

**The impact of public holidays to the
distribution logistics in the paper industry.
Case: Stora Enso Oyj Imatra Mills**

LAB University of Applied Sciences

Bachelor of Business Administration, Degree Programme in International Business

Thesis 2020

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Abstract

Author(s) Misukka, Alisa Ida-Maria	Publication type Bachelor's thesis	Completion year Autumn 2020
	Number of pages 42	
Title of the thesis The impact of public holidays to the distribution logistics in the paper industry. Case: Stora Enso Oyj Imatra Mills		
Degree Bachelor of Business Administration, Degree Programme in International Business		
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Abstract <p>The significance of this research study was to investigate the impact of national public holidays in Finland to the distribution logistics in the paper industry. The work was commissioned by Stora Enso Oyj Imatra Mills. The information was gathered from literature sources of journals, articles, books, taken from the internet and by interviewing experts in the field of logistics and supply chain management.</p> <p>This research was executed by using a qualitative research method. This thesis study as well followed the guidelines of deductive research. The aim of the study was to concentrate to examine the practices of distribution logistics during festive seasons in Finland. The case company of this thesis was an essential part of the study. Therefore, there was a high importance to concentrate to the investigation of the distribution of consumer packing board reels manufactured by Stora Enso Oyj Imatra Mills. The consumer packing board reels are distributed primarily by rail-, road and sea freight, which were the investigated areas of this study.</p> <p>The literature of lean management was used as the theoretical framework of this study. Lean management was utilized in order to outline the theoretical principles of the methodology and to apply them to the gathered empiricism. Based on the gathered data and conclusions made, it was stated that the national public holidays in Finland do have an effect to the overall distribution logistics in the paper industry. Further research will be needed if the theme in question would be examined more intensively among other industries.</p>		
Keywords Stora Enso Oyj, Steveco Oy, VR-Group Ltd, logistics, lean management, national public holidays, consumer packing board reel		

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Appendix 1. Research questions of the enquiry

1 Introduction

1.1 Background of the study

These days logistics has a strong influence on both organizations as well as on consumers. The aim of an effective business logistics is to make both organizations leaner and more profitable, which results in increased customer satisfaction. The goal is to make the overall flow of logistics in the distribution chain as efficient as possible. An effective flow of goods generates value for corporations by improving the collaboration of suppliers and distributors. Both the dialogue and cooperation are key factors in order to optimize the quality control, information flow and the efficiency rate. (Christopher 2011.)

Logistics stands for the overall process of managing all the resources within an organization. The resources of a corporation are acquired, stored and transported to their final destination. Managing logistics requires identification of prospective distributors as well as suppliers and determines both their accessibility and effectiveness. The main goal of managing logistics is to have the perfect amount of resources or an input at the right time. Thereby, a good is distributed to a right destination, at the right quality as well as at the agreed time. Customers can be either internal or external business partners. (Waters 2009.)

The ultimate goal is to make the flow of goods always to stay constant and to avoid uncertainties that might arise at any point. However, during certain periods within a year, majority of organizations confronts defects in their operational chains of logistics. Most of the defects and fluctuations tend to appear during national public holidays and other special days within a year. (Waters 2009) (Barlett 2007.)

Transportation displays a major role balancing the possible factors within the chain of distribution logistics. Hence, this study is intended to investigate the impact of national public holidays in Finland to the distribution logistics in the paper industry. This bachelor thesis concentrates to examine the areas of rail, road and port operations regarding distribution logistics. (Jonsson 2008) (Barlett 2007) (Coyle 2015.)

The case company of this research is Stora Enso Oyj Imatra Mills, which operates in the industry of paper and packing goods. The mill produces consumer board, pulp and plastic coating. The greatest demand is in the consumer packing board goods. The consumer packing board goods in question are mainly distributed in the form of reels. The case study of this thesis focuses on to investigate the distribution of the consumer packing board reels in question. The case company is used as an example to illustrate whether the national public holidays in Finland have an impact to the overall chain of distribution logistics. (Stora Enso Oyj 2020).

The hypothesis of this study predicts that the national public holidays in Finland do have an effect to the overall distribution logistics. This thesis follows qualitative research methods, since the research topic is investigated in order to get a better understanding of the underlying reasons as well as motivations of the research topic. The analysis of the study is classified as non-statistical and the data collection will be executed by in-depth open and semi-structured interviews. The interviews are executed in the form of an enquiry for selected the experts of logistics. The experts represent the logistics group of Stora Enso Oyj Imatra Mills, Steveco Oy in Mussalo and VR-Group Ltd. These selected experts are interviewed separately in order to explore the topic intensively and to get more perspective of the topic from diverse viewpoints.

1.2 Structure of the study

The study begins with an introduction to the research topic by providing background information and some premier definitions according to the research. The following chapters will define the major objectives, delimitations as well as limitations of this study. The case company together with its business organizations are then introduced, which is followed by outlining the theoretical framework of the research. Thereafter, the empirical part is presented together with the research methods chosen. Next, the results of this thesis study are illustrated together with the gathered empiricism and applied to the theoretical framework chosen. In the end of the study, reliability as well as validity are justified, followed by the conclusion of the thesis. Lastly, references are stated and the research questions of the enquiry presented in the form of an appendix 1.

2 Scope of the thesis

This part of the report will discuss about the scope of the thesis. The operations in the chain of distribution logistics may vary between industries and enterprises. Therefore, this section will deliver the clarified objectives, delimitations and limitations to this specific thesis research.

2.1 Objectives

The main objective of this thesis is to investigate the impact of national public holidays in Finland to the overall distribution logistics. Second objective of the study is to investigate and understand the feasibility of the research question, hypothesis and the theme of topic. Another purpose is to comprehend the instability of logistics occurring during festive seasons. In addition, the aim of this research is to uncover prevalent trends in thought, opinions and actions among logistics and supply chain management during these deviant periods within a year.

The case company of this study is Stora Enso Oyj Imatra Mills. The target is to investigate the distribution of the consumer packing board reels produced by the mill. The flow of the consumer packing board reels is examined from three different point of views. These three different perspectives are conversed as the empirical data is gathered by interviews. The interviews focused on to the logistics group of Stora Enso Oyj Imatra Mills, Steveco Oy in Mussalo unit and to VR-Group Ltd. Thus, the reels concerned are researched as a cargo distributed as rail, road and sea freight. (Coyle 2015.)

2.2 Delimitations

When it comes to the delimitations of the study, only the flow of consumer packing board reels manufactured by Stora Enso Oyj Imatra Mills are investigated. The reels in question are distributed domestically as well as to foreign countries. This study only examines the distribution chain taking place in Finland. The research does not focus on to the operations occurring after the border of Finland is crossed. The main focus is to examine the instabilities in the distribution flow in Finland engendered by the Finnish national public holidays. The investigated distribution modes of transport included to the study cover railway-, road and sea freight. The investigation of air cargo is left out, since only few reels are distributed by air freight due to as an example, its rather high expenses. The distribution by railway is only conducted by VR-Group Ltd. The truck cargo distributed from the mill is arranged by subcontractors of Stora Enso Oyj Imatra Mills. The subcontractors of road logistics are not compared between one another, since it is not regarded to be relevant according to this

specific study. Hence this research does not address specific logistics companies distributing the truck cargo concerned. Also, the ships containerized et cetera are as well addressed only as port operations; no certain shipping corporations are stated. Stevedco Oy is the main port operator for the consumer packing board reels examined and is the only port operator providing full logistics services that is included in this thesis.

The national public holidays researched only cover the Finnish national public holidays. Hence, for an example, the national public holidays of the Sámi people are not included to the study. The investigated national public holidays are New Year's Day, Epiphany, Good Friday, Easter, Easter Monday, The First of May, Ascension Day, Pentecost, Midsummer Eve, Midsummer, All Saints' Day, Independence Day, Christmas Eve, Christmas Day and Boxing Day. Even though both Midsummer Eve and Christmas Eve are not classified as official national public holidays, most Finnish people tend to not work during these days. Therefore, there is a possibility of a change during the stated peak seasons when it comes to in example, to the concern of the opening hours of certain organizations. For an example, during festive seasons the all-encompassing operations including the opening hours of harbours do differ from the ordinary. (Ministry of the Interior Finland 2020.)

Another delimitation determining the operations of this thesis is the method of data collection. This study gathers empirical data, which is aggregated from books, journals, articles, observations, the internet and by interviews. In this research, in-depth open and semi-structured interviews are used in order to receive unique and personal responses from the interviewees. Also, by using such as methods of interviewing, it gives the author more flexibility to explore the topic more intensively.

The study follows qualitative research method as well as deductive research. Therefore, the study includes a hypothesis. The hypothesis of the study predicts that the national public holidays in Finland do have an impact of the overall distribution logistics. The hypothesis as well follows the guidelines of deductive research method, and hence, is based on the existing theory.

The theoretical framework of this thesis follows the principles of lean management. At first, the theoretical framework is examined which is followed by the collection of empirical data by interviews. Afterwards, the empirical data gathered is analysed and applied together with the theoretical framework. The aim is to reason the study from a specific hypothesis to general assumption, that might be applicable among other similar industries. The theoretical framework will be later listed and clarified on its own section.

