



CHALMERS
UNIVERSITY OF TECHNOLOGY

Involvement in Change Processes

Master's thesis in Production Engineering

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Involvement in Change Processes

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[Reproservice]
Gothenburg, Sweden 2014

ABSTRACT

This report's main objectives are to map how AB Volvo in Tuve is working with operator involvement in a major change programme and how the operator involvement can be improved resulting in more motivated and engaged operators.

Firstly, the current state of involvement shows that certain operators, referred to as "key-operators" are involved in the change process from the point where the project starts to work on a shop-floor level. That means that the key operators are involved in all steps, from the Border of Line activity to the final fine balancing.

Secondly, improvement areas are suggested on the basis of qualitative interviews and literature studies. The three main areas that can be improved are:

- Communalities – Today much focus is to find common solutions with other factories why many good ideas may have to be discarded. In time the problem will be minimized due to settled common best-practice solutions.
- The same people are always involved – Normally in projects there is an endeavour to find the most motivated and skilled operators to participate why the same people are involved in many projects. To solve this there need to be formalized feedback to the other operators not involved in the project.
- The relation between technicians and operators – The relationship has been a problem for a long time and according to Volvo's own codex "The Volvo Way" this kind of behaviour is unacceptable why it needs to be changed. Working together in different production line activities are a good way to start improving the relations and initiate and facilitate communication.

Volvo is today already working with improvements in engagement and are, for example, since three years measuring Employee Engagement Index. Companies that perform well in engagement surveys are also shown to perform well in other performance indicators such as productivity, profitability, quality and safety.

Keywords: Involvement, Engagement, Change Management, Change Processes, Operator, Assembly, Truck, Manufacturing, and Production.

Acknowledgment

I would like to thank my examiner Bertil Gustafsson who has helped to always keep the focus on the goal of the thesis despite many detours and who has given inspiration and maybe the most important eye opener while writing this report.

I would also like to thank Fredrik Agelén who has been my supervisor at Volvo and made this master's thesis possible. Thank you not only for supporting my project but also supporting me as an individual. Fredrik has supplied me with a reference group whose contribution and feedback has played a central part during the project.

During the time at Volvo I have met some extraordinary people. Thank you for taking your time to answer my questions and participating in interviews and letting me observe your work.

Terminology

Operator

“Operators” in this report refers to the people working in production on a blue-collar level.

Key-operator

The operators chosen to participate in the change project are called key operators.

Technician

“Technician” or “production technician” refers to a support function in production industry and the work includes technical production problem solving and production balancing.

Involvement

Involvement refers to being present and contributing in a project activity. Involvement requires active participation.

Engagement

Engagement is a sense of passion for the work and an endeavour to perform at the maximum. The level of engagement is dependant on many social and psychological factors.

Line Activity

A line activity is a project activity that is performed in direct proximity of the production line and concerns the operations flow.

Volvo Production System

The Volvo Production System (VPS) is the way Volvo wants to manufacture their products. It describes preferred production and logistic flows as well as quality guidelines.

Purple solution

The common solution to production methods that is developed with the factories in both Tuve and Genth.

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1 Introduction

This chapter presents the background to the research questions and defines why this thesis is carried out.

1.1 Background

The pressure on manufacturing companies has never been greater. Manufacturers need to produce more with less resources and the market competition has never been harder. To survive in the increasingly harder competition the companies have to continuously improve to keep up and hopefully outperform the competitors (Camlek 2012). In this pursuit, all recourses available need to be used in the best possible manner. The utilization rate and the productivity of the machines need to be elevated, the material supply need to be swift and delivered just in time when needed and the staff need to perform in an all new manner using the whole pallet of skills to sustain, maintain and develop the operations. Blue-collar involvement is one of the most important ways to fully utilize the competence of the people who know best how the machines in the factory work (Womack, Jones and Roos 1990).

By expanding the operators' work content other beneficial effects are also reached, such as higher engagement for the company and better motivation to work, which are factors that have tremendous impact on the outcome of the work. The engagement level does not only impact on the individual performance but resent research has shown that the aggregated engagement among the staff also affects the total performance of the business unit and even the whole company. Because of this, it is important for companies to facilitate for their employees to feel engaged in their work and thereby deliver at maximum every hour spent on work (Cook 2008).

Volvo group truck operations in Tuve are currently running a project called the "Tuve Transformation 2015" which is a part of a larger program called the European Optimization Program (EOP). Under the umbrella of the EOP, production is moved around in Europe to improve efficiency and cut costs. The program will have the following effects on the Tuve factory (see also Figure 1):

- The cab trim, which is the production step where the cab is mainly assembled, will be moved in to the factory in Tuve from the factory in Umeå.
- One of the existing two production lines at the factory in Tuve will be moved to the production facility in Ghent in Belgium.
- The remaining production line will be improved by changing the production flow to a fishbone structure with extended preassembly areas to be able to increase the productivity at the line. To find the new solutions for the improved factory the project management teams in Tuve and Genth cooperate to find common solutions to common problems see Figure 2.



Figure 1. The production of different manufacturing steps is moved around in Europe as a part of the EOP.

The transformation is a net loss in production for the Tuve plant and it is therefore of absolute value for the factory to improve the productivity, to cut costs and to make sure that the new factory layout outperforms the old one. If the change program would fail to enhance the productivity, chances are that also the remaining production is moved to a more cost efficient facility.

The Tuve plant must endorse both technical and social improvements to reach its goals for the project why high commitment is needed by the operators, line managers and the factory management in order to find the best possible solutions in every aspect. Of these three, operators are the profession with the lowest over all engagement level why it is more challenging to motivate them to participate in such development work. Their input is however most relevant to the work. Targeting operators and mapping their involvement and finding ways to improve the ways of being involved is therefore of most importance.

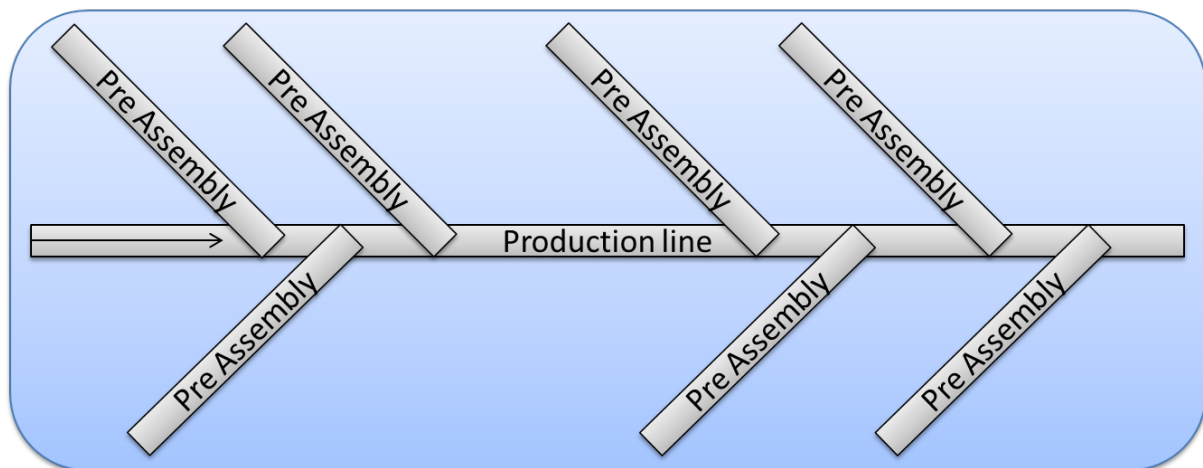


Figure 2. A schematic view of the fishbone production line structure

1.2 Purpose

The purpose with this master's thesis work is to map the present state of operator involvement in the on-going change project - Tuve Transformation. Looking at factors such as the activities that the operators are involved in and which one of the operators that are involved in what activity. With that as a foundation, improvements will be recommended on how to facilitate the operator involvement and how to benefit the most of their contribution.

1.3 Research question

To reach the purpose a number of questions need to be answered:

1. What is the current state of the operator involvement in the change project?
 - a. In what activities are operators involved?
 - b. How can Volvo benefit from higher involvement?
2. What are the strong and weak areas in Volvo's involvement work?
 - a. How can the involvement work be improved?
 - b. What are the main improvement areas?

