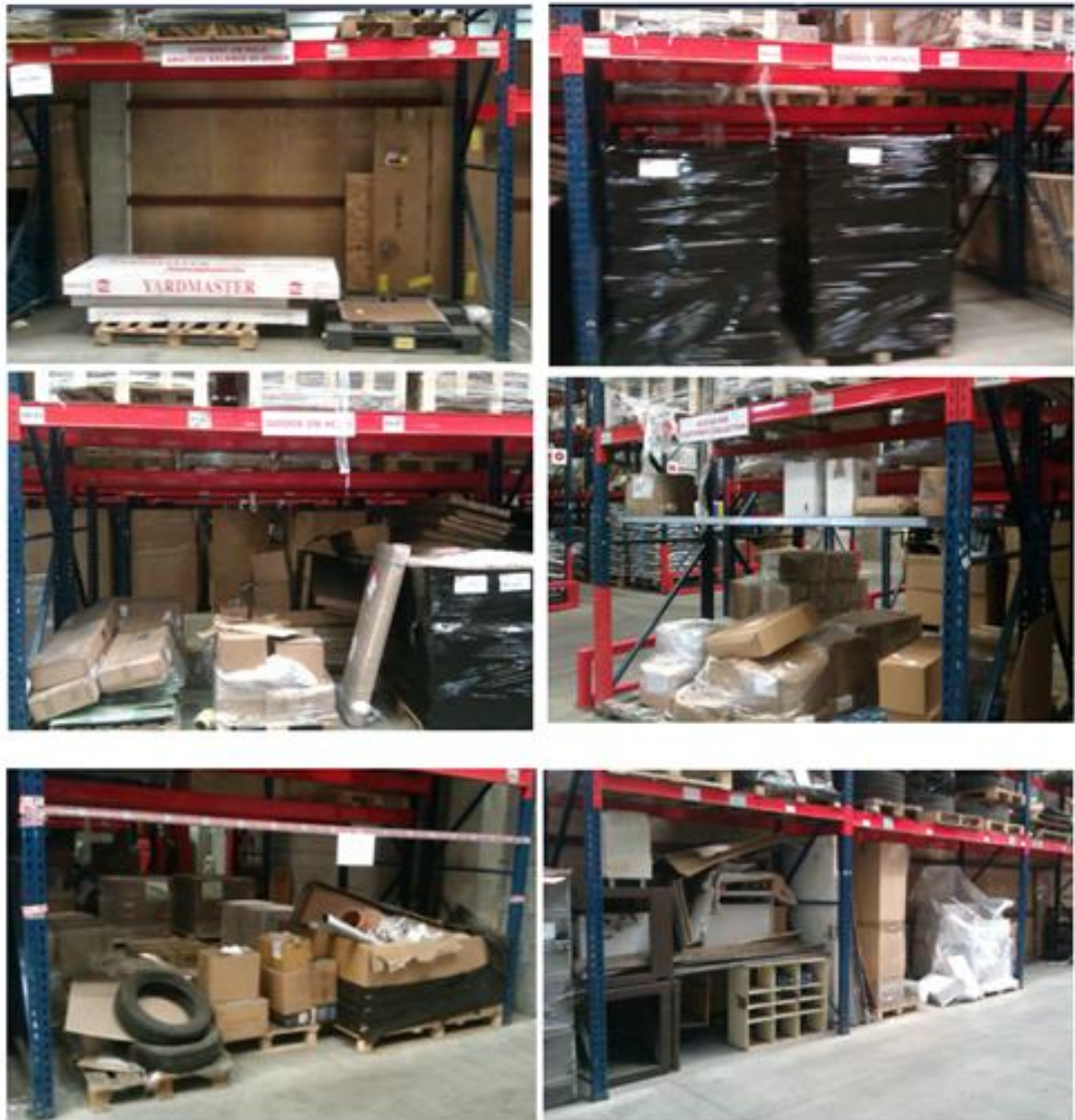

Figure 59: Unnecessary goods at the front

As shown in the following picture, these locations are easy to reach with forklifts which are much quicker than turret trucks. Ground floor is also very good for heavy and tall pallets. Green rectangles in the picture show where all the freight above is at the moment.

This isle is used to sort out inbound cartons during the night but it is always empty during a day shift.

I want to keep this area with easy access and short distance from loading area for more important goods from Group A.
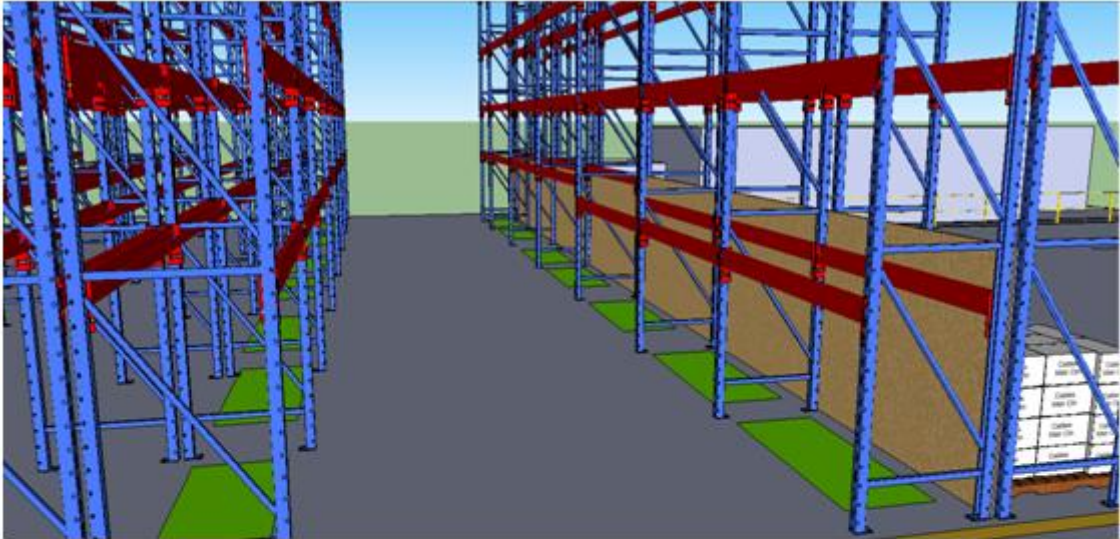

Figure 60: Wide isle at the font part of the warehouse

To keep goods on hold and freight for customer's collection handy for transport office, they can be kept at narrow isle on the other side as shown in the following picture. Ten of these pallets paces must be enough. Lynx equipment and freight that is on hold for years can be moved at the very back of the W/H. Most of the goods are on hold only few days, awaiting for instructions/arranged delivery date.
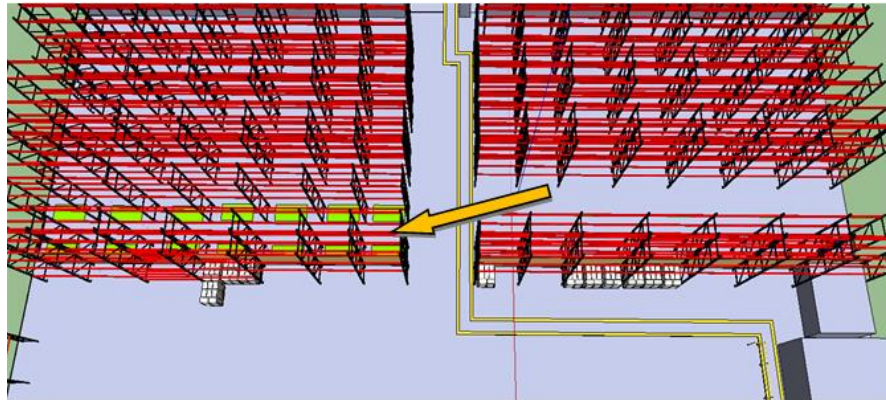
Figure 61: Relocation of freight on hold/ for collection

8.4.2 Efficient storage for frequently moved freight

I have moved previously analyzed Covidien pallets (10001545, 4–070523–00, G–060216–00, 4–076200–00, 4–076201–00, 4–076205–00) to this area. This is certainly more effective way to storage this freight. It provides plenty pallet space for heavy pallets on the ground and easy access to pallets in higher rows. Getting these pallets into the storage or out of the storage had to be previously dome in two steps. I have eliminated using turret truck from these processes by moving them to this area.