2.3 Limitations

This section of the thesis determines the limitations of the study. The case company Stora Enso Oyj Imatra Mills directed the author when it came to the contact persons relevant for the study. The sample size for the statistical measures included three different aspects from three different interviewees. The size of the sample in the study is based on open and semi-structured interviews. The people interviewed for this research are a part of the empirical study and hence, an essential component of the case study investigation used in this thesis. The people interviewed are experts in different parts of the distribution chain concerning the investigated consumer packing board reels manufactured by Stora Enso Oyj Imatra Mills. The sample size of the study was not overly wide, but the quality regarding the information received from the interviewees in question was unquestionably desirable. The participants of the interview were experts in their own sectors in the field of logistics.

Similar research had not been made before, but similar cases and theories were found. Such as theories as well as case examples are applicable to the study in order to gain a wider understanding of the overall research subject. The access to the researched data was rather limited, but it did not have an effect on the flow, reliability or validity of the study. No conflicts or other sources of bias were confronted during the study. The overall flow of the thesis process was stable and consistent from the beginning to the end.

3 Case company: Stora Enso Oyj Imatra Mills

3.1 Case company description

The case company of this research is Stora Enso Oyj Imatra Mills. The mill was founded in 1935 and is located in southern Finland. The mill consists of two production units: Kaukopää and Tainionkoski. Stora Enso Oyj Imatra Mills produces consumer packing board, pulp as well as plastic coating. The mill is one of the largest consumer packaging board mills in the world. This study concentrates to research the distribution of the consumer packing board that is produced annually approximately 1 195 000 tonnes. The consumer packing board is packaged into reels, which are addressed in this thesis. (Stora Enso Oyj 2020.)

The case example of Stora Enso Oyj Imatra Mills is investigated as an example to illustrate how the national public holidays in Finland affect to the overall flow of the consumer packaging board reels distributed. The consumer packing board reels are distributed mainly by trains provided by VR-Group Ltd, by trucks and by sea bulks. Also, some reels are distributed by aircraft, but this thesis does not focus to such as transportation method due to remarkably low usage of such as distribution method.

The aim of the case company is to establish a concrete case example how the public holidays in Finland pertain to the distribution flow of consumer packing board reels. The study aims to find explanations for the phenomenon by data gathering from interviews and from literature examined. As the consumer packing board reels are investigated during contemporary periods within real life context, it provides a better insight to the study of the phenomenon obtained. The phenomenon is both broad and multifaced, which requires diverse perspectives to the study. Hence, the author interviewed three experts of logistics operating in three different units. The logistics experts interviewed are a part of the mill's distribution chain. Participated corporations regarding the empiricism include the logistics group of Stora Enso Oyj, VR-Group Ltd and Steveco Oy in Mussalo.

3.2 Investigated sectors regarding the case company

The investigated sectors of this study cover three corporations: VR-Group Ltd, Stora Enso Oyj and Steveco Oy. The chosen areas were examined by interviews. The three organizations in question are the parties involved with majority of the manufacturing and distribution operations. The distribution chain initiates from Stora Enso Oyj Imatra Mills, is carried by VR-Group Ltd arriving to Steveco Oy in Mussalo to be stuffed, containerized and after, forwarded towards final destination. Therefore, all sectors included to the study are highly remarkable concerning the overall distribution chain of the consumer packing board reels.

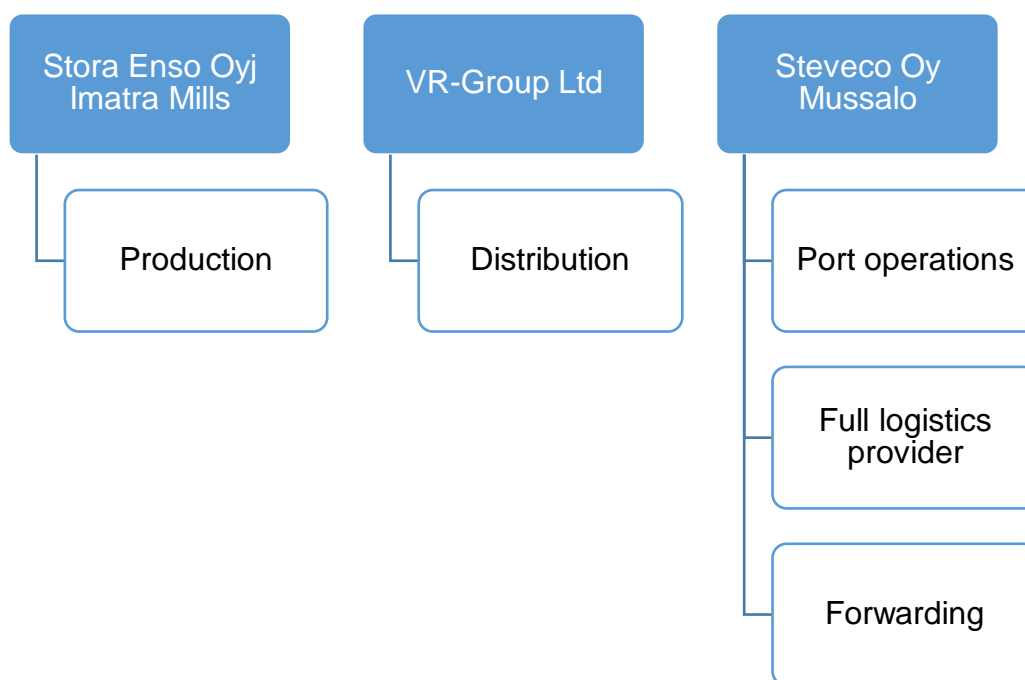


Figure 1. The investigated organizations of the research

The three sectors presented provide an encompassing overview of the major parties in the distribution chain in a chronological order. The stated formula expresses the most frequent chain on transactions of the consumer packing board reels. Such as formula is a part of the empirical framework of the study.

3.2.1 Stora Enso Oyj Imatra Mills logistics group

The logistics group of Stora Enso Oyj Imatra Mills is part of the Stora Enso's logistics sector. The logistics group is involved with daily operations concerning the overall logistics operations of the mill. Main tasks of the logistics group are regarded to be planning, forecasting and communicating with diverse parties. The goal of the group concerned is to make the flow of logistics as simple, efficient and fluent as possible.

3.2.2 VR-Group Ltd

VR-Group Ltd is a Finnish freight logistics company. It is owned by Finnish Railways, VR-Group Ltd, and is a part of VR-Group's Pohjolan Liikenne road services division. VR-Group Ltd carries cargo by trucks and train throughout Finland. Now, VR-Group Ltd has a contact law monopoly when it comes to railway services. However, under present conditions it seems to exemption for competition in 2024. This study will only focus to the rail freight provided by the organization in question. (VR Transpoint 2020.)

3.2.3 Steveco Oy

Steveco Oy is a corporation providing port operations and full logistics services. The corporation offers a wide scale of all warehousing, stuffing and third-party logistics services. The corporation conducts their business operations to business clients both in Finland and internationally. This study concentrates to the investigation of Mussalo unit in Kotka, where the distributed consumer packing board reels are unloaded from trucks, wagons or containers. After, the reels are mainly containerized, unitized and distributed forwards. The Steveco Oy terminals are regarded to be somewhat the most reliable, safest as well as the most efficient ports within the region examined. (Steveco 2020) (Businesswire 2017.)

4 Theoretical framework: Lean management

This thesis study follows the principles of lean management as the theoretical framework. The methodology of lean management is a popular tool used especially in the fields of manufacturing, logistics and supply chain management. Lean management stands for building a stable organization that evolves constantly and helps to identify actual problems and removing them. The continuous improvement of the cycle relies on identifying opportunities in the workflow, planning improvements, implementing possible changes and finally reviewing the changes made. The priority of the methodology is value creation. The concept eliminates all defects by innovative thinking without sacrificing anything regarded as necessary.

The theoretical framework is used to give perspective to the study regarding the empirical analysis. Lean management guides the study for new knowledge and hence, the research does not test any previous knowledge. The tool of lean management helps in the analysis of the empiricism by providing contextual linkages. The framework in question may also contribute some possible examples of correlations of the gathered primary data. The linkages between lean management and the case company are categorized in the end of the study. (Singh-Kushwaha et al. 2010.)

4.1 Lean management

In the sector of logistics, lean management is a tool which delivers value and optimizes workflows. The core of lean management is to recognize, as well as evaluate all activities that are classified as waste in the chain of a supply and distribution activities. Hence, the overall goal is to increase the efficiency of both product dispatch and flow. Such as phenomenon is applicable to the case study executed in this thesis. The methodology can be applied to distribution operations besides the supply and manufacturing activities. (Wronka 2017.)

