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JUNTTAN SUBSIDIARY PERFORMANCE

SERVICE DEPARTMENT IMPLEMENTATION AND PERFORMANCE AUDITS AT JUNTTAN SUBSIDIARIES

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THESIS
Abstract

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Abstract

The aim of this thesis project was to develop a tool for the client organization to be able to evaluate the performance of the service departments of its subsidiaries as well as a set of guidelines for the subsidiaries to follow.

Defining the needs of the client organization and researching methods of performance development in an industrial setting were the tools used to create the guidelines as well as the evaluation tool.

The thesis project resulted in a service operation guide for the subsidiaries of the client organization. Additionally, the project created an evaluation matrix that allows for the client organization to evaluate the performance of its subsidiaries. The project created challenging situations which were only solvable by using all of the tools available: experience from previous projects, theoretical knowledge, as well as being able to refocus onto the main aim of the project. The challenges that the project created, allowed for professional growth when working on development projects.

Keywords

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1 INTRODUCTION

As a company grows and becomes more international, it becomes critical for the company to be close to their customers. The easiest way for the company to realize this is by creating subsidiaries where their customers are located. As the subsidiary is mostly independent from the parent company, the most efficient way for the parent company to review the performance of the subsidiary is through performance audits (Sherman & Fraser).

1.1 Junttan Oy

Junttan Oy is a leading hydraulic pile driving machine manufacturing company based in Kuopio, Finland. The company was founded in 1976 and over the past 45 years has grown internationally with customers all over the world and owning five subsidiaries in Australia, Netherlands, Sweden, Canada, and the United States of America. Despite having operations all over the world, the majority of Junttan's roughly 250 employees work at the Junttan factory in Kuopio. Junttan Oy is divided into five departments: Sales, Productions, Service, Engineering, and R&D. The subsidiaries work closely with the service department to provide spare parts and services to customers locally (Junttan Oy).

The service department at Junttan has three main tasks: spare part sales, field service, and used machine sales. The Used Machine Sales team buys old machines back from customers who are potentially purchasing new machines. Once an old machine has been bought back it gets an intensive service and then is sold again to new customers or placed into the Junttan rental fleet. The Field Service team carries out service jobs and installation of new parts to Junttan machines out in the field. Additionally, the field service team carries out audits on the machines that customers are using to ensure they are being operated safely as well as informing the customers what repairs or service jobs might be needed. Finally, the spare part sales team takes care of all part sales to customers as well as any major project sales, such as adding tools to take are of different sorts of piling operations (Junttan Oy).

1.2 Thesis Scope

The scope of the thesis was to create a performance evaluation tool that allows the Junttan Oy Service department to perform effective audits on their subsidiaries. The tool was to include a guide for the subsidiaries to define the audit areas. This tool was to be as simple as possible to make it effective to use no matter where it is used or by who.

Additionally, the thesis was to get the student familiar with the process of defining an issue and working on a solution that helps solve the issue. The goal was to challenge the student in order to give him more experience in operational development projects.

2 THEORETICAL BACKGROUND

2.1 Best Practice

While companies try to find out what competitors are doing to achieve best performance, nearly all companies forget to look internally for efficient solutions. By searching internally and finding a company's best practices, a company can minimize costs while increasing revenue and profits. In short, a best practice, from a management view, is the most efficient way to perform a task. This can be by saving material, time, or costs. One would assume that a location that creates a best practice would share the information to the rest of the organization, but this rarely happens. The first challenge normally faced is the lack of communication of an issue or potential solution. The second challenge is due to not having the resources required to learn a solution and incorporate it. The third challenge is the lack of a personal connection within the company to transfer the information through a trusted source. The final challenge normally faced is that implementing a new way of working takes too long, long enough for it to become obsolete. (O'Dell, Grayson 1998, 154-156).

The way how these internal best practices can be found is through internal performance audits. While performance audits are normally carried out by independent organizations, internal performance audits are carried out by a company in the same structure as an unbiased external audit. Performance audits, as defined by the European Court of Auditors, are objective reviews of system and operations within an organization to ensure they are working effectively (European Court of Auditors, 7). Plainly said, an internal performance audit is when a company reviews how their operations are working and lists areas of improvement. Using the audit as a base, actions are carried out to make the company's process more efficient. (O'Dell, Grayson 1998, 162-163).