By answering these question the purpose of this thesis will be fulfilled and the Tuve plant will benefit from the outcome.

1.4 Delimitations

This study concerns qualitative analysis of the involvement and engagement at Volvo Group Truck Operations in Tuve targeting the change process of the European Optimization project. This master's thesis work will therefore not go into any kind of quantitative methods. The number of interviews and observations are limited to time and availability.

The involvement that has been studied is focused on how operators are involved in activities that concern them and other groups of professionals. The investigation uses the three-part definition of involvement (Cook 2008), and only this definition is used to analyse the involvement.

2 Theoretical framework

In this chapter the theories behind this thesis is presented. Also, an historical view on management is presented together with Volvo's history of working with involvement.

2.1 Historical view on involvement

Behind all the decisions to change the organizational structure in the production there are just about always the same motifs, to cherish the full potentials of the employees to reach higher productivity and profitability. Historically it has not been enough to rely on the technical development to stand out in the competition why the organizational as well as the social factors has been a necessity to improve (Rubenowitz 2004).

The industrial revolution was the starting point during which work shifted from a more agricultural focus towards a factory heavy industry. The work in the factories was in many cases very monotonous and not very challenging for operators' minds. Adam Smith claimed in the middle of the 18th century that the workers need to be challenged with more than just one or two work tasks to stay smart and not losing his natural ability to use his mind (Smith 1776). What Smith stresses is the importance of work rotation.

In the middle of the 19th century Karl Marx introduced the concept of alienation within manufacturing companies. The problem, as Marx described it, was that the workers did not see the connection between the work that they did and the final product and that was left the factory in the other end of the production line. Marx also argued that the only time when a human can reach its full potential is when she is allowed to use her own creativity to solve problems (Marx 1965). These parts of Marx work correlate very well to what the modern research says about how engagement affects people.

The ideas of Fredrick Taylor were in opposition to the ideas of Marx. Taylor's belief was that there is an absolute best way of performing an assembly sequence and that best way could be found by analysing the standard time for each possible action as an operator and sum up these times to receive the total assembly time. His methods suggested an extremely standardized work set by the management and left very little room for operators to participate in the process (Tamura 2006). The idea that the "separation of conception and execution" would improve production (Taylor 1911) made very evident footprints in factories all over the USA in the late 18th and early 19th century. This method was a historical step backwards in the empowerment of the operators.

In the 1950s the Hawthorn experiments took pace where the effect of different working conditions were analysed. The most famous part of the experiment is the lighting

experiment. The hypothesis was that the productivity would be dependant on the lighting conditions in the factory. The lighting was changed numerous times and the productivity of the operators increased by every change no matter whether the light intensity was increased or decreased. Analyses of the result showed that it was not the lighting itself the affected the productivity but the fact that interest was paid to the operators' work and that they were included in the process. This is traced as the earliest adoption of employee involvement and sets an important starting point for the work on modern employee involvement (Locke and Schweiger 1979).

During the second half of the 20th century the Japanese philosophy of lean production made a huge impact on manufacturing organizations all over the world. The lean philosophy aims to economize at the maximum with scarce resources and to continuously improve the organization. To enable continuous improvements the process must be standardized so that there is a fix base level for the improvements to be adapted to. For the operators in a lean organization the standardized manufacturing means very little degree of freedom in their work and Toyota has acknowledged the issue. What Toyota argues is the solution to the problem is that the operators are involved in the kaizen work some part of the working time where their creativity and know-how is used to improve the processes to contain less wasteful activities that are not directly adding value to the customer (Liker and Meier 2006).

One of the most important conditions to reach a highly competitive organization is the management's willingness to delegate more responsibility to smaller units within the organization. Clear and reachable goals from the management are a condition together with a well-developed company culture with high confidence in the co-workers' abilities and engagement levels (Rubenowitz 2004). The Figure 3 shows a summary of the development of the work organizations over during the last century.

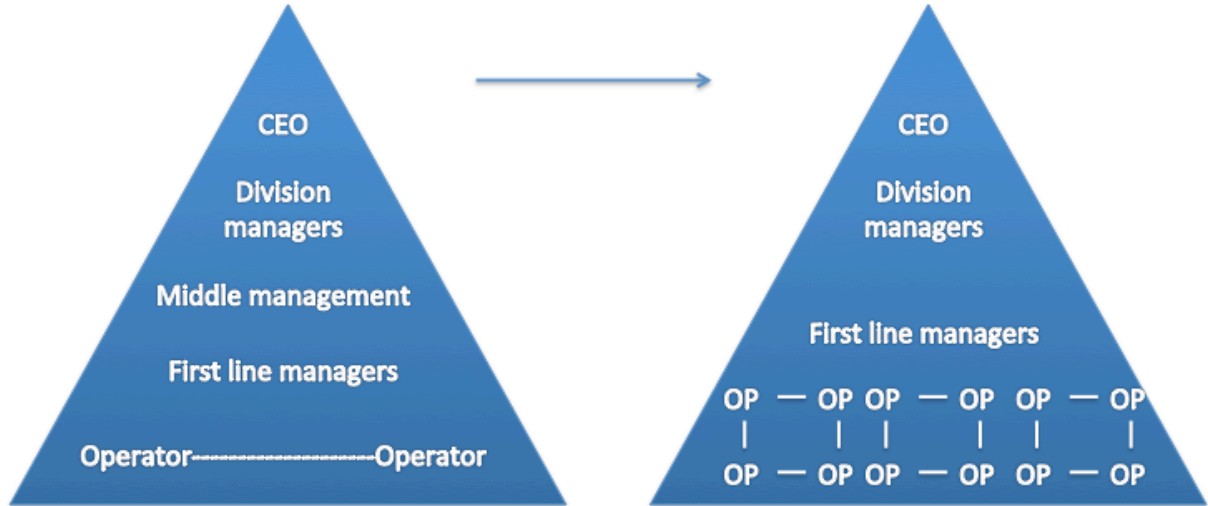


Figure 3. The development of the organizational hierarchy.

2.1.1 Volvo's history of involvement

Volvo has a history of trying unconventional manufacturing methods to improve the wellbeing and productivity among the operators. The two factories in Kalmar and Uddevalla are the most striking examples from the 1980's. At this time Volvo Car Corporation and Volvo Trucks were still the same company. In those plants the operators were formed in teams of about 20 operators who together built the whole car in a self-directed work team instead of the traditional line assembly that was common at the time. During the first years the operators reported higher job satisfaction and both the quality and the productivity were elevated with the new organization but after just some years the costs skyrocketed and both the Kalmar and the Uddevalla plant were closed in 1993 (Sandberg 1995). Still fragments of the mind-set can be found in Volvo trucks value document "the Volvo Way".

2.2 Defining involvement

To fully understand the complexity of employee involvement it is important to look at the lexicographical definition. The Oxford Reference states that employee involvement is "...usually defined as those arrangements for employee participation that are designed by managers and instigated by employers... These arrangements are designed to encourage employees to identify with employer objectives and allow them to contribute directly to the improvement of business operations" (A Dictionary of Human Resource Management 2009). Involvement is also described as a two-way communication and is therefore differentiated from information. To listen and to be listened to are factors that empowers employees to be able to make decisions and take responsibility for the consequences of the actions. According to Cook, many managers find it much easier to just provide information to the employers rather than communicating, but involvement is however critical to reach an engaged and motivated workforce (Cook 2008). The lack of involvement is the greatest single contributor to poor production plant performance in the USA (Mobley 1999) and must therefore be prioritized as for continuously being improved.

There are three types of different types of interactions that describes involvement, see Figure 4:

- Interaction with an employee's first line manager
- Interaction with other teams and groups
- Interaction with the organization as a whole

These three categories need to be fulfilled in order to make the employee feel like being a part of the organization. The three parts are important because they all describe an instance where the operators are directly affected by decisions that are made. In a change project all three parts are present and should be taken into consideration (Cook 2008).