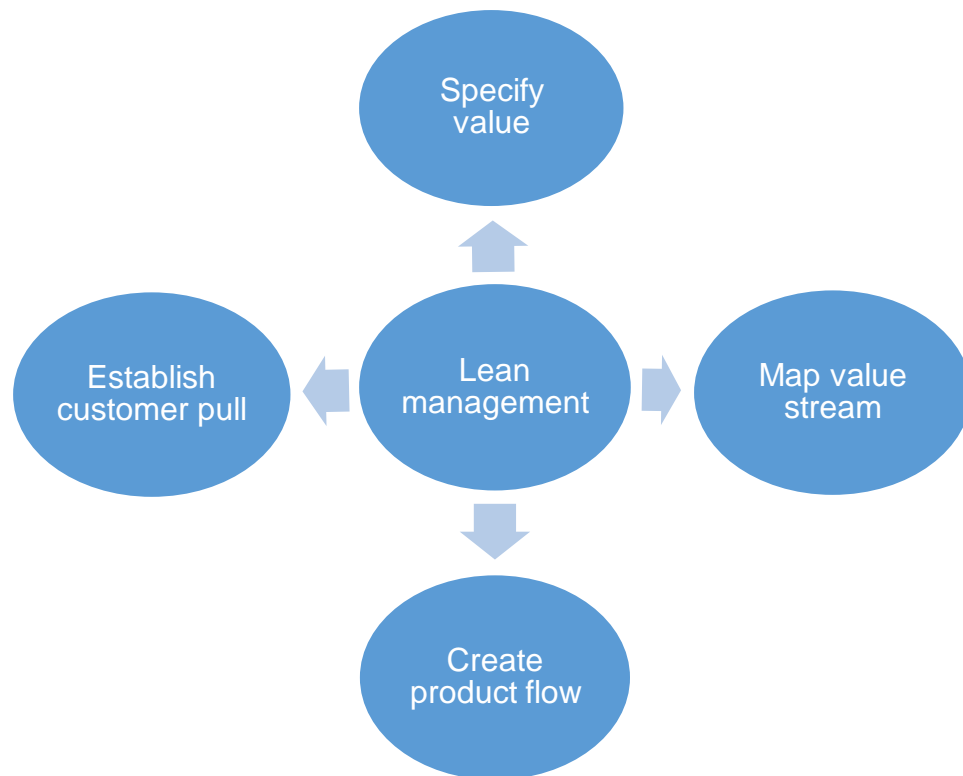


Figure 2. The framework for lean management (Wronka 2017.)

The framework of lean management contains specifying value, mapping values stream, creating a product flow and establishing a customer pull. Such as sectors create the framework for the methodology in question. Such as framework will be later illustrated profoundly.

4.2 History of lean management

The concept of lean management was established by Toyota in the year 1940. Originally, the concept was generated out of manufacturing practices. The aim of the methodology was to reduce all possible practicable processes that were not adding value to the end product. However, the practises of the lean management methodology do not diminish the comprehensive respect for people, even though continuous improvements were constantly made.

As a result, Toyota achieved prominent improvements at all sectors of cycle time, cost-efficiency, productivity as well as overall efficiency. Today, lean management is known to be the world of knowledge work and management. The cognizance can be applicable among various of industries which has increased its popularity. (Charron 2015.)

4.3 Principles of lean management

Lean management can be categorized by five main principles. The five main principles strive to improve the efficiency in a workplace. The concept supports building up one another by creating continuous improvements to a reaction chain of an organization. Lean management entails quality standards, which are dependent on the collaboration of specialized workers. The whole methodology follows a repeatable, interminable process. (Charron 2015.)

4.3.1 Five principles of lean management

The five principles of lean management concentrate to the process of an organization. All the five principles are built to endorse one another in order to create an ongoing cycle of improvements. These five principles are categorized as value, value stream, flow, pull and perfection. Since this thesis is concerned with physical goods, the points are discussed in such a sense. (Charron 2015.)

4.3.1.1 Value

According to lean management, firstly, the value of a good must be identified. A lean process requires persistent reviewing from the perspective of a customer. Essential cornerstones are determined by investigating the feasibility of a good regarding the job it is described and intended to complete. In a successful case a good is accomplishing its mission. In occurrence the good is not doing their intended job, the position of the good in question must be improved. The significance of this step helps corporations to specify the unique value for their good.

In order to discourse organization's value as a whole, certain questions must be addressed. Value identification requires detailed questions to guide organization's process towards an encompassing and desirable outcome. Such as questions contain facts of customers' needs, the needs of the manufacturing facility and finally, the schedules regarding as an example, distribution solutions. At first, the needs of a customer must be clarified. Secondly, an organization should try find out why and when a customer needs a good in question. Thirdly, the enterprise combines the needs of a customer to encounter organization's capacity. Final point is to ascertain how and when must the good be delivered to the customer. (Charron 2015) (Wronka 2017) (Al-Mudimigh 2004.)

4.3.1.2 Value stream

Next pertinent of the lean management principles is to map the value stream of a good. This part identifies all the steps required to be completed in order to create the final product from raw materials. In case of a service good, all the working in process (WIP) points are identified. The aim of this phase is to evaluate and determine all the previous steps taken in detail. The purpose is to explain how the determined value in question flows through the organization as well as at which phases the value confronts complexities. Value stream is analysed from the sectors of production, research, marketing and human resources. From all the sectors in question, all the defects are detected, either fixed or cut off.

Mapping the value stream commence from raw materials. In the first place, a possible supplier delivers raw materials to an enterprise. The enterprise must have a premeditated location to which all the pieces of raw materials are placed and from where these materials take the next step as they get processed further. An enterprise needs to have a detailed plan where all required processing steps are done, who is responsible for each step and what will be happening after each phase.

Production wise, the cycle of determining roles of people, location(s) of materials and the stages of working up the goods are similar between production. In addition, the quantity of a good to be produced needs to be considered and clearly determined in an agreed timeframe.

When it comes to sales and customer service, knowledge about networking, connecting and selling the goods to adequate people is a necessity. To vend goods to right people is the key. Also, the post purchase business must be detected on the behalf of future sales. Lastly, an enterprise ought to specify a person responsible for overall guidance and as an example, for problematic occasions. All the concerned aspects have an effect to the overall determined value of a good. (Charron 2015) (Al-Mudimigh 2004.)

4.3.1.3 Flow

Efficient cycle flow is regarded to be the most important ground for the five main lean management principles. The creation of a coherent cycle is possible after each step of the cycle are thoroughly analysed. By creating a continuous flow, an enterprise will be able find out ways to maximize their efficiency and reduce possible wastes at all sectors of their operations. In addition, an important note is to acknowledge that lean methodology optimizes the cycle flow in all aspects of the business, not only in the sector of production. The results of optimization are reached into distribution operations as well.

Creating a flow requires a deeper look at the tools used at all phases of production, handling and distribution. As an example, an enterprise must investigate whether all the tools used at all cycle phases are necessary and suitable regarding each phase or a necessity for everyday usage. The salience is to make operations to run smoothly. By scrutinizing the cycle, lean management enables businesses to be more innovative in example, with the traditional assembly line models and to create a process of production which maximizes the output and delivers the most value for customer(s). As all the steps are investigated, it leads to the customer. Hence, all points of contingent inefficiencies are streamlined. Some cycle steps may be found redundant and will be entirely excluded from the cycle. (Charron 2015) (Badenhorst 2013.)

4.3.1.4 Pull

Establishing a pull system is the phase which totally transformed the way production was functioning in enterprises in the past. Lean management aims to investigate the true needs of customers in order to direct a more sensible model. Such as model focuses on the exact quantity of customer needs as well as customers' schedule regarding the goods in question. As businesses concentrate to the actual needs of customers, they save time, resources, space and eventually costs. The pull system also optimizes distribution practises. (Charron 2015) (Wronka 2017.)

4.3.1.5 Perfection

The final principle identifies all the areas compulsion for improvement and implements the required significant changes in order to seek the greatest amount of delivered value to meet customer needs. The core of the process is to acquire a process in which all areas of the cycle are fully optimized. Pursuing perfection as well aims for continuous improvement, which stands for continuous analyses of cycle needs. Ultimately, the concept pursues perfection which anyhow is rather unattainable. Today, the world is constantly changing and therefore, business operations require a constant examination. Overall, the methodology of lean management is an impeccable concept. (Charron 2015) (Wronka 2017.)

4.4 The eight wastes of lean management

The concept of eight types of waste is an essential part of lean management. Waste is classified as any action occurring in a process which is not adding customer value. The methodology of improved process requires removing all feasible pieces of waste from the process. Such as activity increases efficiency, reduces costs and provides an increased

customer value. The eight types of waste are categorized as defects, overproduction, waiting, non-utilized talent, transportation, inventory, motion and extra processing. (Charron 2015.)