Inbound process – off–load pallet from a truck and place it into position using forklift

Outbound process – pick pallet using forklift and load it on board of a truck
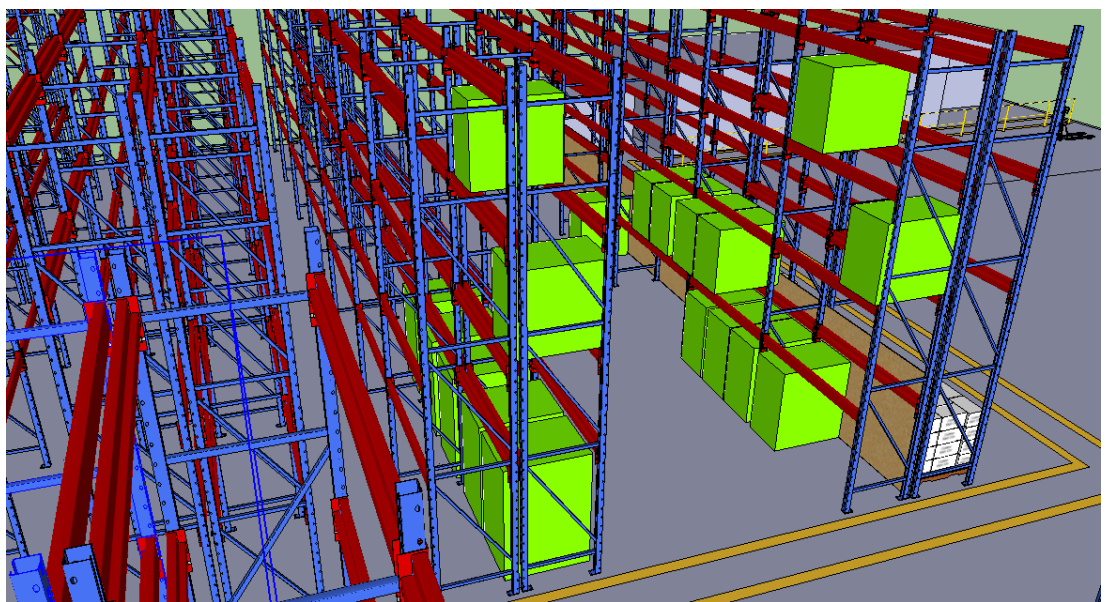

Figure 62: Effective location for the most moved pallets

Very front rows may appear like the most effective regarding to distance from loading area and access but there are few little disadvantage in placing a freight here. I haven't chosen these racks for the pallets in the picture because graund floor is used to divide collected goods which are brought by drivers during a day. They don't only take over ground pallet spaces, but also can be occasionaly in the way when operator wants to pick pallets. This employee told me it doesn't happen often and forklift can normaly rech pallets withou problem so it is still good area for another pallets from Group A.
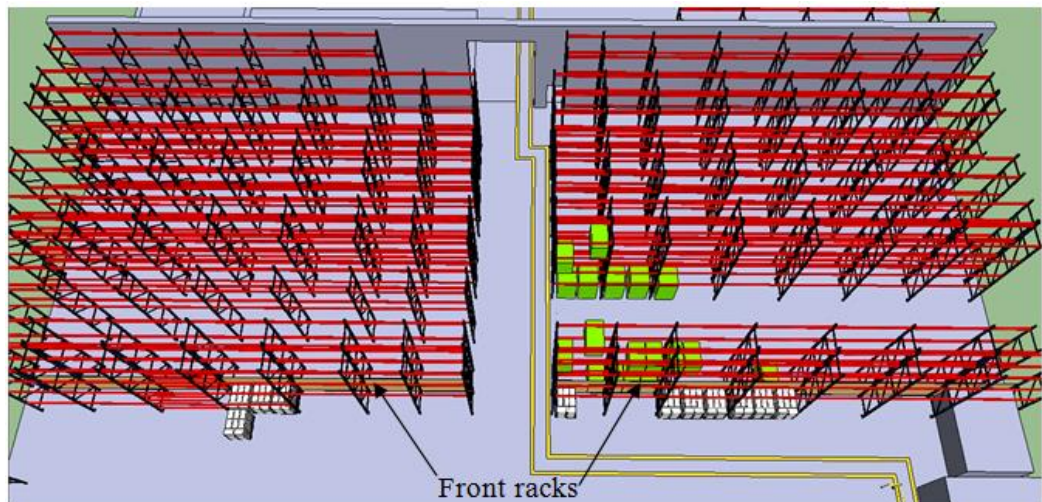
Figure 63: Front racks

8.4.3 Rack optimization

Before I divide warehouse into the group areas according to ABC analysis, I would like to remove few red frames from the front left rack. I don't know what the original purpose of these narrow locations was, but they are not recently used at all. As you can see in the picture, taking 6 frames off creates 8 pallet spaces. Bottom ones can be used to divide inbound freight and top spaces can be used as storage.

Figure 64: Racking optimization

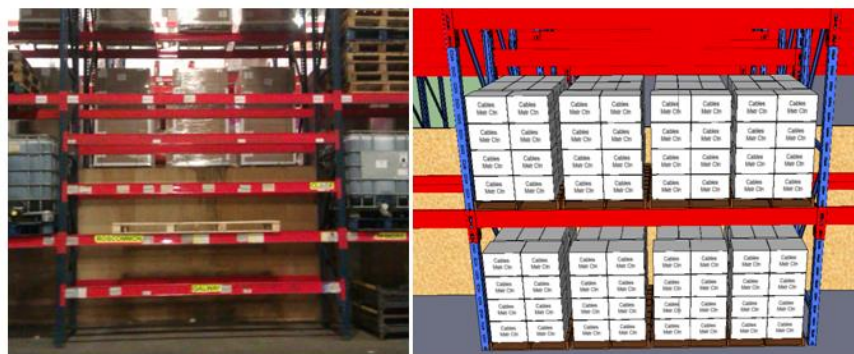I would also add one more row (floor) into some racks at the back area of the warehouse. As you can see in the picture below, the racks at this area have only 3 or 4 rows. These big pallet spaces cause major waste of space because they are taken by small pallets. Some of them are not even half as high as the pallet spaces themselves.

Figure 65: Racks' set up at the back of the warehouse

I am not suggesting 5 rows at each racking because the company is not struggling with lack of space too much and it is good to have space for very tall freight in the backup.

