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Invoice Handling Optimization for Project Transport and Logistics
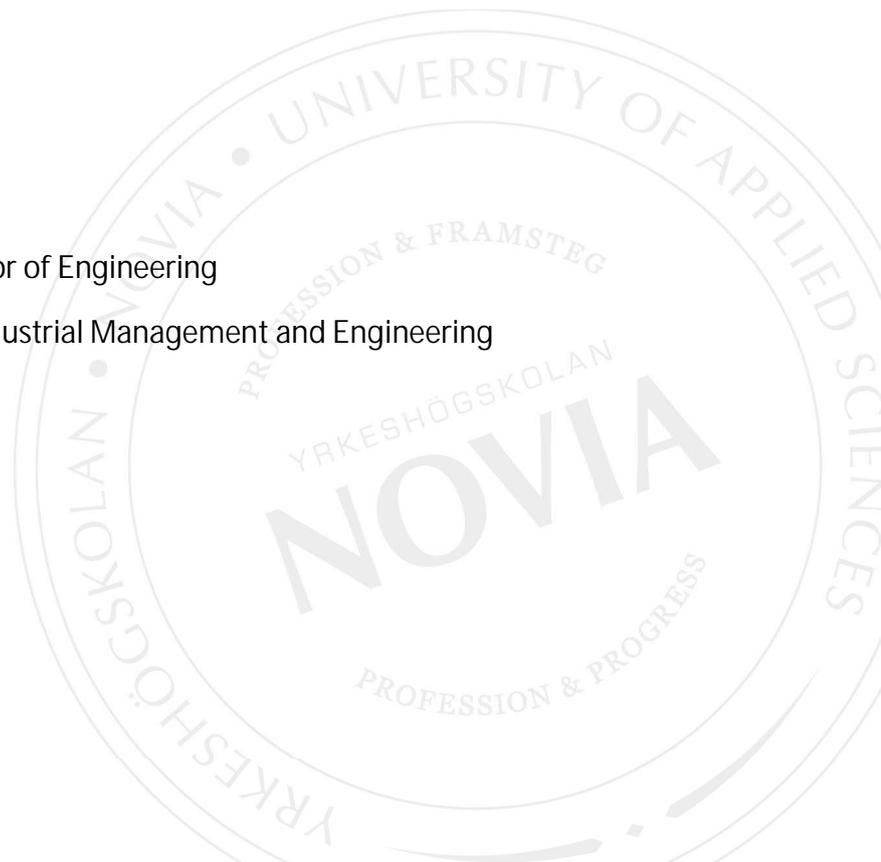
A case-work study for Wärtsilä Energy Business, Project Procurement and Logistics

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EXAMENSARBETE

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Titel: Utveckling av fakturahanteringen för projekttransporter och logistik

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Abstrakt

Detta examensarbete är gjort på uppdrag åt Wärtsilä PP&L. Syftet med detta arbete är att komma fram med ett förbättringsförslag för hanteringsprocessen för logistikräkningar som optimerar, snabbar upp eller eliminerar onödiga flaskhalsar i processen.

För tillfället skapas räkningarna av speditörer som sedan skickar dem till WSSC. WSSC delar sedan ut dessa räkningar internt inom företaget till räkningens behöriga person eller avdelning. För att räkningen sedan skall hamna under rätt projekt och aktivitet måste information läggas in manuellt. Detta kan anses som tidsödande och i vissa fall komplicerat.

Kvalitativ forskning har använts som metod i detta arbete. För att uppnå ett optimalt resultat har personer med erfarenhet och aktiv användning av räkningarna intervjuats. Speditörer som skickar dessa logistikräkningar samt anställda i WSSC som mottar och delar ut räkningar inom företaget har också intervjuats för att få en mångsidig bild av hela processen.

Resultatet av detta examensarbete är förslag på hur denna process kunde optimeras. Förslagen som presenteras har förts fram under intervjuerna. Resultatet bidrar med smidighet, snabbhet, automatisering samt effektivare utdelning av räkningar till processen.