Once a best practice has been identified and defined, it needs to be spread to the entire company. For this to happen, the company's environment needs to support the sharing of knowledge. This environment can be created by allowing employees in the same tasks meet together, discuss, and learn the ways of operating. These meetings, formal or informal create the relationships that allow for managers to share ways of working. This builds the environment for the best practices to spread. (O'Dell, Grayson 1998, 163-168).

2.2 PDCA Cycle

In 1950, Dr. W. Edwards Deming held a lecture in Japan about statistical quality control. While presenting the Shewhart's cycle, an early predecessor of the PDCA cycle with three steps (Design, Produce, Sell), Deming showed a modification to it: a fourth step. This step was to use market research to help develop the product. (Moen, Norman 2009, 5-6).

This modified Shewhart's cycle was translated by the Japanese audience into four simple words. (Moen, Norman 2009, 6-7):

1) Plan
2) Do
3) Check
4) Act

The cycle's four steps include every part needed for problem solving. The planning phase is used to define a problem as well as create a set of solutions. The doing phase is when the plan to solve the problem is implemented. The checking phase is when the planned solution is evaluated based on the planning phrase. Finally, the acting phase is when the process returns to the planning phase if the solution's results are not to the quality wanted. The acting phase restarts the process again for the same problem but using the results from the most recent process, creating a loop that repeats until the problem is solved. (Moen, Norman 2009, 7-8).

This process allows easily for continued improvement as the process naturally creates a situation where the user needs to review the results of the process and compare if the proposed solution solved the problem. Over time, this naturally caused situation for continued improvement was refined into the Model for Improvement. This model added a framework to the cycle through 3 questions which makes the PDCA cycle more focused. These questions are used to define the goal of the needed improvement, create a measuring tool, as well as what can be changed. This model makes the PDCA cycle more flexible to be used when trying to improve products, processes, or personal projects. (Moen, Norman 2009, 7-9).

Everything improves over time. The PDCA cycle is no exception. It is based on a scientific method and has gone through different versions. These different versions have helped refine how the PDCA cycle and Model for Improvement is used. It has been realized that the cycle and model both can be used in all levels of organizations, give projects the opportunity to adapt based on results achieved, as well as guide development projects using concrete questions and goals. (Moen, Norman 2009, 9-10).

2.3 5S

As with the PDCA cycle, Japan has brought forward many development tools for industrial settings. One of the more famous ones is the 5S method. 5S method is a system of thinking to create and maintain an organized and efficient workplace. The name 5S comes from five words in Japanese that all start with S. (Michalska, Szewieczek 2007, 211):

- Seiri (sort)
- Seiton (set in order)
- Seiso (shine)
- Seiketsu (standardize)
- Shitsuke (sustain)

The 5S method is a system of organizing and maintaining an efficient work environment. By following the definition of each S, the method is incredibly easy to implement and can be started from individual workers. The process starts from sorting, 1S. Having each employee sort what is necessary and unnecessary, all extra steps, tools, wait times, and other delays can be removed from the work process. Once a process has been sorted, the next step is to arrange the workspace, set in order, 2S. This step focuses on ensuring that a workspace is arranged in the most efficient and clear way. It can be carried out by marking where certain items are stored and located, for example using tape to mark a section of the floor space for storing empty pallets or outlining tool locations on a wall meant for storing different tools. When arranging the workspace using the 2S method, it should also be considered if similar items should be grouped together. (Michalska, Szewieczek 2007, 212, 214).