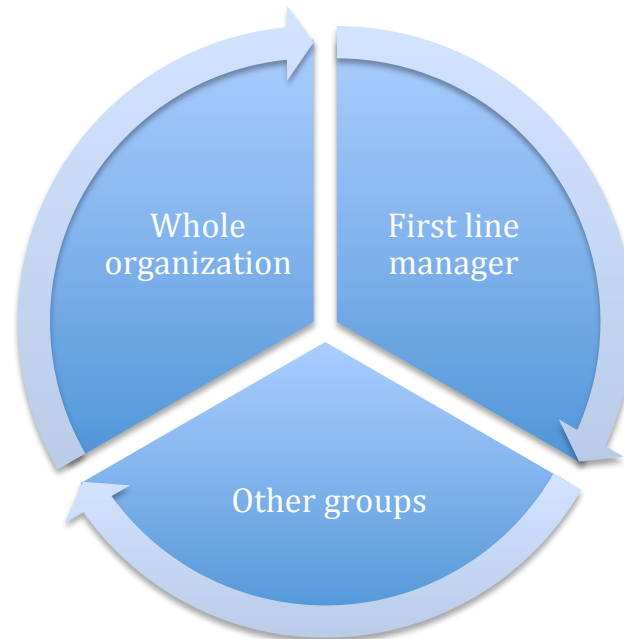


Figure 4. The three parts of involvement all interact with one other.

2.2.1 Involvement with the first line manager

Involvement starts with the interaction of the employee and their closest manager, in the case of operators it is generally the first line manager, and it is usually in this relationship that most effort need to be put when aiming to reach a high involvement level in an organization (Loehr and Schwartz 2003). There are several reasons for managers not to share the responsibility with their employees. Among those the feeling of fear is typically always present. In fact fear is one of the main reasons for poorly made decisions with ethical consequences (Palazzo 2007). More specifically the reasons can be listed as:

- Fear of losing control if you allow people to come up with their own ideas;
- Fear of losing your job if you delegate your tasks and they are done well;
- Fear that the employee won't do the job to your required standards or in the time permitted;
- Fear that the employee cannot be trusted to do the job unsupervised;
- Fear of making a mistake in delegating and having to carry the responsibility for not completing the tasks (Cook 2008).

The importance to elevate the confidence could, with the background of the list not be stressed enough and it is a question of the company's culture. The top management needs to be fully committed and supporting the middle and first line managers to break down the barriers of fear. It is also important for the operators to have the required skills to be able to take a greater responsibility. That is why education in those skills is an important part of the involvement work (Cook 2008).

2.2.2 Involvement with other teams

Once you experience yourself as owner of something you tend to cherish that higher. The feeling of ownership can be so strong that you decline good offers that would be rationally positive (Kahneman 2011). The same psychological principles are active when being a part of a group and people belonging to a group tend to feel positive about the group and feel aversion to other threatening groups. It is therefore not always easy to make groups or teams to be involved. Even though this behaviour is natural and instinctively it is not beneficial for the organization and teams need help from their managers to bridge this gap between them (Cook 2008).

2.2.3 Involvement with senior managers

Typically, senior managers are more used to decide and being asked for advices rather than asking for others' opinions and senior management often lack the time to communicate directly with the operators (Kruse 2012). From an employee's point of view there may be a feeling of resignation when managers never care about their opinion. In these cases it is important for members of the senior management to act as role models and take initiative and lead the involvement work and encourage others to do the same (Cook 2008).

2.3 Employee engagement

Employee involvement is very closely linked to employee engagement. In fact, involvement is together with wellbeing, information and fairness what together build a highly engaged workforce. Involvement is however the most significant factor and gives a dramatic impact on the engagement level of the company (Cook 2008). It has long been a well-known fact that people who are truly engaged about their work perform better than people who are not. What is so interesting with many studies made during the last decennium is that it has been possible to show the correlation between the aggregated engagement level of the employees in a company and the over all performance of the whole organization. Comprehensive studies are made by different research institutes and there are evidences for mainly seven areas where engagement is reflected on the organization's performance (Kruse 2012):

- Service
- Sales
- Quality

- Safety
- Retention
- Profit and Total Shareholder Returns
- Role of Front-Line Managers

2.3.1 Benefits of having engaged staff

Gallup published a paper in 2012 based in the answers of 1.4 million employees showing the effect of employee engagement on business outcome showing some significant results. The study compares the top and bottom quartile of the business units with respect to the employee engagement level and compares the business outcome on some key performance indicators. The study rated close to 50'000 business units in close to 200 companies from 34 different countries showing that the results are robust in many different economical climates see Figure 5.

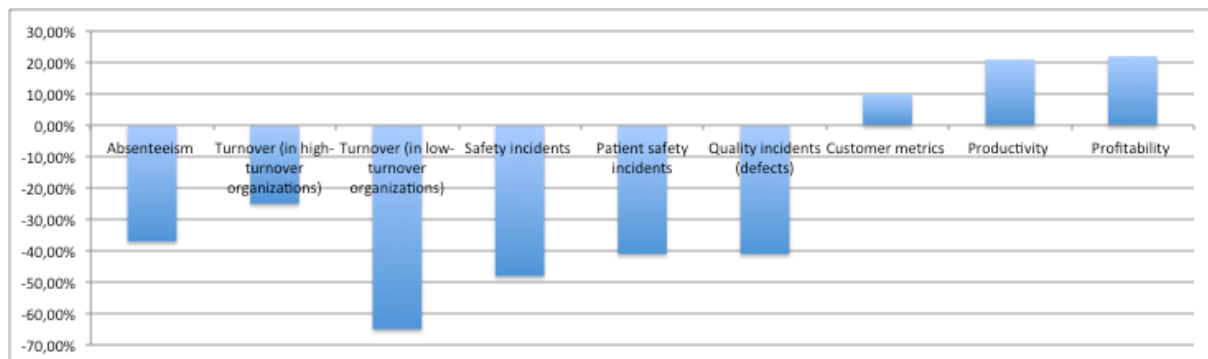


Figure 5. The effects of having an engaged workforce, the top and bottom quartile compared (Gallup 2012).

Another study made by Tower and Perrins (Towers Watson 2012) shows that companies with a highly engaged workforce have lower lost productivity at work and less absenteeism than companies with low level on engagement. The lost productivity at work (also known as presenteeism) is on average 7.6 days per year for engaged employees but 14.1 days per year for disengaged. The absenteeism is 3.2 days per year for engaged employees and 4.2 days per year for the disengaged. The study also analyses the retention of employees and shows that engaged people are less inclined to leave their work. In fact only 18% of the highly engaged employees said that they are likely to leave their work in the next two years whereas 40% of the disengaged people answered the same.

2.3.2 Who is engaged?

It is hard for many managers to understand the lack of engagement among their employees. That is because there is a correlation between the employment level and the level of engagement. The managers expect the employees to be as engaged about the work as she is but that is not the case. The reason for this correlation is the different

work content at the different hierarchical levels in the company. The manager has typically a more fulfilling and rewarding job. The manager is constantly fed with information of which she can make decisions that affects her and her subordinates' situation. She sees the result of her actions and is highly rewarded for high performance. The work content is corresponding very well to the criteria for engagement. With that in mind it is not hard to understand the engagement levels are lowest in the bottom of the hierarchy in the organization (Towers Perrin 2003), see Table 1.

Table 1. The engagement levels at different positions in the company (Towers Perrin 2003).

Engagement Across Job Levels		
Job Level	Actively Engaged	Actively Disengaged
Senior Executives	53%	4%
Directors/Managers	25%	10%
Supervisors/Foremen	18%	15%
Specialists/Professionals	16%	18%
Non-management Salaried	14%	20%
Non-management Hourly	12%	25%

By looking at the figures in the table, it is evident that there is a lot to do in terms of elevating the involvement and thereby engagement for non-managers in manufacturing companies.

Another similar study is made on 5019 Swedish employees in the manufacturing industry showing the percentage responding that they agree highly to the statement "I think that my job is stimulating and interesting" The result are shown in Table 2.

Table 2. The results of a Swedish study showing the stimulation level (Rubenowitz 2004).

Highly interesting and stimulating job	
Job Level	Highly Stimulated
Division managers	88%
Department managers	82%
Shop engineer	72%
Foremen	66%
Pre-assembly workers	35%
Other non-promoted	31%

2.3.3 Measuring engagement

The level of employee involvement is usually not measured but employee engagement usually is. The employee engagement index can give a fairly accurate hint about the involvement as well since they are so closely linked.