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OPINNÄYTETYÖ

Nimike: Projektikuljetusten ja logistiikan laskujen käsittelyn kehittäminen

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Tiivistelmä

Opinnäytetyö on tehty Wärtsilä PP&L: n puolesta. Tämän työn tarkoituksena on laatia parannusehdotus logistiikkalaskun käsittelyprosessiin, joka optimoi ja nopeuttaa prosessia tai poistaa tarpeettomat pullonkaulat prosessista.

Tällä hetkellä WSSC vastaanottaa laskuja huolitsijoilta. Jonka jälkeen WSSC jakaa nämä laskut yrityksen sisällä sisäisesti laskun valtuutetulle käsittelijälle tai osastolle. Jotta lasku päätyisi kirjanpidossa oikean projektin ja toiminnan alle, tietoa on syötettävä manuaalisesti. Tätä voidaan pitää aikaa vievänä ja joissakin tapauksissa monimutkaisena.

Tämä työ on tehty laadullisen tutkimuksen menetelmin, metodina lähinnä laadulliset haastattelut. Optimaalisen tuloksen saavuttamiseksi haastateltiin ihmisiä Wärtsilän PPL osastolta, joilla on kokemusta ja jotka myös käsittelee laskuja säännöllisesti. Huolitsijoita ja WSSC ovat haastateltu saadakseen täydellisen kuvan koko prosessista.

Opinnäytetyön tuloksena ehdotetaan, miten prosessi voitaisiin optimoida. Esitetyt ehdotukset on esitetty haastattelujen aikana.Tuloksena on joustavuus, nopeus, automaatio ja laskujen parempi lajitteluprosessiin.

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BACHELOR'S THESIS

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Degree Programme: Industrial management, Vasa

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Title: Invoice Handling Optimization for Project Transport and Logistics

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Abstract

This thesis is done on behalf of Wärtsilä PP&L. The purpose of this work is to come up with improvement proposals for the invoice handling process that optimize, speed up or eliminate unnecessary bottlenecks in the process.

Currently, the bills are created by freight forwarders and are then sent to WSSC. WSSC then distributes these invoices internally within the company to the account's authorized person or department. For the invoice to end up under the correct project and activity, information must be entered manually. This can be considered time-consuming and, in some cases, complicated.

Qualitative research has been used as a method in this work. To achieve an optimal result, people with experience and active use of invoices have been interviewed. Freight forwarders who send these logistics bills and employees of the WSSC who receive and distribute bills within the company have also been interviewed to get a complete view of the entire process.

The result of this thesis is suggestions on how this process could be optimized which have emerged during the interviews. The result contributes with agility, speed, automation and better dispensation of invoices to the process.

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List of terminology and abbreviations

SAP = Systems, Applications and Products in data processing, Enterprise resource planning system used by Wärtsilä when managing business operations.

LogWis = A program used and developed by Wärtsilä for material management and to manage logistics operations.

WSSC = Wärtsilä Shared Service Center

LC = Logistics Coordinator

TM = Transport Manager

ASCM = Area Supply Chain Manager

GM = General Manager

IDM = Integrated Document Management

PP&L = Project Procurement and Logistics

GR = Goods Reception

RFQ = Request For Quotation

1 Introduction

This chapter will give the reader an overview of the thesis. Background, problem specification and purpose will firstly be presented giving the reader more knowledge about the origin of this thesis. Followed by demarcation, and lastly to give the reader an understanding of the contexture of the thesis, disposition will finally be presented along with information about the case-work provider.

1.1 Background

This thesis is a case-work made for Wärtsilä Finland, Project Procurement and Logistics. Project Procurement and Logistics is a part of the supply chain management that is responsible for the logistics and infrastructure in projects. Therefore, invoices being sent to PP&L is usually about transportation or stevedoring. My supervisor and I both agreed on that the invoice handling process could be developed or at least faster with less bottlenecks that are time consuming. During my time at Wärtsilä I have handled many invoices, and I can agree that this is something that could be developed.