One of the largest factors in a healthy working environment is the cleanliness. In addition to making a workspace look visually appealing, a clean working environment can help better work motivation (Haneef 2014). The goal of 3S, Shine, is to maintain the cleanliness. The cleanliness is achieved by performing a deep cleaning to the work environment, which happens through 1S and 2S. This cleanliness can be divided into to two areas: a worker's workspace and the entire work environment. A worker's workspace is the worker's responsibility. By ensuring that each worker knows tool locations and keeps their work environment, in a large workspace, the work environment cleanliness becomes self-maintained. When applying 3S into the broader, entire workspace, it happens through checks of the work environment. These checks look for unclean spots, such as oil around or on machines, broken equipment, dirty lighting. Every individual worker is responsible for this cleanliness, and it should be inspected daily. (Michalska, Szewieczek 2007, 212-214).

4S, Standardize, is the process of standardizing the procedures of different tasks. The process should focus on the experience of the workers who work with each process. This allows for hands on experience to guide the standard to the most efficient outcome. The standards that are created should be made in a way so that they are easy to understand at all levels of the organization. Additionally, these standards should be created at all levels and aspects of the organization, not just manufacturing. These standards help ensure that the created processes are known to all. The final S, 5S, is Sustain. The focus is on maintaining the results from the 5S method. This is made possible through the self-discipline of all the workers at the organization. The goal is to create self-conscious staff to ensure that the changes are kept, and standards are followed. Additionally, the workers seek new ways to make processes more efficient. As this portion relies on trusting the workers to help develop and sustain changes, this can easily fail. That is why regular inspections are needed, with the help of a check list. These inspections are carried out by an overseeing 5S team who then report back and help ensure that the 5S process works as planned. (Michalska, Szewieczek 2007, 213-214).

2.4 Lean Management

Historically, Lean has exclusively been defined as a way to reduce waste, however, as it evolved it has grown into more than just a tool to reduce waste. A key part in a successful Lean environment is Lean management. Lean Management has two main definitions. (Charron, Harrington, Voehl, Wiggin, 2014, 2-3):

1. A fusion of Japanese and U.S. management principles focusing on reduction of waste, inventory, and customer response time.
2. A systematic and very focused approach for guiding employee learning, education, and practice of Lean principles and philosophies across an enterprise. Lean management encompasses both an individual and a collective organizational transformation plan for the deployment of a Lean educational system. Lean sociotechnical system (belief system), and Lean change management system. (Charron et al. 2014, Page 2).

The term lean manufacturing was coined in the late 1980’s by MIT researcher John Krafcik who was studying best practices in automotive industries, specifically in Japan and Toyota. At the time, production at Toyota was being led by Taiichi Ohno who was studying Henry Ford’s book, *Today and Tomorrow*. Through the book, Taiichi Ohno identified seven basic wastes: defects, overproduction, waiting, transporting, movement, inappropriate processing, and inventory. (Charron et al. 2014, 3-4).

In terms of the Lean Management System, there are 4 main roles of managements: performance management, risk management, resource management, and asset management. Lean management affects all roles. (Charron et al. 2014, 6).

Performance management, from the view of Lean management, comes from five concepts. (Charron et al. 2014, 7-8):

1. Value: A product meeting the needs and wants of a customer.
2. Value stream management: The combination of product development management, information management, and operations management.
3. Flow: Ensuring that the value creating steps are in an uninterrupted sequence that flows.
4. Pull: Focusing on products which customers really want and are willing to buy.
5. Pursuit of Perfection: To keep evolving and making the organization the best possible.

Asset management needs to be planned. An organization cannot view assets as individuals, but instead as a collection that make up a single complex system. The goal of asset management is to get the best results from an asset while using the least amount of money. This requires planning. Everything from asset use and maintenance to asset replacement must be planned well in advance to prevent interrupting asset use. Good asset management is the base for good resource management. Resource management ensures that the correct tools are available at the right place at the right time. This helps minimize costs, decreases the required systems, and allows for more flexibility. (Charron et al. 2014, 10-13).

While the Lean system is typically used in manufacturing, Lean management can be used in all aspects of business. Lean management has two main roles: to maintain and to improve processes. The four main roles of management are the way how Lean management maintains processes. The Lean philosophy on the other hand is how Lean management improves processes. (Charron et al. 2014, 25-26).