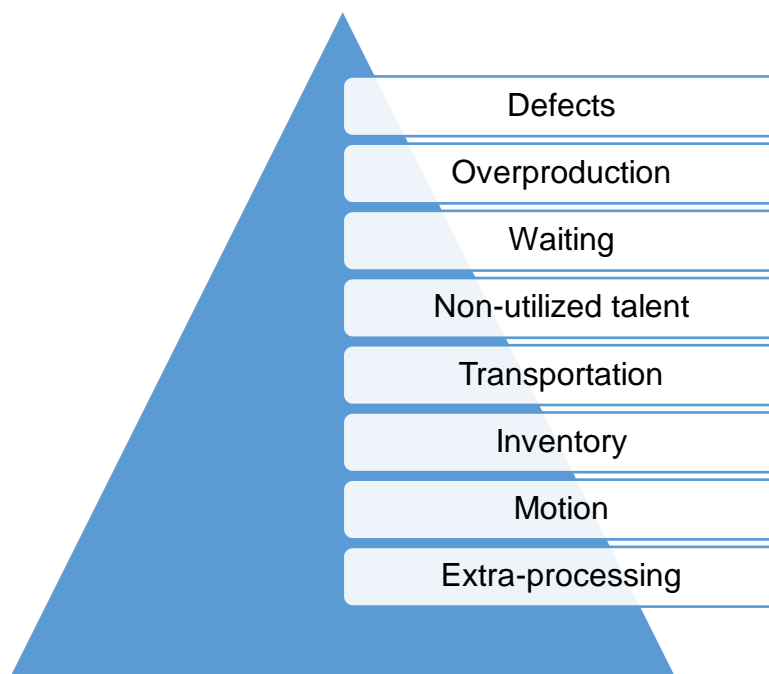


Figure 3. The eight types of waste of lean management (Charron 2015.)

All the eight types of waste are all harmful factors for company operations. Anyhow, depending on an organization, as well as the industry an organization is operating in, some of the stated types of waste may be more harmful than the other. The next chapters will illustrate each of the wastes in detail. (Bob 2007.)

4.4.1 Defects

Defects are classified as either products, services or actions that are out of a specification and hence, require resources to be corrected. Defects are any errors that may occur on daily basis only causing a negative outcome as well as any efforts caused by rework, fragment or even incorrect information. The quality of logistics is depended on doing things right in the first place. (Charron 2015.)

4.4.2 Overproduction

Over production is stated to be an unnecessary in the chain of a supply and distribution operations. Overproduction is defined by producing or doing more than is needed in reality or on the other hand, doing something before it is ready or needed to be sold etc. Such as

actions cost money, create excess inventory and increases the effort hours. A great example of over overproduction from the point of view of logistics is as an example, not taking an advantage of collaborative distribution opportunities. (Charron 2015.)

4.4.3 Waiting time

Third type of waste is excessive waiting. It stands for the unnecessary waiting time regarding the next step in the planned process. Such as action causes bottlenecks to the flow of work, may lead into service failures and therefore, adds extra time to the process or product completion. As an example, it is extremely important to schedule all the working hours of labour force, production, etc. to match volumes. All decisions need to be made before deadlines, possible paperwork is always ready as needed and the timetable of either loading or unloading a trailer or any cargo in question are carried out in time. The key is to maximize the time consumption around-the-clock. (Charron 2015.)

4.4.4 Non-utilized talents

Talents that are not utilized within an organisation are as well classified as waste. Underutilizing the talents, skills and knowledge of employees are classified as wasting the intellectual resources of an organization. As an example, the employees of an organization might not be effectively engaged in the processes of a business or vice versa, the organisation is not utilizing their people with their maximum potentiality. (Charron 2015.)

4.4.5 Transportation

The misuse of transportation operations is another crucial part of eliminating wastes from logistics, distribution operations and from the chain of a supply. Goods to be distributed may be both tangible as well as intangible. Physical goods for an example, consumer packing board reels and psychical goods signifying information must be distributed from a location to another as efficiently as possible. All unnecessary movements of goods may cause damage to the good in question during the transit. Also, excess movements increase as an example, the production time and production costs as well as take up unnecessary floor space. Redundant transportation not only creates waste in operations, but also increases the carbon footprint which especially today is classified as extremely important metric as scrutinized from the quality program perspective. (Charron 2015.)

4.4.6 Inventory

Inventory or information that is only sitting idle and hence, not being processed is another essential part that should be eliminated from the chain of a supply and distribution. As excess WIP goods are fully processed before needed, the products eat up the available space within an organization. Also, such as idle goods have a greater chance of getting damaged or might expire from usage and plainly adds carrying costs. As an example, a business owning too many trucks or trailers than needed experiences all the mentioned undesirable effects regarding excessive inventory. (Charron 2015.)

4.4.7 Motion

Motion incorporates all unnecessary movements by people, information or equipment due to in an example, workplace layout, ergonomic issues or searching for misplaced items. Such as surplus movements increase completion schedules, as well as enhances the possibility of likelihood injuries. In order to minimize the motional waste, a business must invest into the quality logistics. Quality logistics often requires industrial engineers that are responsible of designing layouts and process flows to minimize such as movements. (Charron 2015.)

4.4.8 Excess processing

The last point of eight types of waste is stated to be extra processing that comprehends performing any activities within an organisation that are not 100% necessary in order to produce a functioning good. By processing a product or a service excessively, the good concerned most likely possesses a higher quality what is required by the customer. This waste consumes resources, time and confines organisation's ability to address other vital customer tasks. Distribution wise, in case a good is distributed by a higher and more expensive transportation method as required by a customer, it only creates extra costs for a corporation. (Charron 2015.)

4.5 Benefits of lean management

The concept of lean management is constantly increasing its popularity. The growing popularity generates from the fact that the idea focuses on improving all aspects of in the cycle of a good, as well as involves all levels of the hierarchy within an organization. The theory thereby produces few major advantages that especially managers of an organisation can benefit from. There are four major gained benefits from thinking lean. The four vital benefits are focus, improved productivity and efficiency, a smarter process and a better usage of company resources. (Bob 2007.)

Focus stands for applying the lean management methodology for company's strategy. Implemented concept of lean management will result as reduced wasteful activities within the business. In the end, the workforce within an organization will only focus on to the activities and operations that essentially will bring value. (Bob 2007.)

Lean methodology advocates for improved efficiency and productivity. In line with the concept in question, by abundantly focusing on delivering value for a business in everyday operations, it positively correlates with organization's efficiency and productivity rates. Increased efficiency of a phenomena leads into deletion of distracting and unclear tasks. (Bob 2007.)

Third benefit of the methodology addresses the pull system. The pull system generates a smarter process to operate and hence, results as more productive operations. By establishing the pull system, an organization will be able to deliver work only if there is actual demand. Therefore, as an example, no excess inventories are made, or no redundant distribution transportations are arranged. (Wronka 2017.)

The final major benefit detected is a better usage of company resources. As the production of a company is based on the actual demand as the pull systems aims, a business is capable to use as many resources as needed. Hence, all operations and resources can be planned to convert the actual amount of demand, which optimizes the overall business operations. (Wronka 2017.)

As an organization applies the lean management methodology to company strategy, it results as flexibility and an opportunity to respond consumers' requirements a whole lot faster. The lean management principles will create a stable system that can be applied to the whole chain of a supply, demand as well as distribution logistics. As an outcome, a higher chance of improving the overall performance of a business unit can be obtained. (Bob 2007.)

5 National public holidays in Finland

In Finland there are 13 official national public holidays in a year. All the official holidays in Finland are authored by the Finnish Parliament. The national public holidays in a chronological order are: New Year's Day, Epiphany, Good Friday, Easter, Easter Monday, The First of May, Ascension Day, Pentecost, Midsummer Eve, Midsummer, All Saints' Day, Independence Day, Christmas Eve, Christmas Day and Boxing Day.

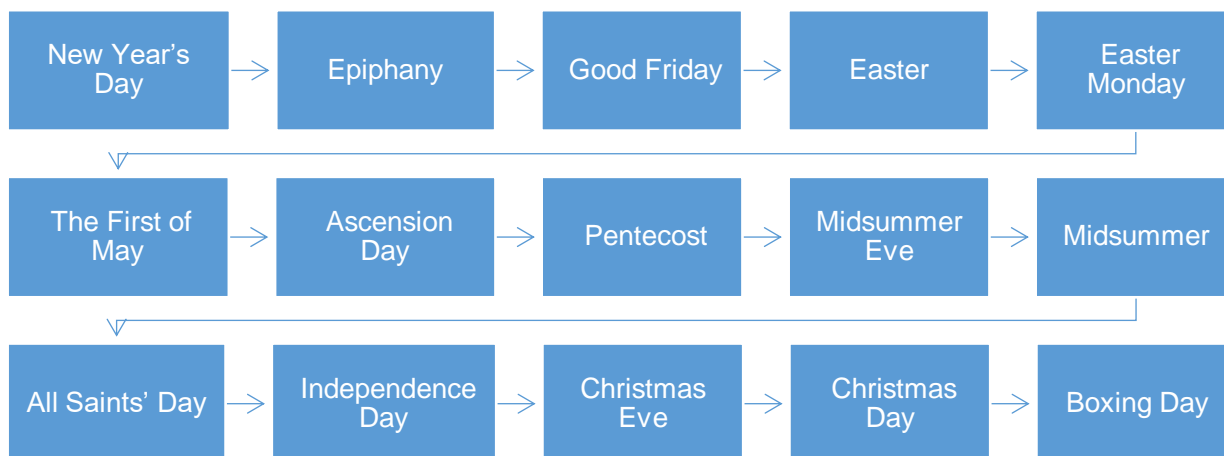


Figure 4. The national public holidays in Finland (Ministry of the Interior Finland 2020.)