There are several standards of measuring engagement levels within organizations and common for them all is that they are performed quantitatively with questioners. The

questions may however vary between the polls why it is not very accurate to compare a specific organization to another. The measures can however be used for both internal benchmarking and, maybe more importantly, general statistical conclusions about correlations between employee engagement index and the performance of the organizations or business units.

There are several big research institutes that perform these often very comprehensive studies among those Gallup and Tower and Perrins. Volvo AB has recently started to measure employee engagement index and are using the IBM research institute Kenexa.

2.3.4 Reaching engagement

As mentioned earlier, engagement is reached by successfully enhance the four factors:

- Well-being
- Information
- Fairness
- Involvement

These factors are interdependent but are separated enough to be improved one by one. Here follows a short description of the three parts other than involvement that are not already described (Cook 2008):

2.3.4.1 Well-being

Well-being is how the company is perceived both internally and externally. The central question in quantifying well-being is how the employees feel about the employer. The emotional aspect is very important for the level of engagement. The employees' feelings for the employer are usually based on both their own benefits and how they are treated at work and on how the employer acts in the society.

2.3.4.2 Information

Information is a very important key for building engagement. Having a clear sense of the company's goals and the way of getting there together with a clear perception on where every single employee can help reaching the goals brings people together and enhances performance. Information is also a critical part in reaching involvement since involvement can be described as a two-way information flow between employer and employee.

2.3.4.3 Fairness

The aspect of fairness means that the all aspect of an employment should be made in a fairly matter. In all steps on the employment, from recruiting to promoting and rewarding good performance, the employee should feel fairly treated. Regular developmental and motivational feedback is a key factor of reaching high engagement.

Fairness also means that the employee should have all her needs satisfied at work and in life.

2.4 Maslow

Maslow's theories about the hierarchy of needs describes how different needs are related to each other and how lower level of needs need to be satisfied, at least to some extent, before a higher level of needs can be reached (Rubenowitz 2004). Being involved as an employee satisfies the higher needs in the hierarchy why the employee's lower needs must be fulfilled before they can be truly involved in their work see Figure 6. As an employer it is therefore very important to ensure that the basic needs are satisfied. For example, some one who feels unsafe at work can never reach high motivation.

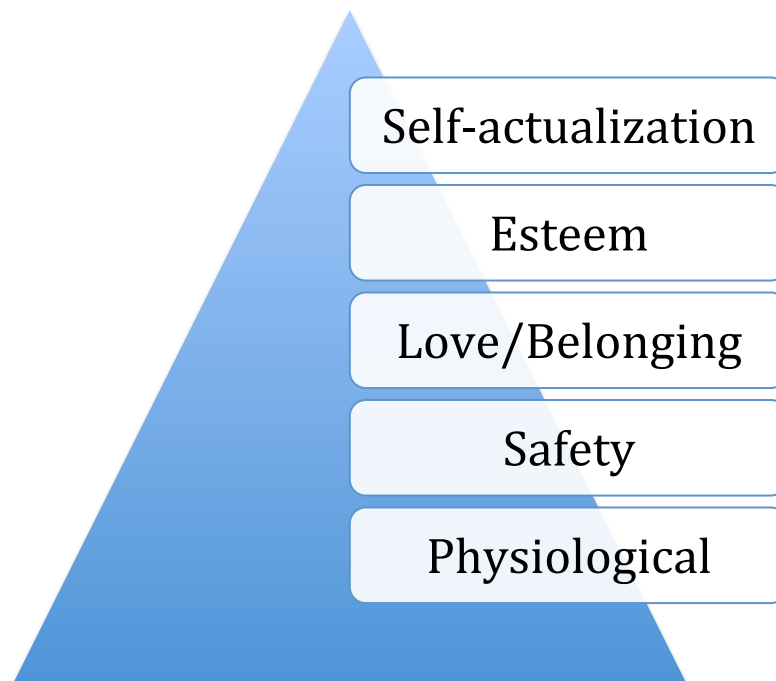


Figure 6. Maslow's hierarchy of needs (Maslow 1954)

3 Method

The method followed in this master's thesis is based on the qualitative methods. The qualitative method was chosen because it provides in-depth information about the subject and provides a wider range of answers than a quantitative study would have generated. By targeting key stakeholders to interview, key events to observe and by studying a wide selection of both internal documents and investigations at Volvo and external research articles it was possible to find the essence of the problem. It is important for the project to already early on target some key stakeholders to interview so that an early understanding can be adopted and to start snowballing to target more people of interest for the study.

In the figure below, Figure 7, it is possible to follow the method from a schematic point of view. From the figure it is possible to see the iterative nature of the model. When working qualitative new information may be revealed at any given point in the project and therefore it is important to continuously improve and challenge the findings.

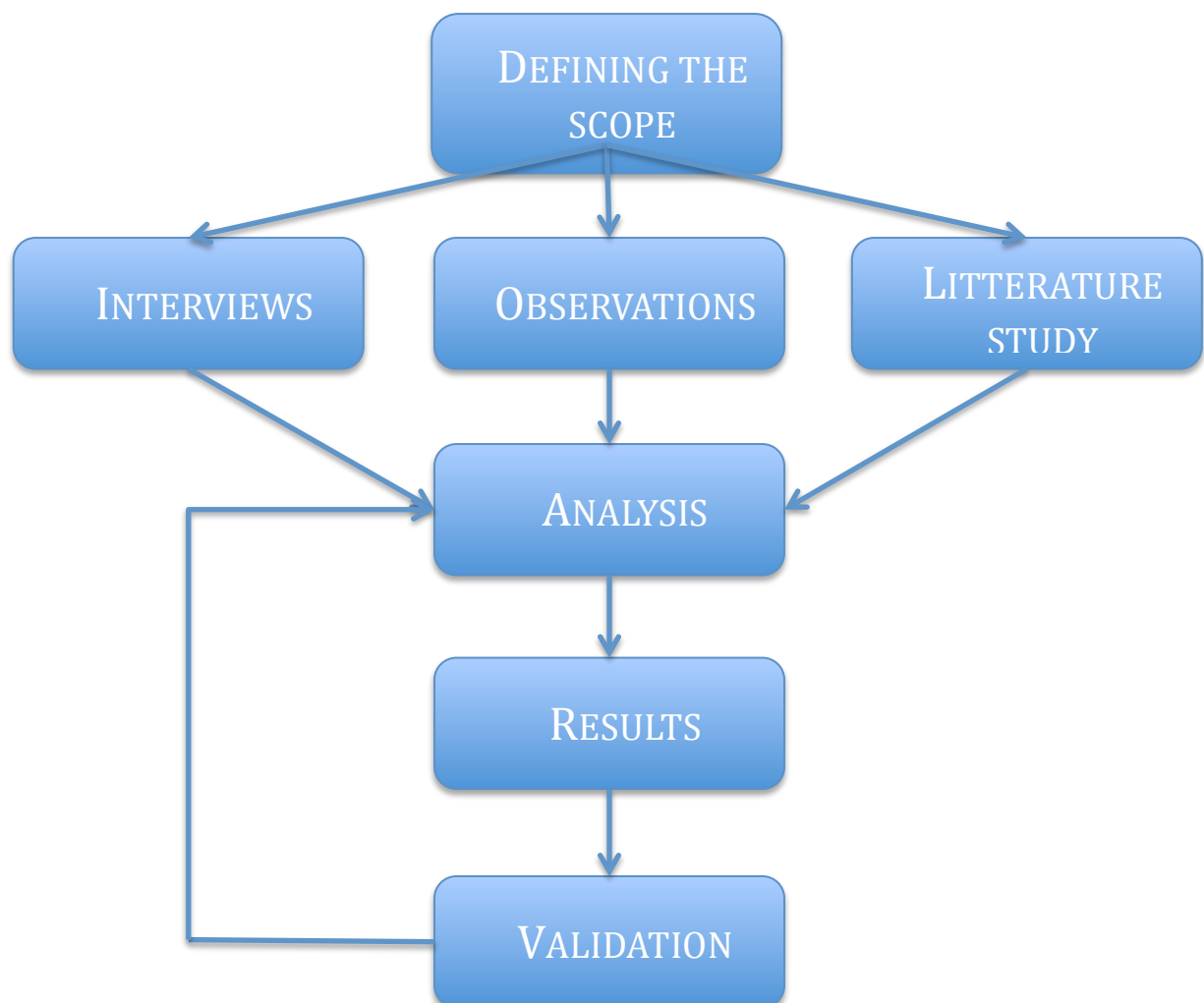


Figure 7. The workflow described in a flowchart, starting from the top with defining the problem and then iterating downwards to the result.