Additional rows:

- Racking F, G, D_1–D_{11} and E_1–E_{11}: additional 5th row – creates 84 plt spaces
- Racking C_1–C_{19}, D_{14}–D_{19} and E_{14}–E_{19}: additional 4th row – creates 58 plt spaces

The additional row for racking F and G could be created with spare beams that are in the warehouse. The company would need to invest approximately 4700 EUR to purchase and install 51 pairs of beams for racking C, D and E.

8.5 Reorganization of freight emplacement

Freight is currently not organized and many pallets from Group C are located in the front racks. According to ABC analysis, the groups should efficiently take over warehouse areas as follows:

Yellow A Group, green B Group, blue C Group.

Figure 66: Freight emplacement according to ABC analysis

9 PROJECT EVALUATION

Financial assets

Financial assets from decreased failed deliveries:

I have put knowledge of the Lynx employees about special delivery requirements together, which already decreased failed consignments. Preventing at least one unpaid delivery a week saves company petrol costs and prevents loosing at least 2880 EUR revenue a year.

Financial assets from rack optimization:

Creating 8 new pallet spaces would generate revenue of 2688 EUR per year by renting the area with 100% utilization of the space throughout the year.

Additional rows at the back of the warehouse would create 142 pallet spaces over all. The company has spare beams to create 40 locations. Creating this amount of locations with own sources would generate revenue 13440 EUR per year by renting the area with 100% utilization of the space throughout the year.

Lynx would need to invest 4700 EUR to create the rest of the pallet space (102 locations). We need to consider that this pace is not going to be rented 365 days a year. It means it is not going to have full utilization. It will only generate revenue of 17136 EUR with 50% utilization of the rented area.

We can calculate payback period according to following formula:

$$Payback\ period = \frac{Initial\ investment}{Cash\ inflow\ per\ period}$$

$$Payback\ period = \frac{4700}{17136} = 0{,}274 = 100\ \text{days}$$

Our payback period in this case is 100 days.

Financial assets from warehouse optimization:

The company has to spend approximately 90 EUR per month to cover warehouse supervisor's overtime hours.

Good organization of the warehouse and placing frequently moved pallets into most effective areas would save time and significantly decrease overtime hours.

Costs

Spray paint of new walk path was ordered and cost company 250EUR.

I have used 2 rolls of stickers to print new pallet space labels, which are just 10EUR.

Purchasing new beams for pallet space increase would cost 4700 EUR.

Part of the costs that result from my optimization proposal are in the extra hours that need to be put into IFMS update and warehouse reorganization. Exact salaries of the employees who can do so were not unveiled to me. According to conversations with the operation manager, IFMS updates would not cost a lot, as most of it can be done during working hours. There would definitely be need to add extra hours for warehouse reorganization, which would cost approximately 500 EUR.

The company used to spend approximately 4000EUR a year for organization gatherings for its employees. The management is not planning to spend same amount of money because of increased expenses as Christmas benefits, but they are considering some activities to raise team spirit at the office.

Non–financial assets

Avoiding failed consignments decrease a lot of time the financial department and administrators have to spend by arguing with customers about paying money. It also takes frustration from the drivers, who are paid per day (not per hour). They are often under pressure and repeating same delivery is a waste of time for them.

Enforcing stricter rules in discrepancy reports would prevent misunderstandings and decrease time used for searching of relevant information or people.

The management should also enforce the drivers to bring back PODs with readable signatures. Trying to read signature is very unnecessary waste of time in already busy office.

I believe the process flow maps and area maps I have created will help new employees to understand complicated administration system of arranging transport and using IFMS system. They can be also used in the company's SOP (Standard operating procedure) manual book.

As part of a visualization improvement, I have sorted out towns located in the Lynx area and created lists, which clearly say where to put documents. Better organization of the pi-

geon holes save time to employees and it is a step closer to standardized freight distribution.

Increasing efficiency and reducing waste in organization of storage saves operator's time and provides fundamental support for further improvements. The customers from Group A and B are stable, therefore investing into this major warehouse reorganization would not be only short term solution. Smaller changes can be done in future during working hours.

CONCLUSION

My master thesis is focused on the implementation of efficient changes in distribution and logistics processes at Lynx Transport Ltd. This company realized the need for being in a logistics network and entered the Pall–Trans Group to maintain competitiveness. However, this membership brings even more responsibility for well organized operations and customer service.

Modern organizations that use different kinds of process optimization tools, realize the need for joining quality improvement and waste reduction techniques together. This is ensured by implementation Lean Six Sigma approach, which is used at the company in certain ways.

Focus on IT technology has obviously been a major focus recently. Its costliness is the main reason that Lynx slightly lags behind the technical progress.

I have analyzed different processes at the company to identify the imperfections. Based on my analysis I have made an optimization proposal with several suggestions for change and created different tools for better understanding and visualization. I have created different maps illustrations to visualize how Ireland is covered by Lynx and other members, simple figures explaining how freight travels through the network, 3D model of the premises which displays a very accurate layout, and administration process maps providing standardization tools.

Part of the optimization proposal is reducing the number of failed deliveries by improved organization of freight distribution, which meets special requirements of certain final destinations. I have put together employees' knowledge into a special requirements table which helps in reducing failures.

I have made suggestions for waste of time reduction at the administration office and improved visualization features at distribution process and storage.

The last part of my optimization proposal focuses on efficient reorganization of the warehouse by reducing any wastes of space, dividing storage according to ABC analysis and adding more pallet locations.

The time I spent at the company and analysis, tells me that Lynx has potential for implementation and maintaining changes which would bring appreciable financial assets.

BIBLIOGRAPHY

[1] MURPHY, Paul R. Jr. & WOOD, Donald F., c2008. *Contemporary Logistics*. Ed. 9. New Jersey: Pearson Prentice Hall, 415 p. ISBN-13: 978-81-203-3373-4.

[2] BALLOU, Ronald H., c1999. *Business Logistics Management: Planning, Organizing and Controlling the Supply Chain*. Ed. 4. New Jersey: Pearson Prentice Hall, 679 p. ISBN: 0-13-795659-2.

[3] SUMMERS, Donna C. S., c. 2011. *Lean Six Sigma: Process Improvement Tools and Techniques*. New Jersey: Pearson Prentice Hall, 297 p. ISBN: 978-0-13-512510-6.

[4] OSADA, Takashi, c1991. *The 5S's Five Keys to a Total Quality Environment*. Tokyo: Asian Productivity Organization, 211p. ISBN: 92-833-1116-7.

[5] BAUDIN, Michel, c2004. Lean Logistics: *The Nuts and Bolts of Delivering Materials and Goods*. New York: productivity Press, 387 p. ISBN: 1-56327-296-2.

[6] HARRISON, Alan & VAN HOEK, Remko, c2002. *Logistics Management and Strategy*. Harlow: Pearson Education Ltd., 281 p. ISBN: 0-273-64674-5.

[7] CHIARINI, Andrea, c2013. *Lean Organization: from the Tools of the Toyota Production System to Lean Office*. Milan: Springer-Verlag, 175 p. ISBN: 978-88-470-2509-7.

[8] SLACK, Nigel; BRANDON-JONES, Alistair & JOHNSTON, Robert, c2011. *Essentials of Operations Management*. Harlow: Pearson Education Ltd., 353p. ISBN: 978-0-273-75242-4.

[9] MORGAN, John & BRENIG-JONES, Martin, c 2012. *Lean Six Sigma For Dummies*. Ed. 2. Chichester: John Wiley & Sons Ltd., 323p. ISBN: 978-1-119-95370-8.