Although Midsummer Eve and Christmas Eve are not regarded as official national public holidays, most Finnish people tend to not work during these days. Certain businesses are as well closed during these days or there may be exceptions when it comes to the opening hours of for an example, port operators. Besides the stated festive seasons, there are few other established days off as well. Several collective labor agreements among industries obtain such as established days off as paid holidays. (Ministry of the Interior Finland 2020.)

In Finland, the national public holidays can also be divided according to their punctuality annually in the calendar. Hence, some of the holidays have settled dates and do not vary depending on the year. However, a proportion of the holidays change every day. As an example, Epiphany is celebrated every year on January 6th, where as the date of Midsummer is dependent on the weekend between dates June 19th to 25th. (University Almanac Office 2020.)

In addition, in Finland all Sundays are regarded as official holidays but they are not considered as important compared to the stated special days. Therefore, in case a national public holiday in a calendar is placed on a Sunday, it tends to not have an effect to operations of organizations in general. Anyhow, in case there are multiple public holidays in a row, it often causes the greatest challenges for businesses. (Robinson 2018) (Vanhainen 2020.)

6 Empirical part

All empirical information accumulated to this study is classified as primary data. Thereby, the empiricism is gathered by the author from open and semi-structured interviews. The literature utilized in this study is secondary data and is gathered in order to make conclusions regarding the collected empiricism.

The target group of this study was administered by the commissioner of the thesis Stora Enso Oyj Imatra Mills. The sample size of this study presents the cognizance of three experts working in the field of logistics. The experts in question possess variable titles regarding logistics and supply chain management. Each of the interviewed experts work in influential positions and as well have a long-term experience of the industry in question. In consequence of the significantly wide expertise, the rather narrow sample size saturates the demands of the acquired empirical data. The concise sample size is taken into a consideration as the structure of the interview was formed. Both the quantity and the quality of the interview questions were precisely taken into an account.

6.1 Research method

This thesis study followed the guidelines of qualitative research method. It stands for a research type in which the data collected and analysed is non-numerical. The data in this study is collected by in-depth semi-structured and open interview questions, which generates the qualitative data. Such as method enables the respondent to immerse oneself into the topic and choose their own words of expression. The aim of the method is to understand concepts, opinions and experiences. Qualitative research method permits the possibility to get insight of research problem as well as to generate new ideas for the study. This study is categorized by engaging a case study.

6.2 Qualitative research

This research included a case study, which aimed to capture a holistic view of the phenomenon researched. All pieces of information provided by the interviewees were evaluated subjectively and the data gathered was categorized according to the interview questions. The goal of the gathered empiricism was to provide more emphasis on the description and the discovery of new pieces of information according to the research topic. (Dickson et al. 2018.)

6.3 Deductive research

This thesis also followed deductive research, which goal is to test a theory. Hence, this research followed a deductive logic that includes valid inference of a theory in question. Such as theory proceeds by firstly, starting with the topic context and reading previous researches. Thereafter, the object and research questions are determined. Next, the theoretical framework for the study is build and empiricism can be collected. Lastly, analysis can be made, results disclosed and finally conclusions made. The aim is to examine general knowledge and output to detailed knowledge. In this study the author followed such as methods throughout the whole research.

6.4 Data collection

The data was collected by in-depth both open and semi-structured questions. Such as method enables the interviewees to tell their own opinion, experience a well as knowledge about the topic by using their own words and concepts of an expression. When it comes to open interviews, each interview is unique and starts with guiding questions. This type of interviewing method gives the author the possibility to explore the topic intensively and from the viewpoint of a participant. All participants of the study were interviewed separately. Semi-structured interviews outline the topic of the research. There is a variation in wording and an order regarding the research questions that were stated in the form of an enquiry. The enquiry included both simple and complex questions, direct and indirect questions, neutral and leading questions as well as primary questions.

The participants of the interview consisted of experts that had different variant knowledge of the examined topic. The participants consisted of four logistics and supply chain specialists. The professionals were selected regarding the case company of the study. The selected professionals are working with railway logistics, port logistics as well as the logistics of road distribution and logistics applications. Hence, the aim was to scrutinize the different viewpoints, detect similarities as well as differences by the compiled interview questions.

6.5 Interview question

The interview was executed in the form of an enquire due to current COVID-19 pandemic. The enquire comprehended from 16 questions. The questions were made on the grounds of the research problem and the research topic. The aim was to collect empiricism from logistics experts from different perspectives of the logistics distribution chain and to gain a wider understanding of the topic. All the interview questions were presented in the same manner to all participants of the study. All the 16 research questions of the enquiry are presented in the end of the study as an appendix 1.

7 Results of the enquiry

The aim of this part of the thesis study is to apply the theoretical framework of lean management to the gathered empiricism. The report will address the responses of the empirical data gathered from the participants of the research enquiry. The participants represent corporations of Stora Enso Oyj, StevecO Oy and VR-Group Ltd. The gathered data is firstly presented and subsequently analysed. In the end, the results of the study are discussed and stated.

7.1 Stora Enso Oyj logistics group

According to the procurement manager of Stora Enso Logistics, land services Finland and North East Europe, the corporation aspires to function normally during the national public holidays. Such a status can be achieved by sticking to everyday operations, as well as by reacting to any undesirable events that might occur in the distribution chain. As an example, the lack of railway wagons or any communication problems between parties are such as unwanted eventualities. The key for success is stated to lay under forecasting and efficient planning when it comes to in an example, the modes of transportation and quantities of goods forecasted.

Overall, it is referenced that the national public holidays in Finland do have an effect to the overall distribution logistics. It originates from the stated festive periods, since they require considerably more excessive work. The surplus engagement and coordination occur at all sectors in the mill, in the field of logistics, distribution as well as in harbour operators. This leads into excess transportation and terminal expenses.

The activities of planning and forecasting for upcoming national public holidays are composed early and focused closer to the holidays. For an example, calling on staff to work overtime, resourcing manpower and forecasting the supply and demand compatibilities are crucial factors to be considered. The challenge is to combine all the needed modifications together and simultaneously follow the collective labour agreements. It is mainly predicated that the national public holidays do not cause problems excessively and the company copes somewhat well with the peak seasons.

After a festive season, the post-holiday logistics require considerable monitoring at distinct sectors. A company always needs to be prepared for possible backlogs that might transpire during the holidays. Such as agglomeration might arise from various of reasons, in an example, from insufficient resources of manpower or increased production. Therefore, the company needs to be prepared that such as situations might actualize. Subsequently, such

as obstacles are conducted immediately after the holidays in order to get operations holistically back on track.

The biggest challenges over the festive season are regarded to be firstly, the process of forecasting the quantity of reels to be produced as definite as possible. The forecasts should match the demand to supply and as well be equivalent to the company resources. Secondly, all parties contributed on the transactions of the reels, ought to work in a consistence. A modifier in a compound term signifies a collaborative effort for an example, when it comes to the clauses of collective labour agreements. Thirdly, a great challenge is regarded to be all sorts of infrastructural projects taking place during the national public holidays. In an example, extensive railway worksites create an additional complexity. Anyhow, such as operations are endeavoured to be limited during the festive seasons. The efficiency at all sectors is the key for accomplishing the goals set.

According to the interviewee, the overall logistics has not evolved during the past years dramatically. In the future, the participant believes that the most important business is to specify pervasive resources even more precisely. In order to enhance the current operations, the logistics group of Stora Enso Oyj Imatra Mills pursues to invest into co-ordinated masterminding. The goal would be to augment the cooperation between all parties involved in the process regarding the reels to be produced and distributed. A successful business development that is already made is concerned with assemblies regarding the peak seasons. Different modifications as an example, questionnaires regarding the operations to be executed have been implemented. Again, the focus on constant cooperation is the core for functionality under the festive seasons. The interviewee finds activity, knowledge gathering and forecasting as the priority.

The workforce capacity over peak seasons tends to be planned successfully altogether most of the times. The difficulties lie under the fact that for an example, the production quantities might dramatically change as the holidays are approached. The most difficult festive periods tend to be placed next to weekends. Also, national public holidays lasting multiple days in a row in an example, Christmas are regarded as challenging. In order to obtain the pursued goal(s), the company must reserve extra resources as to distribution and unloading procedures.

The overall framework of operations has evolved during the past few years, and hence are opined to be in place. When it comes to external resources, they tend to be well covered. As an exception, certain special IT-problems might arise but are stated to be rather rare. In case supernumerary manpower is required, the subcontractors will report straight to Stora Enso Oyj. Therefore, feasible defects and other problems can be detected, resolved or entirely avoided. When it comes to the generalisation of the answers, the participant stated to

not be capable of commenting the matter, since to his knowledge, there has never been complaints, difficulties or such as problems.