As of today, invoices must go through several stages before being accepted. This is because Wärtsilä has a policy called "Four Eyes" which means that at least two persons must handle an invoice before it can be released. WSSC receives invoices by paper, pdf-files or other electronic means. The invoice must either be scanned or manually entered into the ERP-system. Then the invoice must be sent to the responsible person or budget owner for review and approval. Henceforth the invoice amounts must be coded for the correct accounts, cost centres or projects. The multi-step approval workflow is time consuming. The invoices are handled and viewed in Wärtsilä's ERP-system, SAP. In SAP invoices that have been sent to you particularly or to the whole Project Procurement and Logistics department are visible.

Wärtsilä orders transports from forwarders that will eventually send an invoice of these. And since this thesis is made for Project Procurement and Logistics only invoices related to transport or logistics will be taken into consideration.

1.2 Purpose

The purpose of this thesis is to research which factors of the invoice process that contribute with negative effect. As of today, the invoice handling includes much manual work which

is time consuming. The invoice also goes through several stages before being paid. The main target is to come up with a suggestion that would speed up the whole invoice process and to eliminate possible bottlenecks and make it less time consuming. This will eventually result in a faster invoice handling process which in the end saves money.

1.3 Limitations

Since this thesis is made for the Project Logistics, invoices related to transport or logistics will only be studied. When it comes to interviews, only local forwarders will participate.

For this thesis only, qualitative research has been used as a method and therefore, I have left out the quantitative research from the theory. Nevertheless, the difference of these research methods has still been compared so that the reader will get a better understanding of the method choice.

So that the theory will apprehend the whole problem, process management and optimization has also been theoretically examined.

1.4 Disposition

The first chapter introduces the thesis to the reader. Background, purpose, demarcation and background information about the case-work provider are presented to give the reader more knowledge about the thesis.

The second chapter consists of the theory behind the work.

Chapter three will demonstrate the methods used in this thesis of which the result is based upon.

The fourth chapter will present the result of the thesis.

The fifth chapter consists of a conclusion of the whole thesis.

1.5 Wärtsilä

Wärtsilä is a Finnish corporation whose focus lies on energy solutions such as power plants and engine solutions for the marine business. As of January 2019, Wärtsilä is divided into two segments, Marine Business and Energy Business. Before the division of the businesses Wärtsilä was divided in three segments: Marine Solutions, Energy Solutions and Services.

Wärtsilä strives for sustainable solutions, high-quality products and services as their vision and purpose defines:

"Enabling sustainable societies with smart technology"

Today, Wärtsilä has approximately 19 000 employees spread over 80 countries. In 2018, Wärtsilä's net sales resulted in 5.2 billion euros. (Wärtsilä, n.d.)

1.5.1 Marine Business

Wärtsilä Marine Business provides innovative solutions that are environmentally sound for its marine and oil & gas customers. Wärtsilä is the leading provider of ship machinery which can be customized according to the customer's need. Wärtsilä supplies engines, reduction gears, control systems, generating sets, propulsion equipment and sealing solutions for all kinds of offshore applications.

Wärtsilä Marine solutions had a net sale reaching over 1.2 billion euros year 2018, that will say 24% of the total net sale. (Wärtsilä, n.d.)

1.5.2 Energy Business

Wärtsilä Energy Business is striving to reach a 100% renewable future with smart solutions. Currently Wärtsilä sells engine-based power plants that can be combined with other solutions making them hybrids. An example of this would be a hybrid solar power plant. Liquified gas systems, energy storage and integration solutions are also provided.

Wärtsilä is a leading supplier of different power plants. Wärtsilä is unique because of their flexible design, low emission levels and high efficiency.

Year 2018 Energy Solutions had a net sale of 1.5 billion euros with an order intake over 1.7 billion euros. (Wärtsilä, n.d.)

1.5.3 Project Procurement and Logistics

Project Procurement and Logistics is a part of the Supply chain management. Project Logistics make sure that all equipment is safely packed and transported from suppliers and factories to the project site in time. Project Procurement and Logistics is a part of the whole infrastructure that the Supply chain handles.

2 Theory

In this chapter theory of the thesis will be presented. This chapter consists of two subheadings: Qualitative research and process management.

To obtain as much information as possible qualitative research will be explained as it will be used as a method. The purpose of this thesis is to optimize the invoice handling process. Therefore, process management will also be presented.

In the first subheading qualitative research will be described. Qualitative and quantitative research will also be compared briefly just to give the reader an understanding of the difference between the research methods.