[10] MARTICHENKO, Robert & GOLDSBY, Thomas J., c2005. *Lean Six Sigma Logistics*. Florida: J. Ross Publishing Inc., 301p. ISBN: 978-1-932159-363.

[11] MARTIN, Christopher, c2011. *Logistics and Supply Chain Management*. Ed. 4. Harlow: Financial Times Prentice Hall, 276p. ISBN: 9780273731122.

[12] STROH, Michael B., c2001. *A Practical Guide to Transportation and Logistics*. Ed. 2. New Jersey: Logistics Network, 184p. ISBN: 9780970811509.

[13] FRAZELLE, Edward, c2002. *World-class Warehousing and Materials Handling*. London: McGraw Hill Professional, 242p. ISBN: 0071376003.

[14] BRANDIMARTE, Paolo & ZOTTERI, Giulio, c2007. *Introduction to Distribution Logistics*. Hoboken: John Wiley & Sons Ltd., 587p. ISBN: 9780471750444.

[15] JESTON, John & NELIS, Johan, c2008. *Business Process Management*. Ed. 2. Oxford: Elsevier Ltd., 469. ISBN: 978-0-75-068656-3.

[16] HARMON, Paul, c2007. *Business Process Change*. Ed. 2. Burlington: Morgan Kaufman, 592. ISBN: 9780123741523.

ONLINE BIBLIOGRAPHY

[19] WARD, Susan, *8 Rules for Good Customer Service* [online]. Also available at: < http://sbinfocanada.about.com/od/customerservice/a/custservrules.htm>. [Accessed 04 April 2014].

[20] Investopedia, 2014, *Definition of 'One stop shop'* [online]. Also available at: <http://www.investopedia.com/terms/o/onestopshop.asp>. [Accessed 04 April 2014].

[21] MURRAY, Martin. *Cross Docking In the Warehouse* [online]. Also available at: < http://logistics.about.com/od/tacticalsupplychain/a/cross_dock.htm>. [Accessed 27 March 2014].

[22] India MART, *Pallet Racking Solutions* [online]. Also available at: <http://www.indiamart.com/godrejstoragesolutions/pallet-racking-solutions.html >. [Accessed 23 April 2014].

[23] Word of Design, *AR Pallet Racking* [online]. Also available at: <http://www.wordofdesign.co.uk/pallet-rack.htm>. [Accessed 23 April 2014].

[24] SACMA SPA, *Drive–in Racks* [online]. Also available at: < http://www.sacmaspa.com/prodotti.php?s=113>. [Accessed 23 April 2014].

[25] Cisco–Eagle, *Pallet Flow Rack Storage Systems* [online]. Also available at: < http://www.cisco-eagle.com/catalog/c-3043-pallet-flow-racks.aspx>. [Accessed 23 April 2014].

[26] Ziglift, *Pallet Storage Methods In The Warehouse* [online]. Also available at: < http://www.ziglift.com/Products/pushback.html >. [Accessed 23 April 2014].

[27] MURRAY, Martin. *Cross Docking In the Warehouse* [online]. Also available at: <http://logistics.about.com/od/tacticalsupplychain/a/pallet_WMS.htm>. [Accessed 27 March 2014].

[28] STRUPE, Mary K., 2009. Lean vs. Six Sigma. What's the difference? [online]. Also available at: < http://www.ultimus.com/Blog/bid/33875/Lean-vs-Six-Sigma-What-s-the-Difference >. [Accessed 20 April 2014].

[29] CÁDEROVÁ, K., 2010. *Optimalizace systému skladového hospodářství ve společnosti DURA Automotive Systems CZ, s. r. o.* [online]. Diplomová práce, Univerzita Tomáše Bati, Fakulta management a ekonomiky, 108 p. Also available at: http://www.portal.utb.cz>. [Accessed 20 April 2014].

[30] COLLIGNON, Joffrey, 2012. *ABC ANALYSIS (INVENTORY)* [online]. Also available at: < http://www.lokad.com/abc-analysis-(inventory)-definition>. [Accessed 22 April 2014].

[31] HAWKINS, Jefferson, 2012. *How Can 3D Modeling Improve YOUR Business?* [online]. Also available at: <http://skyhawkstudios.com/how-can-3d-modeling-improve-your-business/>. [Accessed 27 April 2014].

[32] SketchUp, *SketchUp Pro* [online]. Also available at: < http://www.sketchup.com/products/sketchup-pro>. [Accessed 27 April 2014].

[33] BOEYKENS, Stefan, 2013. *About SketchUp 2013 an the meaning of "free"* [online]. Also available at: < http://cad-3d.blogspot.sk/2013/06/about-sketchup-2013-and-meaning-of-free.html>. [Accessed 27 April 2014].

[34] Lynx Transport and Logistics, *Our History* [online]. Also available at: <http://www.lynx.ie/about.php>. [Accessed 09 January 2014].

[35] Lynx Transport and Logistics, *Storage & Inventory Management Facility* [online]. Also available at: < http://www.lynx.ie/logistics.php>. [Accessed 09 January 2014].

LIST OF ABBREVIATIONS

Approx. Approximately.

Pic. Picture

Num. Number

ETA Estimated time of arrival

POD Proof of delivery

Admin Administrator

Plt. Pallet

Docket Document

W/H Warehouse

LIST OF FIGURES

LIST OF TABLES

APPENDICES

APPENDIX PI: RIPRAN

APPENDIX PII: DRIVER SHEET

APPENDIX PIII: DISCREPANCY REPORT

APPENDIX PIV: WAREHOUSE SHEETS

APPENDIX PV: CURRENT BALANCE SHEETS

APPENDIX PVI: LYNX COD PROCEDURES

APPENDIX PVII: NON–PERFORMANCE REPORT

APPENDIX PVIII: HUB REPORT

APPENDIX PIX: TRAINING SCHEDULE

APPENDIX PX: MEDICAL DEVICE SHIPMENTS

APPENDIX PI: RIPRAN

ID	THREAT	THREAT PROB.	ID	SCENARIO	SCENARIO PROB.	TOTAL PROB.	IMPACT	RISK VALUE	ACTION
1	Small management support	20%	1.1	Unwillingness to apply proposed changes	30%	Low	High	Medium	Focus on what is important for management. Aim for inexpensive and efficient improvements.
			1.2	Poor communication with employees	50%	Low	Low	Low	Include some of the employees into communication and consultation with the management.
2	Poor cooperation between me and employees	75%	2.1	Unwillingness to follow changes	20%	Medium	Medium	Medium	Explain analysis to employees. Discuss with them the benefits they are going to gain from change implementation.
			2.2	Busy environment at the office	60%	High	Medium	High	Don't bother employees when they are under pressure. Try to talk to them when they are not too busy.
			2.3	Lack of motivation for continuous improvement	40%	Medium	Medium	Medium	Encourage management to get involved into project and notice employees who put effort into improvement process.
3	Poor knowledge and skills of employees	15%	3.1	Low knowledge of daily tasks	10%	Low	Low	Low	Explain employees exactly what information you need from them. Give them space for their own suggestions.
4	My Insufficient knowledge about processes and analysis	40%	4.1	Incorrect implementation of analysis and results	15%	Low	High	Medium	Frequent consultations, self education, searching for inspiration and practical examples.