3.1 Planning the work

Before starting to work in a project it is very important to have a plan. For a plan to work as intended it must consider all the recourses that need to be managed throughout the project (Goodman 1988). To manage time in a clear and visual way a Gantt chart is a good help. The Gantt chart ensures that activities in the project that need to be made in sequence do not collide (Geraldi and Lechler 2012).

3.2 Qualitative research

Qualitative analysis is used in those areas of research where it is not possible to extract quantifiable data and where high flexibility is a necessity. This non-numerical analysis is widely used in research areas such as the impact of social control systems, the nature of managerial work and relations with employees (Cassell, o.a. 2006). The qualitative analysis is also providing an in-depth perspective because of the freedom in the gathered data, which is not possible to reach when using a quantitative method (Bryant 2006). The qualitative analysis is subjective by default but that is not only a problem and a source of error. When analysing psychological and managerial subjects, which are subjective in their nature, it is important to use a method that benefits from the subjectivity and variation in the answers (Kvale and Brinkmann 2009).

3.3 Direct observations

To fully understand the processes in which operators are involved field observations where necessary to perform. The observations where made before the interviews and they formed a knowledge foundation on which the question template was constructed. The results where compiled with three main focuses:

- Who was driving the work forward?
- What were the responsibilities of the blue-collars?
- How could the cooperation be described?

The evaluation criteria are chosen based on the definition on involvement saying that involvement is more that just participating in different activities. It includes taking own initiative and driving the work forward (Loehr and Schwartz 2003).

3.4 Semi structured interviews

Interviews are usually the most important way to collect data in a qualitative research study (Whiting 2008). In interviews based on a semi-structured method a common question template is prepared for all the interviews. These questions form the foundation for the interview and it is up to the interviewee to decide what course the discussion will take. By doing so, it is possible to find out more than if the questions would have been fixed from the beginning. The study is therefore inductive why the results are valid only for this certain studied case. The number of interviewees is not required to be very high since the qualitative method focus on going into depth (Mc Cracken 1988).

3.5 Finding interviewees

The selection on informants is a very important part of the interview process. The general aim is to cover the research area from as many aspects as possible by looking at the problem from a number of different viewpoints. The interviewees can be found by starting with the people most concerned by the problem and then ask the interviewees if they have any suggestions on whom to interview next. This technique is called Snowballing and is widely used in qualitative research (Hennink, Hutter and Bailey 2011). There is, however, a risk of become single minded when using snowballing since the interviewees may recommend people with similar views on the problem as them self. To avoid this it may be appropriate to be able to discuss the interviewee selection with someone with years of experience within the researched group.

3.6 Transcription

Interviews are very much facilitated if they are recorded. This way the interviewer can focus on the interview and being present in the conversation and catching on to follow up questions and still get all the answers, word by word. To be able to use the recorded material the interviews need to be transcribed into written text. When transcribing material it is important to write the exact interview down and also to try to describe the onomatopoeic language as accurate as possible (Kvale and Brinkmann 2009).

3.7 Evaluation matrix

To draw conclusions from the interviews and the transcribed material the text needs to be processed. This can be done using an evaluation matrix. The matrix aims to find similarities by categorize the different people's answers and group all the answers in a particular category together (Kvale and Brinkmann 2009). The groups are made so that they are mutually exclusive and therefore can be evaluated separately.

3.8 Literature studies

The reason for doing a literature study is mainly to familiarize with what has already been discovered in previous research in the subject. It is important to know what researchers already have discovered and how those discoveries can be used in the current study (Onwuegbuzie, Leech and Collins 2012). The development of electronic databases drastically enhances the amount of information that is accessible and facilitates the search of information.

The literature study should start wide in order to find the right keywords and topics and then narrow down to the particular topic that is studied. This enhances the accuracy when trying to find the most relevant information (Onwuegbuzie, Leech and Collins 2012). When studying a problem concerning a specific actor it is important to also study the internal documents that are regulating the situation at the very place.

4 Procedure

The procedure of the study follows the presented methods in close to all aspect and is described in the following paragraph.

The first weeks where devoted to defining the project' s scope and get all involved on the same page. It was very important that both Volvo and Chalmers had the same expectations on the projected outcome of the project so that the result would be beneficial to them both. With a defined and accepted goal the second step was to plan the recourses for the project. The main limiting resource of the project was time why this had to be planed as thorough as possible. By making a Gantt chart a good overview on what parts of the work that could be simultaneously and what part that needed to follow another. With this done, a part of literature research was initiated to enable meaningful and focused interviews and observations. The literature study continued throughout the whole project. Early on in the project the observations began as both an introduction to Volvo and also as a way of meeting people involved in the project and start to familiarize with the research problem hands on. The observation followed a pattern where the three main points where analysed.

- Who was driving the work forward?
- What were the responsibilities of the blue-collars?
- How could the cooperation be described?

There were a total of six activities observed:

1. Workshop with Genth and Tuve project groups
2. Value stream mapping
3. Kaizen event
4. Border of line exercise
5. Safety study
6. Fine balancing

The activities where mainly observed for one working day each and notes where taking along the day. The observed did not participate in the activities.

After three observations the knowledge of the processes where sufficient to formulate questions as a general template for the interviews and start having interviews with key people involved in the project. The following people where interviewed as a part of the research:

- Two representatives from the Tuve plant executive group
- One VPS coach
- Four Operators (belonging to the project)
- One Representative from the Union
- Two Project leaders
- Two Technicians
- One Employees at Human Resources

- One Project leader coach
- One production manager from a Toyota company

In total a number of fifteen people were interviewed in different levels of the company. The interview question template was the same for all the interviews but the interviews turned out very differently because of the different people's backgrounds and experiences. In the end of each interview the question about what other people that would be interesting for the research study to interview and most of the interviewees here found that way. Other ways of finding interviewees was by recommendations from the Volvo supervisor and the master's thesis reference group.

The interview data was processed in an evaluation matrix and the answers were grouped into categories by the content. The observations were evaluated on the three criteria for observations previously mentioned. The observations and the interviews were then weighted together using a matrix and the results were the product.

The results were validated in two different ways. Firstly, the results were discussed with the master's thesis reference group and then with single objects from the interviews. Secondly, the results were discussed with a production manager from a Toyota company known for their skills in involving and engaging their co-workers.

On the basis of the results the recommendations were made and this report was written as well as the presentation.

5 Results

The interviews and the observations made in the factory were used to map the process of employee involvement and to find what could be improved in the process. The most striking is how the interviews all correlate to the three big improvement areas that are presented in the study.

5.1 Involvement mapping

In the project there are many steps that need to be taken to reach the goal. As explained in the introduction the project is very large and concerns many production sites and people. The main area of focus is here the activities where the operators are somehow concerned. In brief the project process can be described as following in Figure 8.



Figure 8. The activities where operators are involved and how they are connected to each other.

5.2 Results from the observations

Here are the results from the observations presented. Firstly with a descriptive text followed by results in terms of what was observed during each process step. The observations were made at the first part of the production line and therefore many of the participants were the same over the different events.

5.2.1 Value stream mapping (VSM)

The value stream map is used to visually describe the current state of a process. The process is then analysed and a future state map is produced. The future state is a goal but does not contain the exact improvements but more of a preferred future state.