Process management will be discussed in the second subheading, where overall management of a process will be discussed and how a process could be improved.

2.1 Qualitative research

The distinction between qualitative and quantitative can have several meanings. Firstly, the difference has to do with the data being measured. If the gathered information gives unspecified data it is seen as qualitative, and if the measured data is precise it is seen as quantitative. Secondly, the difference between qualitative and quantitative research has to do with variations between subjective and objective aspects. Qualitative data seems to be subjective perceptions while quantitative data is objective. (Starrin & Svensson, 2006)

Qualitative research method is a changing and complex field where many different research practises can be used. Therefore, it is an umbrella term that can environ huge variations. (Punch, 2009)

Qualitative research has actual context while the researcher functions as the key instrument. The researcher can spend time in different locals learning about the educational interest. Some prefer only a pad and a pencil while some tend to use videotape or recording equipment. Whatever approach is used, the data are collected at the premises and increased by the knowledge the researcher receives by being on location. Qualitative researchers tend to go to the specific setting where during the study since they feel that you get the best understanding in the surrounding in which it occurs. (Bogdan & Biklen, 2007) According to Kvale and Brinkmann the qualitative researcher tries to see and understand everything from the examined persons point of view. (Kvale & Brinkmann, 2010)

Qualitative research is expressive. Instead of examining numbers and precise data, the qualitative researcher can examine words or pictures. The data can be gained through interviews, photograph, fieldnotes, video recordings, memos and other official records. When analysing the researcher does not try to convert the data into numerical symbols. Instead, the researcher tries to examine the recorded or transcribed data as carefully as possible. (Bogdan & Biklen, 2007)

The researcher must assume during the study that nothing is irrelevant. Everything that is being said can lead or link something together, more over even unlock a more extensive understanding of the study. (Bogdan & Biklen, 2007)

2.2 Process management

Process management begins when you look more closely into a process and want to improve it. Process management implicates to:

1. Focusing

   We find out which processes are available in the company and analyse them. Henceforth we detect the problems in the process by doing a status analysis and try to discover improvement possibilities.

2. Controlling

   To implement a stable activity fault and problems must be eliminated to achieve a stable result that does not varies. It is at this stage that the process becomes reliable and we can be sure that the wished result can be fulfilled. Often companies can offer a great product but not does not manage to do it every time.

3. Improving

   According to the new process, even tougher goals are set with the purpose to additionally increase effectivity and customer value. Some improvements have already been taken into action and employees has become familiar with the thought of always improving. The process develops continuously with both small and big improvements. (Alexandersson, Almhem, Rönnberg, & Väggö, 2004)

Operations and process management is about managing and controlling the resources and processes that produces products or services, or even a mixture between these two. The

knowledge behind this subject comes from "operations management" which measures how a business produces services and products for its external customer. All businesses have "operations management" since all businesses produces or sells a service or a product to make a profit.

A process is an arrangement of resources that converts inputs into outputs so that internal or external customer becomes satisfied. Operations and processes are nevertheless not the same, the differences between these two are slight. Both has the same purpose but not in the same magnitude. Operations is the bigger version of processes, you can say that the processes are the components of the operation.

Every part of any business manages process management. Operations and process management is a common term that is used to describe the management of all types of operation, no matter in what industry or sector. Processes are everywhere. (Slack, Chambers, Johnston, & Betts, 2009)

A process is a series of linked activities. The process alters a product or a service to match the customer's need. The process is continuous and repetitive. A process is what happens in a company, step by step, until the customer receives their product. The actions being made during the process contains of linked operations and how co-workers cooperate.

A process model needs help from several components to achieve the wished result. A process model can be analysed through three basic principles: simplicity, participation and leadership.

The process model consists of only one manual with actual advices. These advices are picked up from reality and which makes it possible to implement them directly into the manual. You should only focus on changing the process. Not to try to understand a complicated and detailed manual. Simplicity is one of process models' pillars.

Simplicity is a presumption for the next important component, participation. The people who work with the process are the same persons who map it. Since they are experts, they can recognize faults and bottlenecks in the process. They are also responsible for making changes and finding creative solutions.