7.2 VR-Group Ltd

According to the key account manager of VR-Group Ltd Logistics, it is regarded to be natural that the national public holidays in Finland differ from the ordinary weekdays. The distribution chain as a whole is stated to operate satisfactorily. The encompassing management of the chain requires cooperation of many parties. The biggest challenge is concerned with forecasting between the mill, distributor and the harbour operator. Another negative effect is regarded with surplus costs that the national public holidays generate due to deviant usage of resources.

All forecasts over the national public holidays are planned together with different parties of the logistics chain and stated to actualize reasonably well. The post-holiday logistics is the most challenging point of time. This is due to changes in the agreed plans regarding operations that were projected to be executed during the holidays. As an example, there tends to be rush in the harbours after the holidays. In case the unloading of wagons in the harbour has been shorthanded, it generates delays to the agreed circulation of equipment. In the worst-case scenario, such as unwanted event delays the order fulfilment certainties.

The respondent stated that cooperation is the key factor for overall effectiveness regarding the distribution chain. Since the distribution chain operates uniformly with multiple parties, the whole chain does not become more efficient if only one of the parties involved is optimizing their operations. Such as unilateral activity might even result as a negative outcome. Anyhow, the overall quality regarding communication between parties has become better during the past few years. The interviewee believes that no changes will be made in short-term scale regarding the matter in question. The collective labour agreements between the industries examined are stated as major barrages. More flexible practices should be made and hence, the overall logistics would not suffer that much during the national public holidays.

The respondent finds his own capabilities of making a difference to the overall operations moderate. The biggest improvements can be made when it comes to improved communication and with certain agreed settlements on occasion. Particular holidays lasting a longer period of a time are regarded to be challenging for an example, Christmas. It is agreed that the current practices are not regarded modern and improvements should be made. The interviewee believes that his answers could be applicable among organizations operating in the same field of business.

7.3 Steveco Oy Mussalo

According to the CFS operations manager of Steveco Oy Kotka container operations, the overall logistics and supply chain management flows chiefly well. The main role of the company is to unload all consignments and containers as well as unitize everything on time. The crucial factor determining the fluent operational flow is dependent on the received information of the corporation's service needs. As an example, Stora Enso Oyj Imatra Mills is required to inform Steveco Oy passably early, so the company is capable of providing the applicable resources. A specific timeframe concerning the reaction time is a necessity for Steveco Oy. This is due to both the clauses regarding the collective labour agreement and certain local reconciliation. The core of the operation functionality is to communicate and plan operations together with business clients and other business partners.

During the ordinary weekdays Steveco Oy operates in two shifts between 6am to 10pm with a standard capacity of workforce. In contrast, weekends and the national public holidays follow similar occupation, the employees are working on three shifts and the capacity of staff is only ten percent compared to the full weekday capacity. The working hours differ remarkably from the practises of Stora Enso Oyj Imatra Mills, which generate insufficiencies. At Stora Enso Oyj Imatra Mills, the consumer packing board reels could be loaded and forwarded around the clock all year.

When it comes to the national public holidays, special days placed in the middle of a week do not have a major influence in the operations of the company. However, longer peak seasons during the year, such as Easter do have a significant difference. Also, other national public holidays placed on Monday or Friday, straight before or after the up-coming weekend necessitate remarkably more work and planning. All operations require excessive careful planning and forecasting due to the constricted amount of workforce. Therefore, based on the forecasts made, Steveco Oy detects all emphasised periods deviating from the standard and in case needed, calls on surplus labour force to work overtime in order to fulfil and carry out all operations.

Another crucial factor concerns the stoppages in the paper industry that used to always occur during national public holidays, but today rarely exist. For an example, in the past, Stora Enso Oyj Imatra Mills was accustomed to always have stoppages during Midsummer on all of their machines. In practise, no consumer packing board reels were made and rather not distributed either. By such means, Steveco Oy used to not hold any staff during those days. Today, the frequency of the stoppages in question has dramatically decreased, which requires significantly more planning and forecasting on the side of Steveco Oy. As a result, employees are called on to work overtime to match the supply and demand ratio. Such as

mode of operation is regarded to be ancient. Nevertheless, the system has not been upgraded. Therefore, it can be stated that the national public holidays do have a remarkable effect on the operations of logistics and supply chain management. The main reason is the dissimilarity regarding the working hours of labour force between Steveco Oy and the paper industry as an example, the case company Stora Enso Oyj Imatra Mills.

The most difficult national public holidays are regarded to be Easter, Christmas and Midsummer. In order for Steveco Oy to make accurate forecasts regarding the needed resources, the corporation is dependent on the foreknowledge provided by Stora Enso Oyj Imatra Mills. Steveco Oy is required to wait for the forecasts regarding the distribution of for an example, the consumer packing board reels and to plan their capacity of human resources. Pursuant to Steveco, the forecasts are actualized variably. All national public holidays tend to cause a few backlogs due to limited resources during the festive seasons. The possible backlogs are often concerned with unloading of wagons. All possible backlogs need to be solved immediately after the holidays. Also, during the national public holidays Steveco Oy do not hold any resources of forwarders. Hence, all possible obscurities are figured out after the holidays. In case during national public holidays there are lot of reels containerized and ships to be loaded, the forwarders are rushed, and backlogs created. Such as operations results as defects.

When it comes to defects, Steveco Oy strives to minimize all possible drawbacks that could occur due to the national public holidays. The company always requires forecasts concerning the number of reels that will be distributed from Stora Enso Oyj Imatra Mills to Steveco Oy. Also, forecasts from VR-Group Ltd are as well required. VR-Group Ltd provides information concerning the wagons in which the reels are distributed. These forecasts need to be performed within a certain timeframe as well. Steveco Oy must resource labour force in advance within both the collective labour agreement and local reconciliations. The interviewee states that the forecasts in question are usually received at last minute. At times the forecasts need to be requested from business partners which is not concerned to be ideal.

Some remarkable changes affecting the operations of Steveco Oy are concerned with both under and over resourcing. Several complexities might arise from definite changes in demand, supply, human resources, the rotation of wagons, or the liability of a risk concerning the break downs or malfunctions of the wagons in question. Therefore, the biggest challenges concern the changes to already given foreknowledge and forecasts. The respondent also states that it is rather difficult for the shippers to predict the future during festive seasons lasting a longer period of a time. Such as contingency often results as unreliable forecasts.

The overall management of logistics has not changed substantially. In future the goal is to make the planning process as well as the overall scheduling for all parties as accurate as possible. Also, another goal is to make the flow of logistics to run similarly all year long. Therefore, there would not be any changes during the national public holidays in company operations.

When it comes to new expedients made in order to improve the quality of distribution logistics, Steveco Oy has begun to use subcontractors in warehousing operations. Such as subcontractors are used when the capacity of company's own resources and storages are already fully used, and the demand cannot be encountered by the company itself.

The interviewee evaluates his own authority to make a difference in order to improve the overall operations of logistics rather minor and difficult. The participant states that as an example, the dissimilarity of working hours between parties, collective labour agreements and local reconciliations are the greatest challenges. Anyhow, significant results can already be accomplished only by articulate communication and increased understanding. There are multiple variables in the distribution and logistics chain. The generalisation of overall planning and forecasting operations tends to be difficult regarding the human resources. As an example, only the breakdown of one railway engine at a critical time will affect intrinsically to all operations. The most important business is the open and sustained communication between all parties. By such as means, all parties are capable of operating as efficiently as possible.

The respondent stated that in order to obtain the expected goals during national public holidays, consistent cooperation and planning is a necessity between shippers, Stora Enso Oyj Imatra Mills and VR-Group Ltd. Based on the planned level of activity, the shippers make forecasts according to batches to be handled. Controlling and supervision of warehousing operations are as well remarkably important. In case the forecasts made will change, it generates extra costs for the company. Such as extra costs might also be generated from controlling, supervision and coordination regarding warehousing and terminals concerned.

According the respondent, the current practices of logistics during the national public holidays are required as highly dated. The biggest problem concerns the differences between the formats of working hours between Steveco Oy and the paper industry. Also, the collective labour agreements as well as the local reconciliations are not flexible enough to the world of today.

The employees of the company are chiefly flexible and willing to work overtime as needed. Anyhow, both Christmas and Midsummer are regarded to be the hardest periods in order

to get extra workforce. On the one hand, the clauses of law today prevent the full accessibility of workforce, even a part of the employees would be willing to work more whenever needed by the corporations. The clauses of collective labour agreement law disallow it. The reason for such as matter lies under the mandatory weekly rest period.

What it comes to the external operators and subcontractors, in case of unpredictable problems, for the most part they are reached via hotlines. Anyhow, the problem solving of certain issues tend to take rather longer, since there might be a lack of expertise due to constricted resources. However, particular smaller subcontractors, such as plowers and container depots are reached out rather instantly. However, such a case is mainly a matter of expenses.

The interviewee deems appropriate that his stated answers would apply to other operators working in the same field of business. Therefore, his responses would be applicable to other harbor operators in Finland.