In the book “Learning to see” where the concept of value stream was first introduced, it was described as all actions performed on a product, including both value adding and non-adding activities, that are required to bring a product through a production flow (Rother and Shook 2003). The total value stream spans therefore from the extraction of raw materials to the hands of the end user. The value stream can, however, be broken down and used in a smaller scale in for example a single part of the line or a pre assembly area. This is the case in the project at Volvo Tuve where the VSMS are used to receive a good picture of the current flow at a single station in the production line or of the pre assemblies. The VSMS are collaborations of both technicians and key operators and with the support from the Volvo Production System staff that are trained in lean manufacturing and project methodology. When the non-value adding activities are identified a future state map is constructed with a reduction of the wasteful activities and better flows. The actual solutions to reach the future state are at this point not concretized and are left for future events. The VSMS are also used in the communality

work and the project leaders use the maps to compare the current solutions in Ghent and Tuve to each other. The standardized way of working with the VSM nomenclature facilitated comparison and makes it easier to explain the processes to each other.

5.2.1.1 Observation

- Who was driving the work forward?

The VSM was very clearly driven forward by the VPS coach assigned to the group. The VPS coach had a very clear advantage in knowledge about the different steps in mapping the flows and how to describe the flow in drawings. The production technicians also had a responsibility but were obviously letting the VPS coach taking the command. Nevertheless, the VSM was made in consensus of the group.

- What were the responsibilities of the blue-collars?

The role of the two key operators participating was mainly to supply information about how the production actually worked at the present time. Where the materials were coming from and what production steps that were made and in what order are examples of the information provided. The operators were treated as experts and they were asked for information but were otherwise passive in pushing the work forward.

- How could the cooperation be described?

There was a very clear division between the blue and white collars where the white collars were doing their thing and just asking the operators for help. The feeling that the white collars were responsible of achieving results was also eminent. The operators were, however, very keen on providing as much information as possible and trying to come up with solutions to the problems that came as a result of the VSM.

5.2.2 Kaizen event

The kaizen events are used to find the technical solution to reach the future state map from the VSM. The events are usually initiated by a manager, mainly first line manager, and executed by the operators working in the station concerned by the change. Depending on the size of the kaizen event the technicians also participate in various degrees. In case of a larger kaizen event with many people involved also VPS-support staff is present.

Liker (Liker and Meier 2006) describes the kaizen event as the lowest level of improvement project and points out the strengths of reaching fast results and the power of being able to show radical improvements reached in a short time span. This is a good way of convincing sceptical co-workers of the power of lean and continuous improvements. Nevertheless, it can be hard to reach sustainable results due to the very aim to reach immediate results and in many cases, as in Volvo's, this means cutting labour costs. The motivation to work with the kaizen events thereby suffers and lowers the productivity. Another trap with working with kaizen events is that the risk of sub

optimizing the production flow is imminent since the events in the other parts of that are disconnected to each other (Liker and Meier 2006).

5.2.2.1 Observation

- Who was driving the work forward?

Since the kaizen event was very closely linked to the VSM the leadership was still very clearly belonging to the VPS coach and as in the VSM the production technicians supported the VPS coach in driving the work forward.

- What were the responsibilities of the blue-collars?

The blue collars provided solution suggestions that were discussed in the group. It was very clear that the operators had the knowledge about the process of the production and what solutions that could work and the weak solution suggestions were quickly discarded whereas good ideas were caught up and mixed with other good ideas to find the best solution.

- How could the cooperation be described?

The cooperation was good because there was a really clear division of expertise. The operators had knowledge about the production process and what would work on the shop floor and the white collars had knowledge about how to develop ideas in a structured way to find a final solution. The operators' gap in knowledge of the kaizen process was lowering the operators' boldness and caused them to not reach their full potential in the discussions.

5.2.3 Border of line (BoL)

One of the goals with the change project is to make a forklift free factory and to reach that goal the material flows must be changed to its very core. Since the number of preassemblies and stations will be changed there is a need to improve the way materials are delivered to the operators working on the line. The border of line is the point where the material shifts owner from logistics to manufacturing and the materials need to be delivered in the right quantity, at the right place, at the right time and be presented in the right way to the operators. The operators should only need to focus on the assembly process (Coimbra 2013).

In the BoL exercises both key operators and key logistics staff worked together with technicians and VPS-coach to find the best way of how to manage the border. To help, Volvo has standardized bins and boxes in which material can be delivered as well as a set of rules for the minimal cover time one box need to have. The aim was to facilitate the process for the operators since they need to maximize their value adding time.

5.2.3.1 Observation

- Who was driving the work forward?

Once the BoL activity was initiated the operators were very clearly taking the leader role. Their advantage of being familiar to the production flow made them work close to fully autonomously.

- What were the responsibilities of the blue-collars?

The blue collars were fully engaged in the activities and a dispute even arose about what was the best way to deliver the material to the line. The dispute had to be settled by one of the executives. The operators had full responsibility and the white collars mainly acted as a support.

- How could the cooperation be described?

Since the role of the white collars in this activity was more supporting than in the other activities there was a lot of room for the operators to take part in the work and develop their ideas. The very clear opinions of the operators led to the white collars having a mediating role.

5.2.4 Safety studies

The safety is one of Volvo's core values and therefore one of the main focuses. All new solutions are evaluated in safety studies and tested to ensure that there will be no incidents. During the observed safety study a number of blue-collars were present both from logistics and production including a safety representative. The project leader and project technicians were also present. Three different solutions to a problem were tested for a safety perspective and the risks were assessed following a standardized method. In the end, both blue- and white-collars agreed on a solution that worked best for everyone.

5.2.4.1 Observation

- Who was driving the work forward?

The initiative of the safety study came from the project management who also summoned the meeting and were driving the work forward during the two hours safety study. The project manager also documented the process and asked questions about experienced risks and possible ways for injuries to occur.

- What were the responsibilities of the blue-collars?

The blue-collars had an executive as well as a judging role where they both had to try the different solutions they had taken part in developing and had to come up with feedback and solutions to unexpected problems. The grade of participating varied in the group where some took a lot of initiative whilst others barely spoke a word.

- How could the cooperation be described?

The cooperation worked well and the roles of the participants felt intuitive and aided to raise many new thoughts and solutions.

5.2.5 Balancing

At the rough balancing exercise the aim is to roughly decide what should be assembled at what station. This work was made as cooperation between production technicians and operators from the concerned line.

5.2.5.1 Observation

- Who was driving the work forward?

The balancing was not clearly driven forward by anybody in particular and the initiative fluctuated very much between certain individuals that wanted to express their opinions very loudly.

- What were the responsibilities of the blue-collars?

The blue collars responsibilities did not differ much from the responsibilities of the white collars and both were discussing together what production stations that should produce what.

- How could the cooperation be described?

Traditionally, balancing has been a task for production engineers. Now, when operators also participated in the activity there were some disagreements on what ways to perform the activity. The production technicians had a more scientific management approach to the problem whereas the operators favoured a more hands on approach because they knew by heart what were the most demanding activities. The lack of understanding of the two different methods among the participants caused some frustration and was not advantageous for the progress of the balancing activity.

5.2.6 Fine Balancing

This exercise is continuing where the first balancing exercise ends. The aim here is to make a final balance that is executable and possible to use when the line starts up. Because of the big abundance in variations in the truck models built on the same line this part is very hard to do and requires a lot of time.

5.2.6.1 Observation

- Who was driving the work forward?

The fine balancing was a very time consuming exercise that went on for many days and the production technicians were driving the work forward and made sure that the operators were in on the task.

- What were the responsibilities of the blue-collars?

The expert knowledge of the operators was critical and they had the last saying in close to all suggestion of different balances.

- How could the cooperation be described?

The same problems as for the balancing activity were also present here. The understanding for the different ways of balancing was not good and therefore there were some problems with the cooperation. Other than that both white and blue collars were working alongside very well.'

5.3 Chosen operators

The operators chosen to participate in the change project are so called key operators. This means that they are senior operators with several years of work experience and proven to be positively engaged to the work. The project manager who needs an operator for a certain project activity asks usually the manager responsible for the part of the production line if there are any operators that would suit for the task. The manager then suggests one or two of the operators, in many cases a team leader, and the operators are asked if they want to participate. This means that the operators who participate in the change activities are engaged and have a positive attitude towards the change process.

5.4 Employee Engagement Index

Since two years back Volvo has measured the Employee Engagement Index (EEI), which is a development from the previous measures of Employee Satisfaction Index, which has been measured from the 1970's. The survey is performed once a year and the bought from the IBM company Kenexa. The result from the study is summarized in a percentage figure that describes the level of engagement and can be scaled down from company level down to group level. Together with the company's engagement figure a benchmark number is also provided to show how the surveyed company has performed compared to an average company.