The management team's commitment is one of the core elements for achieving a successful result. We can think that the management's commitment is working as a strong magnet. By placing overall and tough goals, the management team strives for the wished direction for

the company. It is also important to inject motivation in the employees by creating understanding and acceptance for the work. To help everybody involved to raise their own goals and to stretch their limits. The management must actively exercise the strong appeal that a committed leadership radiates. A successful work for improvement requires continuity and persistence. Nobody is going to prioritize the change if not the management team does it. (Alexandersson, Almhem, Rönnberg, & Väggö, 2004)

Unnecessary work does not vanish or automatize by itself. It must be found and recognized as unnecessary work. Optimizing the process must be done in certain ways in different situations. A big company is rarely forced to optimize its performance in a drastic way. Instead, a slow and steady improvement that will last several years is preferable.

Continuous improvement of the process requires the capacity of those responsible for the chain and the people involved. Those responsible for the chain must have enough tools for continuous measurement of the core process so, new goals can be set. A prerequisite for true development is a deep understanding of one's own and competitors' activities. By using general measurements, one can assume that success will not be granted.

The improved process can be compared with the old process, other business models or to other competitors. Everyone included in the process must be able to distinguish the ever-changing customer needs and unnecessary work. They also need to be prepared to make rapid changes if necessary. Continuous improvement means that slight changes must be constantly renewed. (Laine & Tiirikainen, 1994)

Re-engineering and continuous improvement are not mutually exclusive approaches. They fit into different occasions and supplement each other. From time to time, existing operating models should be questioned and, if necessary, re-engineered. (Hannus, 1994)

2.2.1   Process improvement

The first task is to find out what requirements the implementation of the strategy puts on the process chain. To identify the core process and assess their performance against competitors and strategic goals. If the company is in a situation where rapid development is not needed, continuous improvement is preferable. At its simplest, it is enough to train people and create the conditions for the quick implementation of small improvements. (Laine & Tiirikainen, 1994)

When improving a process, it is preferred to follow a process model. It is a good choice and favours you. Focus on the following:

- Fast and permanent results.

- Key to motivated co-workers.

- Improved communication between departments, functions and employees.

- No confusing theory. Knowledge will be documented in hindsight, if necessary.

You can also divide the process model in five sections that you can follow while improving a process.

1. Start

   The management team shows the direction, determines goals and identifies which processes exists in the company. This then establishes the common platform that is needed to be able to anchor the work further into the organization.

2. Analyse the current way of working

   When the processes have been obtained and prioritised, working with one process one by one is preferable. Then you should gather the functions and employees that are included in the process and create a team that maps the current situation and what problems exist in the process.

3. Solve problems

   At this stage you look more closely into bottlenecks, problems and faults in the communication to find a solution.

4. Ensure quality

   We document the new routines, preferably in a common quality system.

5. Improve

   In the last stage the process will be improved so that the process will continuously be better and better. (Alexandersson, Almhem, Rönnberg, & Väggö, 2004)

2.2.2 Kaizen

Kaizen is a continuous improvement method used in management. The purpose of kaizen is to increase productivity and to improve processes by adding small modifications to the process itself.

The goal with kaizen is not to radically change or re-engineer the process, but to eliminate unnecessary elements that are costly but do not give more value to the process. The actions taken to improve the process do not have to be internal in the business, they can also comprise suppliers, personnel's wellbeing and wellbeing outside work hours. (Wikipedia, 2015)

2.2.3 PDCA

PCDA (Plan-Do-Check-Act) is an improvement method for processes needing continuous development.

- Plan

  While planning you want establish objectives, goals and processes so that the desired result will be fulfilled.

- Do

  In the do phase you take the planning into action. To measure the effectiveness, small changes are preferable, so data analyzation will be easier.

- Check

  In the check phase data and results gathered from the do phase are analysed and evaluated. The gathered data is compared to the expected result to look for similarities and differences. While testing, differences between the original planning from the plan phase can be obtained.