8 Theoretical framework applied to gathered empirical data

The theoretical framework of lean management was used as the base for this study. The empiricism was collected from the interviewed participants concerning the case company Stora Enso Oyj Imatra Mills. The integration of the theoretical framework to empirical data included testing the hypothesis of the study. Therefore, the research did not only rely on logic alone, but also interlinks the existing theoretical framework to the gathered empiricism. The results of the study are indicated from case company interviews. As well, the theoretical framework is utilized to direct the study. The theoretical framework also provided guidance and suggestions as the executed interviews were analysed. Firstly, this section discusses the five principles of lean management and their compatibility regarding the case company. Thereafter, all the relevant eight types of waste regarding this research are stated more precisely. (Dickson et al. 2018.)

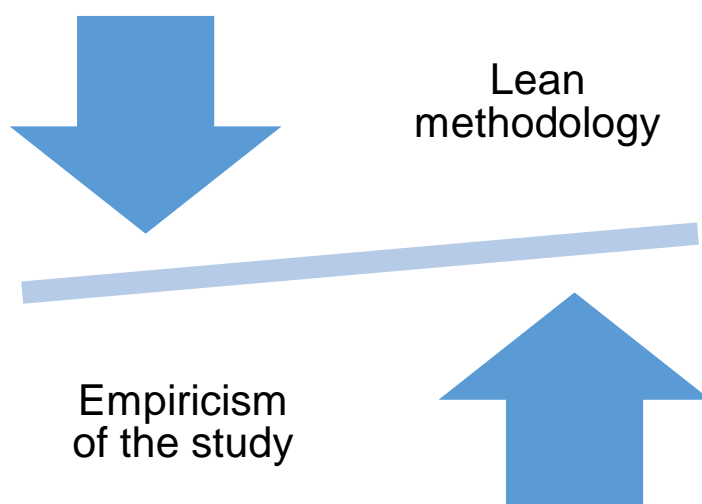


Figure 5. Lean methodology applied to empirical data

The following partitions will apply the principles of lean methodology to the gathered empirical data. First, the five principles of lean management and their compatibility regarding the case company are justified. Thereafter, all the relevant eight types of waste regarding this research are stated more precisely.

8.1 Five principles of lean management

This section will apply the five principles of lean management to the gathered empiricism regarding the case company Stora Enso Oyj Imatra Mills. The lean methodology supports the constant flow in the chain of a supply, manufacturing and distribution. Such as matters seems to be applicable to the goals of Stora Enso Oyj Imatra Mills and its business partners Steveco Oy and VR-Group Ltd. Stora Enso Oyj Imatra Mills as well aims to improve their

overall daily operations constantly. Also, future operations to be executed are planned in advance, and forecasts are constantly pursued to be more and more precise. The case company aims to provide value and by such as means, is concentrated on to the optimization of value stream regarding distribution logistics and its overall operations. All operations regarding the distribution logistics are carefully planned step by step.

The case company and its business partners are also focused to the pull system that the theoretical framework aims. Stora Enso Oyj Imatra Mills pursues to confront the exact quantity of the consumer packing board reels forecasted with business partners in question. The actual needs and resources of business partners are highly considered in order to make the flow in the distribution chain as efficient as possible. The pull system saves the time, resources, space and eventually costs of all parties in question. Hence, the case company do mainly follow the main five principles of the lean methodology by building a stable organization that is constantly evolving, identifying actual defects and removing waste. The ultimate aim is to pursue perfection at all sectors in the distribution chain. Even though the holiday logistics is discovered to create challenges, all parties stated that the current operations within the cycle are constantly examined to seek the greatest amount of delivered value to meet customer needs. (Kvist 2009.)

8.2 The eight wastes of lean management

Besides the five main principles, lean management concentrates to remove eight wastes that might occur in company operations. This part of the report will address the eight waste of lean management illustrated in figure three. All the relevant points of figure three regarding this thesis study are analysed and stated.

8.2.1 Defects

Firstly, the methodology supports the ideology of quality logistics, in which activities are completed correctly in the first place. In practise, this concept is executed by identifying and removing all defects detected within an organization. According to the answers of the executed enquiry, the case company is constantly following such as practices, since all examined operations are constantly being scrutinized, monitored and improved. In case defects or any types of waste are detected, they are eliminated. The case company and its business partners interviewed are constantly improving their operations when it comes to the challenges regarding the overall flow of distribution logistics during the national public holidays. It is anyhow acknowledged that more improvements need to be made in future and the changes to be made are not intensely easy. (Bob 2007.)

8.2.2 Overproduction, waiting and transportation

This thesis study was not focused on the production side of the company. Anyhow, as overproduction is combined with two other types of waste, excess waiting time and the misuse of transportation, the case company aims to always optimize and schedule such as operations as constant and accurate as possible. Also, the distribution chain is pursued to function by maximizing its full capacity. Based on the observations of the author, the case company as well aims to produce the examined consumer packing board reels to be distributed directly from the production. All wagons of VR-Group Ltd aim to carry the maximum capacity of the reels to Steveco Oy in Mussalo. Steveco Oy aims to unload all wagons as they are received. Therefore, all possible waste is intended to be minimized and all excessive operations are removed. (Bolumole 2001.)

8.2.3 Extra processing

Overproduction can as well be linked into extra processing when it comes to planning the distribution chain. As stated, as an example all wagons together with truck distribution are always aimed to be distributed by the demands of business customer(s). Therefore, both the wagons provided by VR-Group Ltd and road distribution trucks are distributed straight to stuffing places by the minimal effort to cut extra costs etc. (Logistiikan Maailma 2020.)

8.2.4 Non-utilized talents

When it comes to the fifth waste discussed, non-utilized talents, the enquiry did contain a question regarding problematic situations during the public holidays. Regarding such as matter, the interviewees stated that as problems are confronted during the holidays subcontractors and external operators provide hotlines to be reached into. Anyhow, the hotlines in question might lack expertise regarding difficult unconventional situations. The responses of the participants did not include the usage of internal workforce regarding the problematic situations. Only the subcontractors and external parties were discussed. Therefore, organization's own resources tend to not be fully utilized, creating a waste regarding the intellect resources of the organizations themselves. (Bob 2007.)

8.2.5 Inventory

Inventory is as well regarded to be waste. The inventory convers information only sitting idle. Case company and its business partners stated that they always pursue to maximize all of their operations regarding both tangible and intangible goods. As an example, the results of the interviews showed that as empty wagons of VR-Group Ltd are distributed to Stora Enso Oyj Imatra Mills, they are all stuffed and no excess undesirable inventory of the

wagons is formed. The same example applies with the truck distribution. Another example is concerned with the cooperation between parties. The cooperation regarding information flow was operating chiefly well according to the participants. However, one of the parties stated that the information flow between the parties concerned should be emphasized and made more constant. Sometimes such as activities were defaulted as for an example, forecasts were expressed in the last minute or they were ought to be asked from business partners, which was not considered as corrective operations. Stable and constant information flow can hence be regarded somewhat wasteful between all of the parties, since the business partners are always depended one another. (Bob 2007.)

8.2.6 Motion

Motion and unnecessary movements by people, information or equipment are considered wasteful activities. This study detected such as waste in the sector of equipment and information. It was stated that there is a constant development in order to maximize the information flow between parties. All unnecessary intermediaries are intended to be removed and more efficient changes are constantly formed. Such as activity considering constant improvements does support the lean methodology. Anyhow, according all of the participants of the interview, more major developments should be made regarding the working hours between different parties. The collective labour agreements were detected to be the biggest waste. Regrettably, a common collective labour agreement between industries working together seems to be extremely hard to be formed due to certain clauses of law. (Logistiikan Maailma 2020.)

8.2.7 Current situation

Overall, the current operational flow of distribution logistics between the corporations in question is stated to function rather well. All parties involved are aware of their strengths, weaknesses, capabilities as well as tasks to be completed. There are few obstacles detected by all of the parties concerned. Suggested development needs are stated in the next chapter.

8.2.8 Development needs

The biggest challenge to be developed tends to be the incompatibility of diverse industries working together. A common directive salutary for all parties should be compiled. Such as completion would benefit both employees as well as employers of the organizations in question and make the overall logistics to function leaner. Also, certain upgrades and applica-

tions concerning for an example, the mandatory idle times of employees, ought to be adjusted. Such as suggestions have occurred on the behalf of both parties: the employer and employee. (Salomaa 2019.)

Another business to be improved is concerned with the same theme regarding the occupationally of workforce during a year. The collective labour agreements should match one another between the industries in question in order to create a more effective distribution flow for the goods. Also, the information flow between parties requires further improvements. The desirable connection would be determined by consistency, trust and flexibility from all parties. Such as modifications would improve the overall efficiency of the whole chain of logistics and supply chain management in which all parties would benefit. (Magiera 2015) (Kvist 2009.)