3 METHODS

As Junttan has expanded rapidly as a company, they have created subsidiaries around the globe. While having locations near to customers helps keep customers invested in the company, the distance between the main company and the subsidiary naturally minimizes the amount of oversight the company has in the operations of the subsidiary. This is a challenge that Junttan faced even with their closest subsidiary in Sweden. In order to combat this, a way to evaluate the subsidiaries was needed.

The creation of this tool was carried out by a student in the form of a thesis project. The student was familiar with both development projects as well as how the Junttan Service department operates in Finland. This prior knowledge placed the student in the perfect place to carry out the project.

3.1 Preparing the Project

The goal of the thesis was to develop a tool to evaluate how the company's subsidiaries are operating, the first step was to list all the areas that needed to be evaluated. This was carried out by listing all possible aspects that are part of each subsidiary's operations and ranking them based on how critical they are to the service tasks each subsidiary has. The operations that were ranked were not ones that the customer sees, but the behind-the-scenes operations, such as how a warehouse is planned or how documents are stored. This process was assisted by having meetings with the service managers at Junttan to get an understanding of what aspects were important.

The next step was to research how to start developing the tool. By becoming familiar with different development methodologies. Some of the methodologies researched include Plan-Do-Check-Act cycle (PDCA cycle), 5S methodology, and lean production. These development methodologies allowed for planning the tool. For example, the idea of the PDCA cycle guided the instructions how the tool was to be used and when it was to be updated. The set-in order portion of the 5S methodology guided how the warehouse arrangement section of the guide was written.

3.2 Service Operation Guide

Each subsidiary's employees have been taught by a Junttan Service manager on how the company operates, however, no documentation exists that contained all of the best practices as the company had been operating out of one factory. This lack in documentation meant that there was no one correct way of operating but multiple ways depending on who was taught by whom. In order to make operating ways the same, a single guide was needed. The creation of this guide would also help Junttan to oversee how their subsidiaries were performing, because it created the backbone of the auditing tool that allows Junttan to evaluate subsidiaries. This led to the creation of the Junttan Service Operation Guide. The purpose of this guide was to create a tool that subsidiaries can follow in order to operate according to Junttan standards as well as creating a single reference document that all Junttan employees can use.

3.2.1 Outlining the Guide

The starting point of the guide was structuring the topics in a logical way. By using the information gathered while preparing for the task, creating the first outline was easy. This was done by naming the largest topics first and then defining subtopics (see Figure 1). As the main goal of the Service Operation Guide was to assist subsidiary service departments and warehouses, the guide was made up of four parts: warehouse arrangement, service operations, working environment, and brand visibility.

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Figure 1 Example of topic grouping and subtopics

Once the topics were defined, it was time to plan the subtopics. Depending on the topic, this was as simple as breaking down the topic into individual areas. However, some subtopics had to be broken down into small topic areas. This was to make the guide as clear as possible.

The order of the topics was planned based on relevance to the service department operations. The first topic was the warehouse arrangement. This was selected as the first topic since it is the most relevant for a service operations location. By having each subsidiary organize their warehouse based on the same guide, it ensures that Junttan Service technicians can operated at every warehouse without having to search for everything.

The next topic was about service operations. The goal behind the topic was to create a collection of best practices with guides related to them. By collecting all of the best practices related to service operations allows for subsidiaries to start using operation methods that have already been found to be effective. This would potentially save the subsidiary from using ineffective methods which in turn could potentially save money. The subtopics in the service operations section were decided based on their relevance to the day-to-day operations that are a part of Junttan service operations or help make operations run effectively. For example, including how picking lists are handled comes from the long experience at Junttan of handling picking list. Handling picking lists is a part of day-to-day operations at Junttan. However, the topic also includes how to handle customer owned parts. Customer owned parts arriving at a Junttan location is not something that happens day to day but was included in the guide in order to prevent accidents before they happen.

The third section of the guide was about the Junttan subsidiary service workspace. The goal of this section was to ensure that Junttan subsidiaries and their warehouses look professional and are safe working environments. By including these topics, meant that the subsidiaries have tools to not only stay organized when working but additionally in situations where clients would visit the warehouse, the work environment would look professional.