According to an interviewed HR employee it is hard to use the measurements made since it is not possible to compare with companies in the same sector. The responsibility to work with and improve engagement is on the managers. For the operators that means that it is up to their first line manager (called production leader) to care for their engagement level. This work is not coordinated in the factory and no instructions are presented on how the work should be carried out.

5.5 The Volvo way

The Volvo way is the core of Volvo. It describes the foundation of values on which the company rests and includes a description of what Volvo is and what it will become. The Volvo way is summarized in a booklet and is commissioned by the Volvo Group's executives and shown to all employees. The booklet describes how the culture at Volvo helps people grow and that the respect for the individual skills and personalities.

5.6 Interviews

The view on involvement is very positive in all the interviews. Benefits with operator involvement seem very easy to put forward and one operator said, "Being a part of the project feels very rewarding and it is a sign of appreciation from my previous work". The technicians also emphasize the benefit of cooperating early in the project with the operator to facilitate the future implementation of the changes to the line. Management also highlighted the importance of employee engagement as a way of take advantages of all the in-house knowledge available.

The view on why involvement is important varied a lot among the interviewees where the management provided the most complex view and describing both the benefits of allocating the best know-how and the aspect of helping the involved employees to grow as people. Management also pointed out the benefit of facilitating implementation since the operators are participating early on in the project and are not surprised when the implementation phase starts. Other answers where a bit more single sided towards the benefit of the operators' knowledge in the subject.

When asked to analyse the current involvement status in the change project at Volvo the beneficial aspects where many. One operator stated, "...I feel like a part of the project and I now understand why we need to improve our processes". The project management was impressed of the performance of the involved group and stressed result if the job of the operators, "The operators really take place in the group and deliver valid input and improves the results".

The drawbacks with having operators involved in the change process was also subject to discussion and the more frequent point raised was that the process becomes a lot more time consuming with many people with different background have to take decisions together. The progress (of the group) is very slow, especially when working with balancing", said one of the employees involved in the project. Another point raised was the difficulties to "borrow" employees from the production line since the production organization is very slim and everybody is needed to keep the manufacturing going forward. This point was not raised by the operators but from the project management, since they are the ones negotiating with the line managers to engage operators in the project.

The information flow from the project out to other interested parties such as the operators in general was raised as an issue point as something close to unexciting. The operators described their colleagues as unaware of the project's progress and one operator said, "I know people working in production (at Volvo Tuve) unaware that the project even exists". The project management indicated that the responsibility to inform the operators belonged to their managers and not to the project itself but not all line managers took the responsibility to inform their teams why this unfortunate lack of information was the result.

The most sensitive issue addressed during the interviews was the relationship between the operators and the production technicians. When this subject was brought up several interviewees lowered their voices or wanted to go off record. The factory management described the relationship in a historical view and the conflict has been going on for several decades. Recently the conflict escalated and operators feel very bad about their situation. One technician started to cry when the operators harshly questioned the technician's solution to a technical problem at the production line. The conflict is sprung from some operators' opinion that the technicians lack of experience from working at the production line and that they therefore do not come up with reliable solutions. The production technicians, on the other hand, have on their own been responsible for activities such as balancing the line and solving technical problems without asking for the operators' opinions. The operators feel overrun by the technicians and doubt their ability. The conflict and bad employment conditions have made the retention of production technicians very low, which has made the problem even worse since the distrust from the operators some times is justified with low experienced technicians. One technician said, "I have co-workers who dislikes going to work It is always too much to do and we always get criticized on what we do".

The union representative said that Volvo's greatest problem was that the change was going too fast and that the workers could not keep up with always changing ways of working. Many of the different management philosophies are just temporary and soon run out of steam or are replaced with a new buzzword. The main task for the union was therefore to "...try to slow down any change and work with what we (Volvo) already have". The view on the factory management on what the union's missions is was very different from what the union said. The management stated that the union represent the workers and when doing so, understand the change is a necessity to keep the Tuve plant competitive in a global environment.

The view on the communality directive was most diverse among the interviewees. The factory management and the project management as well as some support functions was very concerned of the communality as lowering the engagement and the motivation to be involved. The operators and technicians who where actually where involved did not experience the communality as a problem at all. A member in the project management team described the problem, "Since both Genth and Tuve need to find common solutions to common problems only one of the factories' solution can be used. Even if we (at Tuve) has worked with a solution for several weeks Genth's solution may be better and be the one that is implemented. That means that we have spent several weeks' work on nothing". By not being able to use the result of many weeks of hard work would be discouraging and act demotivating. The operators and the production technicians did not see this as a problem since the decision on what solution that should be implemented was not their call to make and managed by the project management. "To loose the solution to another one is not fun and putting all those hours in to the project feels like undone work but it is out of our hands," said one operator.

The interview with the production manager from a Swedish based Toyota company resulted in some unexpected outcome. When Volvo's way of working with operator involvement in change processes was described the spontaneous reaction was that Volvo involved its operators much higher extent than they did. Toyota has worked with twin-factories and using the same solution for the same problems for a long time and when Volvo's concerns with the purple solution were brought up the problem was dismissed as a first time problem. "After the first time, Volvo knows what solutions that are standard to use for problems in production and after this first time it will be much easier to find solutions that work since they are already implemented in these first two twin-factories".

6 Analysis

In this chapter the results are analysed.

6.1 Operator presence in change activities

The operators at Volvo Tuve are represented in very many parts of the change project. This is a quite unique situation in Sweden and when interviewing a production manager from a Swedish Toyota company it appeared that that Toyota company was far behind in terms of involvement when implementing changes compared to Volvo. What Toyota aims for is to prepare the changes in advance so much that when they are to be implemented there is no discussion. The preparation is very much dependent on using already existing and operative solutions and then adapted them to the specific conditions at the particular Toyota plant. The fact that the operators are present at the change at Volvo contributes a lot to the success of the project and the observations have shown that the operators contribute and add much value to improving the processes and finding good solutions to production related problems. It is very clear that the true experts on production are the ones actually working in production with thousands of hours of experience and deep production knowledge. By using this source of expertise the project mobilizes true experts in all areas being improved in the factory. From finding technical solutions to new problems, improving the factory layout and material flows, finding better ways of assembly the trucks and better balances and all these recourses being found in-house without having to ask consultants from other firms. By involving the operators another dimension of benefits are also unlocked at Volvo. The involved operators become more engaged in their work and perform even better than before and reaching better results in their daily work. It is a win-win and Volvo Tuve has come a long way on the journey towards a fully engaged workforce. Looking back at the definition of involvement by (A Dictionary of Human Resource Management 2009) it is evident that Volvo's interpretation is close to the dictionary's way of describing involvement.

6.2 The role of the union

The interview with the union resulted in some unexpected results and it is not surprising that the relationship between the white-collars and the union could be improved. The union described Volvo as changing too fast and not taking time to reflect on the results of the changes and therefore the role of the union is to try to constrain the changing forces inside the company by saying "no". The view of the company and the white collars is instead that the changes are not happening fast enough to keep up with the continuously changing condition and surroundings much due to the union. The different view upon change is damaging the progression of the development of the whole factory in Tuve and creating a lot of unnecessary friction consuming energy that otherwise could have been used to something fruitful.

6.3 Activities with operator involvement

As shown in the results, operators are represented in all activities that directly affect them and can be summed up as all the activities that take place on the factory floor. There are however, many other activities going on in a large project like the subject of this study where operators are far from present. When the project reaches the state where the very concrete shop floor activities can be performed the course of the project has already gone far. The higher level of involvement is reached through the possibility to impact your own situation. This means taking part in the whole project and not just the parts on the shop floor. The benefits of for example operators from Sweden and Belgium finding common problems and common solutions could be immense and facilitating the pursuit of a purple solution and twin factories.