APPENDIX P II: DRIVER SHEET

Driver :		**DRIVER SHEET 22903**			27/05/2010	15:22 *Page 1*
MICK SMITH		Truck Reg:	10 G 3642		Delivery:	3
Van Run: 99	Delivery Date: 10/05/2010	Trailer Number :			Collection:	1

FILE REF:		SHIPPER	DELIVER TO	WEIGHT	CUBE	LOAD NO. OF PKGS.	RECEIVED IN GOOD ORDER & CONDITI CONSIGNEES SIGNATURE
195036 DKT NO 12345 3rd PARTY REF.		PRIMELINE LOGISTICS ASHBOURNE IND EST ASHBOURNE CO MEATH	MR JOE BLOGGS 28 FINTAN PARK CRAUGHWELL CO GALWAY 087 2596841	0.00	0.00	2 PLTS URGENT	DATE 10/05/2010 TIME SIGN PRINT NAME
195087 DKT NO 23456 3rd PARTY REF.		SHARON LYNCH C/O CAFE LYNCH MAGNA COROSSATE PARK CLAREMORRIS CO MAYO	PRIMELINE LOGISTICS ASHBOURNE IND EST ASHBOURNE CO MEATH 01 8353000 COLLECTION	0.00	0.00	5 PLTS	DATE 10/05/2010 TIME SIGN PRINT NAME
195088 DKT NO 34567 3rd PARTY REF.		PRIMELINE LOGISTICS ASHBOURNE IND EST ASHBOURNE CO MEATH	SUPERVALU STATION ROAD LOUGHREA CO GALWAY	0.00	0.00	5 CRTN	DATE 10/05/2010 TIME SIGN PRINT NAME
195089 DKT NO 45678 3rd PARTY REF.		PRIMELINE LOGISTICS ASHBOURNE IND EST ASHBOURNE CO MEATH	SUPERVALU FR GRIFFEN ROAD GALWAY CITY 091 569870	0.00 PLS ENSURE MANAGER SIGNED DKT	0.00	1 PLTS 2 CRTN	DATE 10/05/2010 TIME SIGN PRINT NAME

Delivery	Collection	Total No. Packs	TOTAL GROSS	TOTAL CUBE	PLTS	DPLTS	CRTN	SKID	FCASE	HCASE	RCASE
3	1	15.00	0.00	0.00	8	0	7	0	0	0	0

E & O E ALL BUSINESS IS TRANSACTED UNDER THE COMPANIES STANDARD TRADING CONDITIONS. AVAILABLE ON REQUEST.

APPENDIX P III: DISCREPANCY REPORTS

DISCREPANCY FOR LANDBRID290114

Date:	29/01/2014	Lynx Transport Ltd
Checked By:	PETE	Deerpark Ind Estate
Carrier:	LANDBRIDGE	Oranmore
Entered By:	WOJTEK	Co. Galway
Trailer Number :		091-790410
Trailer Arrived:	2:10	Arr 2: :
Trailer Departed:	2:40	Dep 2: :

DOCKET NO.	CONSIGNEE	ADVISED	REMARKS
1367104	ANOCOFER ELECE	1 PLTS	NO GOODS RECIVED/REC ONLY DKT
	SHIPPER		
	CUMBRIA LOGISTICS		
4471697	HEATMERCHANTS (GALWAY)	1 SKID	REC SKID NOT PLT
	SHIPPER		
	GRUNDFOS LTD		
669543	J DUGDALE	1 PLTS	GOODS RECIVED / NOT ON MANIFEST
	SHIPPER		
	BARRY CASH & CARRY		
4471701	HURST HEATING & PLUMBING	1 SKID	REC SKID NOT PLT
	SHIPPER		
	GRUNDFOS LTD		
4471675	PRECIOUS PETS	1 CRTN	BAG TORN
	SHIPPER		
	E F S LTD		

TOTAL JOBS 5

CLASSIC DRINKS-THE CHILLI SHAKER STATION HOUSE LETTERKENNY-10 CASE-OUT OF AREA

DISCREPANCY FOR JMC290114

Date:	29/01/2014	Lynx Transport Ltd
Checked By:	BRIAN	Deerpark Ind Estate
Carrier:	LYNX TRUCK	Oranmore
Entered By:	WOJTEK	Co. Galway
Trailer Number :		091-790410
Trailer Arrived:	3:10	Arr 2: :
Trailer Departed:	4:05	Dep 2: :

DOCKET NO.	CONSIGNEE	ADVISED	REMARKS
1339771	GOODWINS LUCAN LTD SHIPPER WALKERS TRANSPORT UK	2 PLTS	NO GOODS / NO DKT RECIVED
707347	ATLANTIC CLEANING SHIPPER WIPEOUT LTD	2 CRTN	GOODS RECIVED/NOT ON MANIFEST
140128048CODEX	HSE WEST FINANCE DEPT SHIPPER CODEX LTD	1 SKID	REC SKID NOT CTN (PIC)
DULT1-20505	WESTERN HEALTH BOARD SHIPPER DSV BB	1 PLTS	CTN TORN (PIC)
93988	LUCY SIMPSON SHIPPER ALL MED AGENCIES LTD	16 CRTN	= 1 PLT (PIC)
CK00470279	AURIVO CO OP SHIPPER PROMPTO	1 PLTS	=1,5SPACES(PIC)GOODS RECIVED/NOT ON MANIFEST
401276340	ENDA KILCOMMONS SHIPPER TUFFNELLS	2 CRTN	GOODS RECIVED/NOT ON MANIFEST
1339601	ECC TEO SHIPPER MONTGOMERY	2 PLTS	=2,5SPACES(PIC)GOODS RECIVED/NOT ON MANIFEST
707349	TAUGHMACONNELL NAT SHIPPER WIPEOUT LTD	5 CRTN	GOODS RECIVED/NOT ON MANIFEST
B016280114002	DAVID FALLON MOTORS SHIPPER EXPRESS PARCELS	1 SKID	REC SKID NOT CTN (PIC)
707339	AN NEAD SHIPPER WIPEOUT LTD	2 CRTN	GOODS RECIVED/NOT ON MANIFEST

Lynx Transport operates strictly under IRHA terms and conditions. Copy available on request.

Date:	29/01/2014	Lynx Transport Ltd
Checked By:	BRIAN	Deerpark Ind Estate
Carrier:	LYNX TRUCK	Oranmore
Entered By:	WOJTEK	Co. Galway
Trailer Number :		091-790410
Trailer Arrived:	3:10	Arr 2: :
Trailer Departed:	4:05	Dep 2: :

DOCKET NO.	CONSIGNEE	ADVISED	REMARKS	
707343	SIOPA AN PHOBAILL / SHIPPER WIPEOUT LTD	1 CRTN	GOODS RECIVED/NOT ON MANIFEST	
140128011IB	CAFE TOGO FRIARS LTD SHIPPER INNOVATIVE BRANDS	9 CRTN	ITEM MISSING FROM PACKAGE (PIC)	
707333	THE FAIRGREEN HOSTEL SHIPPER WIPEOUT LTD	3 CRTN	GOODS RECIVED/NOT ON MANIFEST	
140128009CXNPS	OFFICE OF PUBLIC WORKS SHIPPER CODEX	1 CRTN	GOODS RECIVED/NOT ON MANIFEST	G
IE03415817	UNICOM GALWAY SHIPPER KPMG WATFORD	6 CRTN	REC 6 CTNS -1 PLT NOT 6 PLT (PIC)	
1340510	THERMO KING SHIPPER MONTGOMERY	2 PLTS	GOODS RECIVED/NOT ON MANIFEST	
S01229014002001	THE FISHING LODGE SHIPPER EXPRESS FREIGHT	1 CRTN	GOODS REC/CREATE LYNX DKT(PIC)NOT ON MANIFEST	
706949	TOM MONTGOMERY FURNITURE SHIPPER MR IAN FOGARTY/OFFICE	1 CRTN	NOT ON MANIFEST	
CK00470318	AURIVO CO OP SHIPPER PROMPTO	2 PLTS	BAG TORN(PIC)GOODS RECIVED/NOT ON MANIFEST	
1340299	KPH PLANT AND TOOL HIRE SHIPPER MONGOMMERY	1 PLTS	GOODS RECIVED/NOT ON MANIFEST	
000485905299	GALMAY JAMES MC MAHON SHIPPER ASSOCIATED HARDWARE PLC	1 PLTS	REC PLT NOT CTN (PIC) PLT TORN	

Lynx Transport operates strictly under IRHA terms and conditions. Copy available on request.