The final topic of the guide was brand visibility. While the primary focus of a service centre is not marketing, it is the face of the company in the region that the subsidiary is in. This means that the subsidiary still needs to practice the marketing practices of the company. The goal of this topic was to get all the relevant information about marketing at Junttan collected into one place for the subsidiaries.

3.2.2 Making the Guide

Once the outline had been created, it was time to make the guide. As the guide was divided into four main topics: Warehouse Arrangement, Service Operations, Workspace Environment, and Junttan Brand Visibility; the guide was written in four parts. Each topic was researched and planned before being approved by the Junttan Service manager overseeing the thesis. Once the plan for a topic was approved, the guide was written.

3.2.2.1 Warehouse Arrangement

The first topic, Warehouse Arrangement, was straight forward to create. Taking personal experience of the student and the manager, the student first created a plan of what a service location warehouse should include. The foundation for this plan was created based on the Junttan Hyvinkää warehouse plan. As no warehouse location is the same, the plan, working of the first two principles of the 5S methodology, only included items of what each warehouse needs. How a warehouse was set up was left to the subsidiary to use the warehouse space as effectively as possible. By looking at what parts a service location needs to have in stock and by how to store them, the warehouse plan was created. For example, as a service warehouse has incoming and outgoing packages, clearly marking two separate areas ensures that packages get sorted correctly and do not get mixed up. While some of the requirements are straightforward, having everything listed ensures that even the simplest tasks are done properly.

3.2.2.2 Service Operations

The second topic in the guide was Service Operations. This topic deals with all aspects of a service location running smoothly. This topic was divided into five subtopics: Warehouse, Field Service, Spare Part Sales, Invoicing, and Purchasing. The decision to break the Service Operations topic into five subtopics was made so it would be easy to find relevant information in the guide as well as to make the auditing aspect of Service Operations more straightforward. Additionally, as the goal of internal audits is to measure performance, these topics help develop the skills of the subsidiaries by using the 5th concept of performance management as defined in Lean management: Pursuit of Perfection.

While the first topic in the guide was about the physical needs of a service warehouse, the Service Operations subtopic Warehouse is about how tasks within the warehouse are completed. The idea behind making a guide on how tasks are carried out was to get all warehouses to work in the same fashion in certain tasks. This ensures that important information is recorded correctly and in a fashion that everyone in the company understands it. The second subtopic was the way Field Service jobs are recorded as well as what is the official uniform of a Junttan technician in the field. The documentation guide is to ensure documentation is identical and understandable no matter who is servicing the machine. The defining of the official uniform is to ensure that Junttan service technicians are safe when performing duties in the field.

The next three subtopics all relate to each other but were separately defined as they are separate tasks. The subtopics are: Spare Parts Sales, Invoicing, and Purchasing. Spare Parts Sales are a very important aspect of Service operations, and the guide briefly goes over the process. It is not deeply explained as there already exists a guide on all aspects relating to the spare parts sales process. This is the same for the Invoicing and Purchasing subtopics. These topics are all critical to Service Operations and as such had to be added. However, as there already have been guides made, there was no sense in writing one again.

3.2.2.3 Workspace Environment and Brand Visibility

The fourth topic of the Service Operations Guide was Workspace Environment. This topic goes over how the workspace should look from general cleanliness to how garbage is stored using the 5S principles of sort (1S), shine (3S), and sustain (5S) as the bases. As simple of a topic as it is, it was added into the guide as the first thing a customer sees when entering an office or warehouse is how it looks. The cleaner the workspace, the more professional it looks and better for long term employee health. This leads to everything being more organized. The final topic in the Service Operation Guide was Junttan Brand Visibility. This topic was made by using existing material the Junttan marketing team had made. The topic was added into the guide to serve as a reference that subsidiaries could use to make sure that the Junttan brand was visible according to how the company has planned. For this and every topic in the guide, a contact persons information was added to ensure that subsidiaries had a way to get additional information regarding certain topics.