- Act

  This section can also be called "Adjust". In this phase the process will be improved. Data received from the "do" and "check" phase helps to identify problems with the process. Problems, opportunities for improvement, disagreement and inefficiencies can be found during the identifying. When finding the core problem of the process it

will be investigated and eliminated by modifying the process. Eventually, the actions in this phase, the process has improved goals, standards and instructions. (Wikipedia, 2017)

3 Methods

In this chapter the methods of the thesis will be presented. Choice of method as well as approach will be explained to give the reader a better understanding of on what basis the result is proven on.

3.1 Interviews

In this thesis interviewing has been chosen as the primary method as there is not much quantitative data to analyse concerning this problem. The advantage of interviewing is that you get opinions from all parts of the process, that will say, from each stage and additionally from persons with different background or title. This will eventually strengthen the result since there is perhaps not only one flaw in the process that can be optimized. The disadvantage of only using interviewing as a method is of course that you do not have any statistics to rely on.

A semi-structured interview is a more open and free way of interviewing. While interviewing a framework of questions or themes should be followed, but of which you can divert from and ask supplementary questions depending of what the interviewee says. The topics that you want to cover should be added in your guide or framework, so each topic will be answered. The questions should be well researched in advance, so the interviewing becomes as efficient as possible.

The difference between structured interview and semi-structured interview is that the structured view has certain questions that need to be followed during the interview and which you cannot divert from. (Wikipedia, n.d.)

To make sure I would cover the whole process I decided to interview at least one person per stage in the invoice process handling, that will say, Logistics Coordinator, Transport Manager and Area Supply Chain Manager. Instead of interviewing a General Manager who seldom releases invoices, a Development Manager was more reasonable since he could give more significant information. So, I started on planning on which persons from each title had

the most experience with invoice handling, just to make sure that the outcome would be as precise as possible.

Additionally, I thought that WSSC had to be interviewed since they send the invoices internally in Wärtsilä and plays a major role in the process. It is they who decide to whom these invoices are being sent to and they have a big influence on the process. They could strengthen important information or even point out obvious problems in the process.

Finally, to wrap up the whole process, I determined to interview local forwarders. As the invoices are created by the forwarders it seems obvious to interview them. As said, the forwarders create the invoices, that is why it is so significant to get it right from the start so that the invoice will be effectively handled until the end of the process.

Before I started interviewing I created a question template of which I would ask the questions and follow during the interview. I had these questions accepted by my supervisor at Wärtsilä and started to conduct meetings shortly after. When interviewing I recorded each interview to make it easier to analyse while putting together the result. I decided to use semi-structured interviewing as my method in this thesis. As explained, this means that I would have to cover the questions in my question template but could ask questions outside of it too just to fill out and gain as much information as possible and to address accurate supplementary questions. However, the conversation during the interview flowed on freely and openly.

In the subheadings below information that was yielded from the interviews will be presented.

4 Results

In this chapter the result of this thesis will be presented. The result will in this case be improvement proposals that will eliminate, improve or add something to the current procedure.

The proposals that I have chosen are the most significant and reasonable proposals that have been addressed during the interviews. Each proposal will have its own subheading. The current invoice handling in Wärtsilä will also be presented.

5 Conclusion

In this chapter I conclude my thesis with consideration to the purpose. A personal suggestion to this problem will also be presented.

5.1 Did I reach my purpose?

The main task of this thesis was to come up with improvement suggestions for the invoice handling process. The improvement proposals that has been yielded during the interviews are both minor and drastic. Some proposals are small and can be implemented immediately which is satisfying. Other proposals are more dramatic and drastic which requires re-engineering of the process. However, all proposals are relevant and can be mixed to achieve an optimal solution for the process.

In my opinion I have chosen accurate persons to my interviews. Almost all of them had different input to the process and the whole process got covered by these interviews.

The purpose was to propose improvements that can eliminate bottlenecks and make it more automatic. This has been achieved according to me, further research and feasibility studies are however needed.

5.2 Comments

This thesis has given me a lot of understanding of the invoices' process and handling, and how the Supply Chain works. I would like to thank my supervisor at Wärtsilä, Ville Laakkonen for giving me the opportunity to write my bachelor's thesis for Wärtsilä. I would also like to thank Roger Nylund from Novia UAS for helping and supporting me with the writing of this thesis.

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