Date: 29/01/2014   Lynx Transport Ltd
Checked By: BRIAN   Deerpark Ind Estate
Carrier: LYNX TRUCK   Oranmore
Entered By: WOJTEK   Co. Galway
Trailer Number :   091-790410
Trailer Arrived: 3:10   Arr 2: :
Trailer Departed: 4:05   Dep 2: :

DOCKET NO.	CONSIGNEE	ADVISED	REMARKS
CK00470280	AURIVO	1 PLTS	GOODS RECIVED/NOT ON MANIFEST
	SHIPPER		
	PROMPTO		

TOTAL JOBS 23

DISCREPANCY FOR PALLTRANS

Date:	29/01/2014	Lynx Transport Ltd
Checked By:	ARRON	Deerpark Ind Estate
Carrier:	LYNX TRUCK	Oranmore
Entered By:	WOJTEK	Co. Galway
Trailer Number :		091-790410
Trailer Arrived: 23:00	Arr 2: 2:30	
Trailer Departed: 0:10	Dep 2: 3:00	

DOCKET NO.	DELIVER TO	ADVISED	REMARKS
ALLTRANS DELIVERIES A/C			
1844512	UNIVERSITY COLLEGE	2 CRTN	REC 1 SKID + 2 CTNS NOT 3 CTNS (PIC)
	COLLECT FROM TEKNO SURGICAL	1 SKID	
Total Jobs For ALLTRANS DELIVERIES A/C 1			
BEATTIES TRANSPORT LTD			
722960/1	62635	4 PLTS	= 6 SPACES(PIC) OIL SPILL ON TOP OF CARDBOARD(PIC)
	COLLECT FROM BEATTIES		
Total Jobs For BEATTIES TRANSPORT LTD 1			
REDHEAD INTERNATIONAL			
3N40118303	CLARENCE O'FLAHERTY	2 PLTS	CTNS BUSTED (PIC)
	COLLECT FROM REDHEAD INTERNATIONAL		
Total Jobs For REDHEAD INTERNATIONAL 1			

APPENDIX P IV: WAREHOUSE SHEETS

Pick list No.16121

For CIVI01 COVIDIEN

Part Number	Location	Row	Col	Qty	Date	Order No.	Comment
10025355_01/03/14					03/12/13	20131203112	
	N03	0	1	25.00			
10049582 12/12/13					13/12/13	20131213193	
	O13	4	2	162.0			
10079846 28/11/13					29/11/13	20131129171	
	O02	0	1	100.0			
4-070523-00 01/04/14					19/12/13	20131219183	
	M06	0	3	120.0			
4-076200-00 13/11/13					14/11/13	20131114184	
	O03	4	3	48.00			
4-076203-00 07/11/13					07/11/13	20131107175	
	O03	2	3	56.00			
4-076477-00 14/10/13					14/10/13	20131014164	
	N04	0	3	429.0			
4-076929-00 08/01/14					09/01/14	20140109174	
	S14	3	2	120.0			

W A R E H O U S E   R E C E I P T   N O T E

Delivery Note no.   20805

Consignor   Consignee
COVIDIEN
MICHAEL COLLINS ROAD
MERVUE
GALWAY

Part Number	Date	Qty	Order No.	Comment	Location	Row	Col	Qty
10001545	24/01/14	200.00	2014012414 5343					
					J13	0	1	50
					J13	0	2	50
					J13	0	3	50
					J14	0	1	0
10005187	24/01/14	200.00	2014012414 5443					
					N03	1	1	100
					N03	2	3	100
4-071469-00	24/01/14	112.00	2014012414 5730					
					M02	0	2	112
					O02	0	2	63
4-076226-00	24/01/14	4.00	2014012414 5550					
					O06	1	1	4
4-076262-00	24/01/14	100.00	2014012414 5417					
					M12	0	3	96
					O12	3	4	4
4-076671/72U24/0	24/01/14	54.00	2014012414 5532					
					M07	4	1	54
4-076673-00	24/01/14	120.00	2014012414 5504					
					N04	1	3	120
G-060756-00	24/01/14	10.00	2014012414 5613					
					R04	2	3	10
QUALITY FI 041	24/01/14	1.00	2014012414 5813					
					P07	3	1	1

Cartons	Pallets	Weight	DIMs
0.00	1	0.00	

[RECEIVED IN GOOD ORDER AND CONDITION UNLESS OTHERWISE STATED.]

[Signed: _____]   Print Name:

[Date: _____]   [Time: _____]

Warehouse Initials:

APPENDIX P V: CURRENT BALANCE SHEETS

Part Number	Description			PO	Quantity	Pallets	Min	Max
	Location	Row	Col	Comments				
BEEFY CRUNCH 15KG	MASSBROOK	BEEFY CRUNCH 15KG						
	H02 0		1	65				
	H02 0		2	61	BBD 21/12/2014	7 BAGS DAMAGED		
	H02 0		3	62	BBD 21/12/2014	7 BAGS DAMAGED		
	H02 1		1	65	BBD 21/12/2014	7 BAGS DAMAGED		
	H02 1		2	65	BBD 21/12/2014	7 BAGS DAMAGED		
	H02 1		3	65	BBD 21/12/2014	7 BAGS DAMAGED		
	O10 0		1	20	BBD 21/12/2014			
	O10 0		2	65	BBD 21/12/2014			
	O10 0		3	65	BBD 21/12/2014			
				Part Total	533	9		
CH RABBIT ROYAL	CHUDLEYS RABBIT ROYAL 15 KG							
	O12 0		3	29				
				Part Total	29	1		
CHICKEN/RICE15K	MASSBROOK	CHICKEN / RICE15KG						
	O11 0		1	45				
	O11 0		2	45	BBD 07/01/2015			
	O13 0		2	2	BBD 07/01/2015			
	O13 0		3	45	BBD 07/01/2015			
				Part Total	137	4		
G/H SPRINT 15KG	M/BROOK G/H SPRINT 15KG							
	N12 0		1	12				
	N12 0		1	65	BBD 06/12/2014			
	N12 0		2	65	BBD 06/12/2014			
				Part Total	142	3		
GUSTO ADULT10KG	GUSTO ADULT CHICKEN 10KG							
	N10 0		2	8				
	N13 0		1	60	BBD 25/09/2014			
	N13 0		2	60	BBD 25/09/2014			
	N13 0		3	40	BBD 25/09/2014			
				Part Total	168	4		
M/BROOK MUESLI	MASSBROOK MUESLI ADULT 15KG							
	N10 0		3	65				
				Part Total	65	1		
M/BROOK SILVER	MASSBROOK SILVER 15KG							
	H03 0		1	65				
	H03 0		2	65	BBD 06/12/2014	2 BAGS DAMAGED		
	H03 0		3	65	BBD 06/12/2014	2 BAGS DAMAGED		
	N08 0		1	65	BBD 06/12/2014	2 BAGS DAMAGED		
	N08 0		2	65	BBD 06/12/2014	2 BAGS DAMAGED		
	N09 0		1	65	BBD 06/12/2014	2 BAGS DAMAGED		
	N09 0		2	56	BBD 06/12/2014	2 BAGS DAMAGED		
				Part Total	446	7		
MASS/B COMPL15K	MASSBROOK COMPLETE 15KG							
	H03 1		1	65				
	H03 1		2	65	BBD 05/11/2014			
	H03 1		3	65	BBD 05/11/2014			
	H04 0		1	65	BBD 05/11/2014			
	H04 0		2	65	BBD 05/11/2014			
	H04 0		3	65	BBD 05/11/2014			
	H04 1		1	65	BBD 05/11/2014			
	H04 1		2	65	BBD 05/11/2014			
	H04 1		3	65	BBD 05/11/2014			
	H04 2		1	30	BBD 05/11/2014			