3.2.3 Finalizing the Guide

The final part of creating the Service Operation Guide was to make it visually appealing. This was partly very simply done. The document was written in Microsoft Office Word directly using a Junttan document template. This meant that there was virtually no work needed to make the pages visually appealing or to add page numbers since they were automatically added. The challenge came with making the text visually appealing as well as placing the topics in a logical order.

As the guide was divided into four topics and as such written in four parts, the first challenge was making the guide flow in a logical order. The final order that was decided was as follows: Warehouse Arrangement, Service Operations, Workspace Environment, and Junttan Brand Visibility. This order was decided as Warehouse Arrangement and Service Operations were the two most important topics that were included into the guide. Having them first meant that it would be easier to find relevant information as questions about the warehouse or service operations are expected to be the most common.

In order to make the guide more visually appealing and easier to understand, images relating to certain topics were added to the guide. For example, images of how cylinders should be stored in the warehouse or how logos should be printed onto boxes were added to make the text clear. The images were either obtained from the Junttan marketing team, such as the ones regarding brand visibility. Other images were taking from the factory floor by the student as needed. These images were taken with a basic camera and contained little to no editing. Once the guide was finalized, the guide was ready to be made available to the company.

3.3 Evaluation Matrix

The second part of the thesis project was making the evaluation matrix which would allow the company to audit its subsidiaries and carry out the "check" step of the PDCA cycle. While the Service guide contained multiple topics, not all of them were ones that could be evaluated. The matrix was divided into three parts: Warehouse arrangement, Brand visibility, and Workspace. This means that the Service Operations section of the guide was completely left out, as it was more important to first be able to measure concrete factors.

The matrix was constructed to be as easy as possible to use as well as being easy to understand. There are four columns: Area, Points, Comments, and Improvements (see Figure 2). The first column, Area, is straightforward. This is the topic that is being evaluated. The topics correspond with the topics from the Service Operation Guide.

Warehouse Arragement			
Area	Points	Comments	Improvements
Pallet Racks			
KanBan			
Arriving Shipments			

Figure 2 Example of Evaluation Matrix with columns visible

3.3.1 Evaluation Points

The next section is the points for the area. This is where the person performing the audit evaluates how well the subsidiary performed in the topic. Each area is evaluated from a scale of 1 to 5 points. The points are divided according to the following table:

Evaluation points system:

1	Barely meets any aspects of criteria or not at all.
2	Some aspects of criteria met.
3	Meets most aspects of criteria.
4	Almost meets all aspects of criteria.
5	Meets all aspects of criteria and possibly beyond.

This points scale was created to be as straight forward as possible by referring to the service guide. Using a scale from 1 to 5 allows for the most feedback while using the least amount of points. If a scale of 1 to 3 had been used, the difference between a 2 and a 3 would have been so large it would make it had to give a 3 in a topic. At the same time, a scale that used more than 5 would make it confusing to understand the difference of the scores.

3.3.2 Feedback

The third section in the Evaluation Matrix is the Comments section. Once the auditor has scored the subsidiary, they have the option of writing comments for each topic. This section can be used to record improvements made from previous audits or for general notes on how a subsidiary is handling a certain topic. This column was mainly added to create a space where the auditor can write notes.

The final section in the Evaluation Matrix is the Improvements sections. If a subsidiary gets scored less than a 5 in a topic, it means they have something to improve in the topic. This section of the matrix is meant for the auditor to write down what it is that needs to be improved. This serves as a guide for the subsidiary on how to perform better and more efficiently.

4 RESULTS

The scope of the thesis project was to create a tool with which Junttan Oy can audit and evaluate the performance of its subsidiaries in a subjective and standardized way. The result of the project was a 15-page guide, not including attachments, as well as a four-page long evaluation matrix. The guide and evaluation guide that were created are only the first versions. Unfortunately, due to the project timeline, neither the guide nor the matrix could be tested with a subsidiary. Additionally, the guide in the state that it was finished in, included only a portion of tasks that the Service department carries out. The final version of the guide that was made through this project was made to be large enough to work as a testing tool on how auditing a subsidiary could work but not be time consuming or too complex to use.