The responses of the enquiry did not support the practices regarding the utilization of talents inside the companies examined. Therefore, organizations are depended on external resources and subcontractors regarding some matters, which weakens the position of the organizations. Organizations could execute small-scale trainings regarding operations that require external operators. Such as practise would generate more certainty. Such as small-scaled trainings would also contribute overall self-sufficiency of the companies in case problematic situations are faced during the national public holidays. This would result as utilizing the talents, skills and knowledge of all employees, generating a stronger company. (Enright 2003) (Salomaa 2019.)

9 Reliability and validity of the study

This section of the thesis will discuss about the reliability and validity of the study. All researches rely on accuracy. Therefore, both reliability and validity are justified extensively.

9.1 Reliability

What it comes to the reliability of this research, the results can be considered as generally accurate. One of the goals in this study was to minimise all possible errors and biases in the research procedures. As an example, the data collection method positively supports such as matter. All the experts interviewed answered the presented questions separately which prevented the participants of influencing one another. Therefore, the researcher is not presenting non-random results of the study. The percentage of the possibility to repeat the results of the study are thereby remarkably high. Hence, this means that all operations of the study could be repeated with rather similar results.

Other factors affecting to the reliability of the study are concerned with the sources used in the study. This thesis contained literature sources, observations as well as interviews. The observations of the topic were made by the author as working for the case company. The observations were classified as natural and non-structured by including disguised observations. Therefore, the subjects or the organization were not aware of the observation taken place. Such as methodology also supports the reliability of the study, since the subjects observed, or the organization was not acting any different from the ordinary. To add, the observation period was rather comprehensive, since it covered a duration of half a year. Therefore, that enabled to detect approximately half of the public holidays spend in Finland. The observation period begun in March and ended in the end of August.

However, the author does not consider the study fully reliable. The scepticism of reliability lays on the fact that in case other experts operating in the same field of business were interviewed, the results might have differed a little. Anyhow, majority of the respondents did state that they believe their answers would be applicable to other organizations operating in the same field of business. Hence, it can be stated that the overall results would have most probably been alike. (Kananen 2015.)

Majority of the literature used in this study contained scientific books, pieces of article and journals. The sources of literature were mostly gathered from the LUT academic library that provides extremely high-quality literature content. Also, the literature references in question did contain sources in three different language: English, Finnish and Swedish. Such a variety was used to maximize the information collection for the study and hence, support the overall reliability of this research.

However, since the topic of the thesis considers fluctuation and instability as a fundamentality, in case the study was repeated for an example next year, the results might be different. According to the experts, the industry has been evolving and developing a little during the past few years, which already affects to the outcome of this thesis study. Therefore, the results would probably also change slightly in case the same study would be repeated in an example after five years of a time.

The study included three different perspective from the grounds of the case company Stora Enso Oyj Imatra Mills, Steveco Oy and VR-Group Ltd. Three different perspectives from three different corporations are included to the study together with the theoretical framework, that stands by the reliability as well. Thereby, several interpretations should not occur as the topic has been examined from various perspectives. Anyhow, some of the answers of all respondents are rather diplomatic and circumlocutionary. Hence, many of the themes are discussed rather superficially. Such as style of answering to the interview question slightly weakens the reliability of the study.

Another factor that could have affected the reliability of the study is regarded with possible environmental changes occurring during the research. In case of major environmental changes, the flow of the consumer packing cardboard reels could have been affected by the ongoing Corona virus. It can be proposed that the COVID-19 pandemic increased the instable and inconsistency of the operations within the case company and its business partners. Anyhow, since the study was executed during the pandemic, the post pandemic operations could not be examined since they did not exist yet. The COVID-19 is only an example regarding environmental factors that could affect the reliability of research study. Such as external factors could have an effect to the opinions and answers of the interviewees implicitly. This study was not intended to include any issues or changes regarding the Corona virus pandemic, but it can be speculated that it could have had an effect to the answers gathered concerning the instability in the distribution chain. The inclusion of both external and environmental factors is a necessity in order to critically review the reliability of a thesis study. (Kananen 2015.)

9.2 Validity

When it comes to the validity of this research, the author states that the study did measure what it was intended to measure. Hence, both the research question as well as the hypothesis were fully examined. Therefore, the concentration of the topic did not fluctuate or get distorted during the research.

Research questions covered a wide axis of the topic, which gave the author the opportunity to examine the topic from various perspectives. Therefore, the study supported a construct

validity. The sources of the study can be classified as multiple, due their diverse origin of evidence. No gaps within the study were detected.

All the respondents of the study did understand the research questions correctly, which leads into great validity of the study. The internal validity regarding the approximate truth about the inferences of cause-effect relationships did actualise. The participants of the interview stated their personal thoughts, shared their knowledge and beliefs according to the topic highly well. This gave the author the opportunity to make valid conclusions and factual connections within the data and theory. The systematic actions of the study were discovered to constitute to be reliable. (Kananen 2015.)

The external validity was also tested, since the interview questions did include an issue regarding the generalization of the results. Majority of the participants did agree with the fact that there is a possibility to generalize the results within the context of validity among organizations operating in the same field of business. Therefore, it could be proposed that corporations operating in the same field of business could concur to the answers provided by the interviewees. (Kananen 2015.)

Also, the overall content validity seemed to fully represent the aims of the measure. The interview did contain a few questions that were not fully concerning all participants. Anyhow, this was acknowledged by the author as the enquiry was formed. The author believes that such a matter increased the insight of the study as information gaps between different parties could be detected. Majority of the interviewees are operating in different parts of the distribution chain. When it comes to such as questions presented, the respondents stated that such a question was not a proportion of their operations. However, this was acknowledged by the author beforehand and due to such a matter, the enquiry did contain multiple different questions to gain as much internal information as possible. To add, all the respondents had been working with their current positions regarding the industry long-term, that can be interpreted to increase the validity of the research.

10 Conclusion

To conclude, this bachelor thesis investigated the impact of national public holidays to the distribution logistics in the paper industry in Finland. The case company of the study was Stora Enso Oyj Imatra Mills. The distribution of consumer packing board reels produced by the case company were utilized in this thesis study in order to illustrate the research topic in practise. The study proved the hypothesis of the research to be correct and stated the major defects regarding the insufficiencies within the distribution chain.

The results of the study stated that the national public holidays do have an effect to the overall flow in the chain of distribution logistics. The outcome of the study presented that there are a couple distinct concerns affecting the overall flow in the distribution chain. It was found out that the biggest issue affecting the distribution chain is the incompatibility between the examined industries. Especially the case company Stora Enso Oyj Imatra Mills and its business partner Steveco Oy had major incompatibilities. The collective labour agreements as well as the local reconciliations are remarkably dated regarding the intensive cooperation between the industries in question. The diverse formats of working hours between the co-operating industries creates major complexities during the national public holidays. It was also presented that open communication between all parties involved in the chain of a supply, demand and distribution lacked consistency. A sufficient and constant communication administers all parties operating in the distribution chain. Lastly, the study showed that possible external and undesirable factors transpiring within the distribution chain could remarkably influence the overall distribution operations of a company in a negative manner.

However, as a whole, the participants of the research stated that the flow of consumer packing board reels in question was operating chiefly well. The theoretical framework of lean management supported the study from various perspectives. It can be stated that the distribution logistics of case company does follow majority of the principles according the methodology. Upgrades regarding the stated results should be made in order to make the distribution logistics to flow more efficiently during the national public holidays.

In future, the ultimate goal would pursue the overall flow of distribution logistics to function similarly compared to standard weekdays. Such as target requires discarding complexities from the distribution chain as well as implementing modern applications to collective labour agreements as well as local reconciliations in question.

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Appendix 1. Research questions of the enquiry

1. What kind of influence do the public holidays have to the flow of logistics and supply chain management?
2. Do the overall operations of distribution logistics flow smoothly during national public holidays? Do such as festive seasons differ from the ordinary business days?
3. How do you prepare for the upcoming national public holidays? How valid and reliable the forecasts made tend to be?
4. How the post-holiday logistics actualizes in your operations?
5. What defects are there in the field of logistics? What should be developed?
6. Overall, what are the biggest challenges when it comes to distribution logistics?
7. Have the overall operations of logistics changed during the past few years? To which direction do you see the operations proceeding in the future, why?
8. What new applications have you generated in order to improve the quality of distribution logistics?
9. How would you evaluate your own authority when it comes to the improvement proposals concerning overall distribution logistics?
10. What succeeds the best when it comes to the planning operations of distribution logistics? What tends to be unsuccessful?
11. Which of the national public holidays tends to be the most encumbering? Which are regarded to be the most neutral?
12. What kind of modifications are you required to make to your operations in order to obtain the expected goals during the national public holidays?
13. How would you describe the current practices of logistics during the national public holidays? (dated, modern, something in between)
14. On average, are employees flexible to work overtime during the national public holidays? Is it considered to be challenging to get labour force inside your own organization during the national public holidays?
15. How flexible are the external operators, such as subcontractors, during the national public holidays in case unpredictable problems arise? (e.g. customer service of suppliers, IT duty officers, etc.)

16. Would you consider your answers applicable to other organizations operating in the same field of business?