Part Number	Location	Row	Col	Description		PO Comments	Quantity	Pallets	Min	Max
	H04	2	2	30		BBD 05/11/2014				
	H04	2	3	30		BBD 05/11/2014				
	O08	0	1	35		BBD 05/11/2014				
	O08	0	2	62		BBD 05/11/2014				
	O09	0	1	35		BBD 05/11/2014				
	O09	0	2	1		BBD 05/11/2014				
				Part Total		808		16		
MASS/B PUPPY/JR				MASSBROOK PUPPY JUNIOR						
	O14	0	1	20						
				Part Total		20		1		
TOP CAT 15KG				MASSBROOK TOP CAT 15KG						
	O14	0	2	6						
	O14	0	2	20		BBD 25/10/2014				
				Part Total		26		2		
TRIAL & WORKING				MASSBROOK TRIAL AND WORKING DOG 15KG						
	N14	0	1	32						
	O11	0	3	60		BBD 06/12/2014 5 BAGS SHORT AT ARRIVAL				
				Part Total		92		2		
				Company Total		2466		50		

APPENDIX P VI: LYNX PROCEDURES

LYNX COD PROCEDURE

The following is a Procedure put in place for training Admin Staff on COD's

LYNX COD PROCEDURES

> ALL CODS REQUEST ARE TO BE LOGGED IN LYNX COD'S RED FOLDER. YOU WILL FIND THIS FOLDER IN THE TOP OFFICE.

> FILL IN THE DATE OF REQUEST.

> WHO TOOK THE CALL (LYNX PERSON).

> THE COD AMOUNT.

> WHERE WE COLLECTED THE COD (COD FROM).

> CHECK WITH THE CABIN, WHICH DRIVER IS COLLECTING THE COD AND IF THEY HAVE A RUN NUMBER PLEASE, FILL IN.

> THE PERSON WHO IS SCANNING THE DOCKET MUST FILL IN WHO RECEIVED THE COD.

> FILL IN THE AMOUNT OF THE COD YOU RECEIVED.

> MARK IN EITHER BOX WAS IT A CHEQUE OR CASH.

> PUT THE DOCKET NUMBER THAT RELATES TO THE COD.

> DECLAN WILL SIGN WHEN HE HAS RECEIVED THE COD (ACCOUNTS SIGNATURE).

> IF YOU HAVE ANY COMMENT PLEASE FILL IN E.G. UNDER PAYMENT ETC.

> A COPY OF YOUR COD COLLECTION REQUEST MUST BE LEFT IN THE BACK OF THE FOLDER, THIS IS FOR THE PERSON WHO IS SCANNING TO ATTACH THE COD TO IT AND LEAVE IN SMALL OFFICE IN GREEN PETTY CASH TIN.

DISCREPANCY PROCEDURES

Goods Received Damaged

- Establish nature & extent of damage – decision to be made whether goods should be delivered to customer
- Speak with trunking driver – establish the following:
  - Were goods loaded damaged by sender (ie: JMC/Palltrans)?
  - If yes, were they signed for as damaged by the driver?
  - Did the damage occur in transit to Lynx?
  - If yes, were the goods insufficiently restraint for transit? How? Elaborate...
- Take detailed photos of Label 1st & the damages to freight
- Discrep to customer details of the damage & advise photos will be sent on later in morning
- Notify driver, or leave a post-it with run that goods have been noted as damaged on receipt into Lynx & customer ie: JMC/Landbridge have been informed

Goods Received – oversized / shortages etc...

- Take photos of freight (address label 1st then freight)
- Oversized pallets – use measuring aisle/stick/gauge as back up
- Discrep to customer details of the discrepancy & advise if pic will be available
- Amend job screen so that accounts price job correctly
- Amend delivery docket also so that customer signs for correct description/qty of goods.

Goods Fell Off Trailer / goods damaged when Un-Loading

NOTE: The following must be carried out by the Supervisor on duty

- Take a detailed report as to what happened
- How were goods loaded on trailer on receipt into Lynx
- Who was the forklift driver?
- Photos to be taken of damaged goods – before off loading (if still on truck)
- In the event of a dangerous pallet, the supervisor must first inspect & establish the safest way possible to un-load freight in accordance to Health & Safety regulations.
- What to comment on Discrepancy depending on situation:
  - *Option A:* Goods fallen over in truck on arrival at Lynx – pic taken before off load. Advise if goods are out on delivery or on hold
  - *Option B:* Goods badly loaded – pic taken before off load – Advise if goods are out on delivery or on hold
- Detailed report needs to be passed to the day shift so it can be followed through & reported to customer

No Goods Received

- Check sheet marked accordingly with comments
- Discrepped to customer as 'No Goods Received'
- Advise on discrep also if a delivery docket was received or not – 'No Goods Rec / Rec DKT Only'
- If a docket was received this must be left in the No Goods envelope
- Job will later be deleted from IFMS when C&D Report is being done
- Where a docket only is received (job not manifested either) this must be discrepped in extra comments on discrepancy report as '123456 Docket received only-No Goods' Docket then to be left in the No Goods envelope for processing.