4.1 Next steps

As the guide and matrix that were made were not tested during the time frame of the thesis project, the first action Junttan Oy should take is to implement the guide in one or two different subsidiaries. Once the subsidiary has become familiar with the guide and implement the guide into its operations, Junttan Oy would have to send a team to evaluate the subsidiary. If the results of the evaluation tool were successful, the guide could be implemented throughout the company. This could ensure that all Junttan locations operate in a similar fashion. The success of the evaluation tool could be argued by how clearly the tool allows for the listing of items to develop as well as how the subsidiary implements the recommendations.

Once the guide has been implemented, Junttan should then start an updating process, using the act principle of the PDCA cycle. This updating process should start a minimum of two years after the guide has been first implemented. A two-year time frame allows for the tool to be tested as well as carrying out the first round of performance audits at all locations. As this guide was created to only include the most important operations of the service guide, it is missing all side operations that are carried out. These side operations can be added into the guide once a testing process with a limited number of subsidiaries has been carried out. The most effective way to create this updated guide would be to have the managers of different tasks write a step-by-step guide of the task. Then another person would be able to compile the task guide into the operation guide and add the task into the evaluation matrix.

4.2 Lessons Learned

One of the main goals of this thesis project was to challenge the student professionally. The two main areas where the student was challenged were: the process of defining an issue and working on a solution to solve the issue and leading operational development projects. The process of defining an issue and working on a solution to solve the issue at first glance seems like a simple task. However, the truth is that anyone can define an issue, but it takes experience and knowledge to look at an issue and to be able to break down the issue so that a solution can be found. This was one of the first tasks faced when starting the thesis project. The student was given a task of creating a tool to be able to audit subsidiaries. While this is a direct task, the underlying issue was a difference in ways of operating. This led the process of creating the tool. This challenge helped the student understand how important it is to clearly define the underlying issues when faced with a problem. Once the underlying issues are defined, it creates a plan on how to solve the problem faced.

The second challenge that the thesis created was leading a development project. While the student has been part of development projects before, leading a development project was a new responsibility. This new responsibility also brought challenges. These were mainly related to time management and planning the project timeline. When the thesis project was started, it took the student longer than preferred to plan out the project. This however showed what happens when planning is left to the last minute as certain tasks were rushed. The second challenge of being the project leader was time management. A few times during the duration of the project the student was faced with time management issues. These were mainly due to neglecting to set personal deadlines for when certain tasks should be completed.

5 CONCLUSION

During the process of developing an evaluation tool for Junttan Oy to be able to perform audits on its subsidiaries, a lot was learned. Some of these lessons learned are about how development projects are carried out while others were personal lessons learned by the student. Overall, the project could be considered a success as a tool was created to audit Junttan Oy subsidiaries. However, the tool could not be tested during the project timeline due to the inexperience of the student. Projects like this help build the experience that is needed in the professional world of an engineer.

Over the course of the thesis project, the student faced a few major challenges. The student was given relatively free hands to create the tool based on how he saw fit. The largest challenge that this creates is deciding what is relevant and what can be left out to be added at a later date. This challenge could have easily been prevented by creating a clearer outline of what the guide should include at the very beginning of the project. Another challenge that the student faced was the lack of hard deadlines. While the student had a few deadlines, they were not strict. For the most part the student had to create a work plan and be disciplined enough to stay on time. This caused a few periods in the thesis project time period where the thesis was not the primary focus. This in turn meant that toward the end of the thesis project, the student had to work almost double to compensate for the periods when the thesis was not a priority. This challenge could have been prevented by creating two sets of deadlines: first a list of deadlines from the partner company and a list of deadlines from the university of applied sciences. The deadlines from the partner company would have been related to different stages of the evaluation tool while the deadlines from the university of applied sciences would have been related to the actual thesis and the thesis report. However, this challenge also showed the student how important it is to plan deadlines for a project when planning the project timeline. In the end, the goals of all parties involved in the thesis project were achieved.

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APPENDIX 1 – JUNTTAN SERVICE OPERATIONS GUIDE (CONFIDENTIAL)

APPENDIX 2 – EVALUATION MATRIX (CONFIDENTIAL)