Goods Received – On Hold, No ID, No Dkt received

Reasons to HOLD - Goods received in Lynx with:

- ➢ Insufficient Address & No phone number to contact
- ➢ No Docket rec & insufficient information that we cannot tell who the customer is.
- ➢ Goods received with no delivery docket & we have been told in past not to deliver freight unless we have customers own paperwork
    - Details & photos to be taken of goods – photos of any & all labels attached to goods
    - On Hold label to be attached to freight stating (1) date (2) customer received from (3) any other information necessary
    - Discrepped to customer & advised also On Hold awaiting further information
    - Move freight to On Hold bay in warehouse

UNLOADING PROCEDURES

The following procedures are in place & explained to all involved in the w/h in Unloading Vehicles

Safe Unloading Procedures for Trailers in Yard

- Drivers: Park in a safe area for unloading of trailers
- Drivers: Truck must be turned off with all breaks applied and chocks used if need be
- Drivers: Check for bulges in curtain before opening
- Drivers: Open curtains and tie curtains back

Forklift Driver in yard:

1. Check to see these is no loose debris on the ground that the fork lift will be travelling over or uneven surfaces
2. Check that the pallet you are lifting down is secure and wrapped and that there is no loose objects or cartons on top of the pallet
3. Please use appropriate Loading Equipment
4. When unloading, start at rear of the trailer and work forward
5. Unload top deck first, if you have any questions regarding pallets on top deck ask the driver
6. The trailer cannot be moved once unloading from the side has commenced
7. If you find that there are pallets on the trailer leaning over or not wrapped securely enough to unload, contact your supervisor immediately
   Your supervisor will take photos of the pallet and advise you on the most appropriate course of action

Forklift driver in warehouse:

1. Ensure dock leveller is secure before driving onto it

2. Driveway down to ramp is clear. ie no pallets in bays protruding either side into drive way

3. Any pallets received in bad condition ie not wrapped properly/falling over etc must be left to one side so they can be secured properly

4. One way pallets or damaged pallets must be put on standard plts for reloading

A full discrepancy and photos of this pallet must then be sent back to supplier.

For further information on safe unloading can be got from the Lynx Health & Safety Statement, copy in Administration Office

APPENDIX P VII: NON–PRFORMANCE REPORT

Attachment: non performce 30-05-2012.xlsx

29/05/2012					
JOB REF	**DRIVER**	**CUSTOMER**	**DELIVERY ADDRESS**	**REASON FAILED**	**ACTION TAKEN**
411308	M FARRELL	LANDBRID	FLETCHERS B/SLOE	DRIVER OUT OF TIME	
411315	M FARRELL	DSV	O COLOHAN	DRIVER OUT OF TIME	
411314	M FARRELL	DSV	O COLOHAN	DRIVER OUT OF TIME	
411381	M FARRELL	JMC	O COLOHAN	DRIVER OUT OF TIME	
WS17935	A LAINE	JMC	LORRAINE KING	3 OUT OF 8 CTNS ONLY LOADED	
2120471	N O HARA	JMC	JOYCES TUAM	PUT ON HOLD	
1502157	A LAINE	ALLTRANS	EVERGREEN MOYCULLEN	HAD A FUNCTION IN PROGRESS COULD NOT TAKE DEL	
4.22E+09	N O HARA	TWOWAY	WINDOW SEAL	ON HOLD UNTIL CUSTOMER MAKES CONTACT	
4380580	N O HARA	LANDBRID	DUNNES ROSCOMMON	DEL B4 3 PM	

APPENDIX P VIII: HUB REPORT

Hi all

Please see details regarding freight count for Pall trans below;

We have also:

Lx BEA – 1 plt – Lx ALT

LX COR – 5 plt – Lx JMG

Lx COR– 1 pt – LX DEF

MEMBER:	FREIGHT FOR THE HUB EX. LYNX	DUBLIN + NATIONWIDE COLLECTIONS MADE ON BEHALF LYNX THROUGHOUT THE DAY
ALT:	5 CTNS, 3 SKIDS, 21 PLTS	1DPLT + 19 PLT + 1 CTN
DEF:	3 PLTS	
COR:	1 PLT	4 PLTS
BEA:		1 SKID
JMG:	6 PLTS	
OLY:	1 PLT, 5 CTNS	1 PLT
LAC:	1 PLT	
RED:		
WAT:	6 PLTS	
REX:		

APPENDIX P IX: TRAINING SCHEDULE

TRAINING SCHEDULE - IFMS - IVETA ROSOVA

TRAINING AREAS FOR IFMS				TRAINING RECEIVED	TRAINED BY
Scanning					
El Trax Segregating dockets Index by Barcode	☐	Manual indexing Browsing indexed dockets	☐	☐	☐
PS eDRS - Twoway Segregating dockets Scanning procedure	☐	Updating signatures on www.aramex.net Uploading images via POD Intergrator	☐	☐	☐
RETURNING CUSTOMER PODS					
Twoway envelope	☐	DSV PODs Palltrans	☐	☐	☐
IFMS					
Work Area/ Job screen - entering bookings Logging/ amending jobs Emailing jobs	☐	Printing docket/labels/barcode Apllying Comments	☐	☐	☐
Job screen- Reporting Non- perfomance deliveries / unassigning jobs Job taken off the run Schedule changed Customer advised	☐	Apply Surcharge if nessesary Urgent box applies	☐	☐	☐
Customer manifest Applying customer ref Printing dockets / labels	☐	Searching jobs	☐	☐	☐
Discrepancy report from Manifest on Lynx freight collected throuth the day **Amend /reprint the docket** ☐ **Customer advised** ☐				☐	☐
Print Documents Coll/Delivery dockets Barcode Labels	☐	Manifest by Customer manifest	☐	☐	☐
3rd Party Integration to/from IFMS **OBS customers**	☐			☐	☐
PALLTRANS STRUCTURE / DUBLIN COLLECTION					
Palltrans Board arrangment Booking collections	☐	Collection report N 2 N shipment	☐	☐	☐
Dublin regular collection via Iggy Madden Time schedules	☐	Customer manifest	☐	☐	☐
Excel Training					
Basic training Creating tabels Basic Formulas	☐	Formating Cells Layout arrangement	☐	☐	☐

APPENDIX P X: MEDICAL DEVICE SHIPMENTS

MEDICAL DEVICE SHIPMENTS

This procedure outlines all activities that should be taken in relation to the collection / delivery of medical devise shipments.

Before embarking the driver must ensure the following is adhered to:

- He / she is in their company uniform and is neat and tidy
- The driver must ensure that they practice good personal hygiene and that hands are properly washed following any bathroom breaks
- Driver must ensure they perform their usual vehicle and trailer inspection checks ensuring that their vehicle is clean and free from leaks / spills or odors.
- Ensure you have enough Diesel for the journey
- Ensure that you have your locks for all vehicle doors
- Ensure that you have the appropriate paperwork

On collection of the goods:

- Driver must inspect each pallet carefully for damages. All damages must be noted on the delivery paperwork and brought to the attention of the shipping location before departure.
- Driver must also report all damages noted immediately to the Lynx office and their usual contact in the Customers Company.
- Driver must ensure that qty / lot number descriptions match his/her paperwork. If there is any chance this must be noted on the shipment paperwork and the Lynx Office and their usual contact in the Customers Company.
- Driver must collect only from designated shipping area.
- Do not collect any additional load from 3rd party – unless approved via the shipping supervisor / Lynx Supervisor. You only have permission to collect the goods per the paperwork issued to you.
- Do not split sterile load numbers unless authorized to do so.
- Driver must ensure his / her load is save to travel
- Apply restraints where necessary – ensure you do not damage any freight when doing so.

- Use the locks provided to secure the vehicle back doors.
- Inform the office / customer of any delays in departure time.

Journey:

- Complete your journey from Collection point to Delivery point.
- Abide by the Road Traffic Act
- Do not carry unapproved passengers
- Do not make any unscheduled stops
- Contact the office immediately of you need to make an unscheduled stop
- Always park your vehicle in a safe & secure location

Arrived at destination:

- Driver must ensure he/she delivers to the correct location
- Do not deviate from the delivery location without first checking with the Lynx Office or your usual contact at the customer location.
- During off load, driver must again be vigilant and note any damages
- Ensure that your paperwork is signed correctly, ie: Signature Printed, Dated and Timed

Upon completion of job:

- Report back to office for Driver Debrief

Repeat the process for each shipment