6.4 How operators are involved

The operators in the project are in many cases participating in the different activities as an extra resource for the production technicians and in many cases it is observable that the technicians has the last say in discussions and if consensus is not reached and creates a gap between the operators and the production technicians. The observation was very clear in the balancing and the fine balancing. An explanation to this can be that the balancing activity historically has been done by the technicians without the operators having their say. The problem with the production balance is one of the main issues that have been brought up during interviews with operators as the reason for the conflict between the operators and the production technicians. With support from (Cook 2008) the importance of giving the operators the skills needed to take more responsibility can be stressed. With more education, operators will have a higher credibility and the managers will experience less fear when sharing responsibility (Palazzo 2007).

6.5 The feelings of the involved operators

The involved operators express a joy and proudness to be involved in the different activities and are proud of the confidence that have been given. They also express that it is much more giving to be working with the project work than with assembly or other work tasks from their daily work as, for example, team leaders. The sense of responsibility is also very strong among the involved operators and the some suggested key operators turned down the offer to be a part of the project with the motivation that they did not want to be held accountable for the result of the change project among their colleagues.

6.6 The relationship between operators and technicians

The subject of the relationship between the operators and the production technicians turned out as a very sensitive subject. During many of the interviews the interviewee asked to turn the recorder off and lowered their voices. The problems in the relationship have been going on for several years and have been studied internally by researchers from the University of Gothenburg. Production technicians have a very low retention and they are therefore usually inexperienced at their work. This leads to distrust from the operators who does not respect their academic knowledge. The uncomfortable feeling that is created, both for the operators and most strongly for the production technicians affects their personality in a negative way. When the base needs in Maslow's hierarchy of needs are not satisfied the higher needs cannot be either. This means that it is impossible to reach esteem and self-actualization, and thereby high involvement if the conflict is not trapped down. To solve this problem Toyota send their production technicians to work as operators to learn about the production process and get to know the operators (Liker and Meier 2006). The problem for Volvo in this case is that the turnover of production technicians is very high and therefore the technicians are inexperienced in the operators' situation.

7 Discussion

The findings in this study starts with the current state of the involvement at Volvo. On the strong side of the project is its ambition to have a high degree of operator involvement. Operators are involved in all the activities that are directly concerning the production floor and the operators are given a lot of space to take part in the discussions and the decision making process. Compared to the Toyota company also researched this level of broad involvement is rather unique to have. The involvement process could, however, be improved.

7.1 Communality

The communality work is causing a lot of hard work for the project management and frustration of the people involved in the process of finding the solutions. It is a real challenge to improve the conditions but after speaking to the Toyota company's production manager it is evident that the hard work put down in finding a purple solution now will pay of in the long run and facilitating the future development of other factories.

To solve the problem in short term the importance of communicating why it is important to find a purple solution and what the long term benefits are. If that is understood it is not a problem to "loose" solutions to the Genth plant since the long-time benefits is what counts. It is also very important to inform the group on why the developed solution was not possible to be implemented and why the other solution was more suitable. It is not a problem to loose faire and it can encourage the strive to perform even better next time.

7.2 Who are involved?

A problem raised in this project is that only few operators are involved in the project and that there is a big majority who know very little about what is going on in the project. The true power of creating involved and engaged co-workers are not in the few but in the many. When selection which operators who are going to be asked to participate in the change process the project managers asked for skilled key operators. The result was that only already highly engaged operators joined the project. Of course, the project need as engaged and skilled operators as possible to benefit the most but many disengaged people where left out and will continue to have low levels of involvement and engagement. To target this problem there the project needs to create ripples along the whole organisation. A good first step in doing so is revising the information about the project being communicated. The project's newsletter is its official mean of communication and is not commonly read by the operators. The information must be easier to access and formulated in a way that is easy to grasp. Another step would be to create a feedback loop from the involved operators to their colleges who are not involved in the project. This would be good not only to inform

about what is going on in the project but also for collecting ideas from many more employees with an aggregated much broader base of expertise than only the involved operators. To delegate more responsibility to the operators for the tasks currently made by the technicians would also enhance the general involvement level. The daily balancing of new model changes would be a good example of an activity where operators could work as a team and solve a problem together without even the supervision of a production technician.

7.3 The conflict between the operators and the production technicians

The conflict needs to come to an end. It is destructive and obstructs the very important cooperation between the operators and the production technicians. Volvo's internal code of conduct summarized in the Volvo Way leaves no room for this way of treating each other at a workplace. The mere fact that the interviewed employees and managers find it uncomfortable to talk about the issue makes even more important bring the problem up to light. Along the observations the cooperation worked very well and this is the right way to go to improve the relationship. Having even more activities that require cooperation will strengthen the trust and both the operators and the technicians will find respect for the others knowledge and skills. The problem also needs to be acknowledged by the factory management and prioritized to make the factory work as one. The conflict brings fear to the factory and diminishes the employees' ability to take good decisions and minimizes their engagement and need for esteem and self-actualization.

7.4 The role of the union

The union is a very important institution to both put emphasis on the needs of its members and help to steer the company in the right direction. The discrepancy in view of the situation at Volvo is, however, alarming. Seeing their main task as trying to diminish change and stick to the old ways of doing things is opposite of the aim of the factory management. To reach Volvo's goals it is important to find ways to work together, both blue and white collars, to reach common goals. As representatives of the operators the union's attitude could be harmful for engaged and involved operators who on the one hand trying to improve Volvo's processes by changing the operations to the better and on the other hand being encouraged to slow down the change by the union. Being thorn between these two views on change the operators are at risk of losing some of their engagement and be reluctant to seek new challenges. A more constructive attitude from the union could be to encourage the management to provide more education to the operators to be able to participate and being responsible for more other line activities such as balancing.

7.5 The validity of the study

During this study many employees and managers has been interviewed and observed and to discuss with them about involvement has given great input to the work. The results are based in these people's opinions and thoughts about involvement seen through the light of their situation at Volvo. The opinions collected in this case are of course subjective but by digging deep into their views the root to their view has in many cases turned out to be common among many of the interviews.

At Volvo in Tuve there are about 1800 employees in total and this study is not representable for each and every one of them but the results are valid since the involvement is seen from many different angles with a great depth.

7.6 Sustainability aspect of the study

Working is a major part of the life. A normal workday is 8 hours per day and during that time one of course works but the job also satisfies other needs. For a workplace to be social sustainable there is a need to provide the employee the tools to build esteem and self-actualization. This can for example be to be respected by others, build confidence and the feeling of having achieved something. Is can also be to learn new things and to solve problems. A company with high level of involvement helps its employees to better reach these factors and to develop as human being. This work is therefore targeting a social aspect of sustainability.

7.7 Method discussion

The qualitative approach to the research question was a fairly intuitive and easy choice. The alternative, using a quantitative method, would not have been technical nor in terms of resources manageable. Qualitative method provides also a lot of help by allowing a longer and more in depth interviews. The semi-structured approach to the facilitated the progress of the interviews enabling the interviewee to direct the course of the conversation to what she wanted to share and thought was important for the study. Analysing the semi-structured interviews was harder since the characteristics of the interviews where very varying due to the semi-structured approach. Since the different activities that where observed varied a lot in content and structure the observation method of looking in to the three topics where very facilitating and made the analysis a lot easier. The use of an evaluation matrix for the interviews and the use of the three point analysis for the direct observations where very beneficial and important to the project

8 Conclusion

The benefits from the study are many. A more involved workforce cannot only contribute more to the projects in which they are involved but they can also grow as people. The findings regarding mapping the involvement activities showed that the operators are involved in all activities directly concerning the production.



Figure 9. The activities where operators are involved

To conclude this work it must be stressed that Volvo is making a very good job in engaging the operators in many ways in the change process. Operators are present and working hard in all activities that affect the daily work at the production line. Every step from deciding how material is delivered to the line to how and in what steps the truck should be manufactured. It is also clear that Volvo benefits from this way of working since many good ideas are brought up by the operators and the involved people become more engaged about their work and thereby enhances the performance of the whole factory. There are however some areas that can be improved in order to reach even better results from the activities in which operators are involved.

The improvement areas that are suggested are mainly focusing on the importance of information flow and respect for the individual. By increasing the information flow more people will feel engaged in their work and have a sense that they contribute to something more than just their daily work. The personal relationships at work are important for the results since the cooperation needs to be good in order for people to be involved together in common projects.

Putting this study in perspective it may seem like a very small step towards a higher level on involvement at one of Volvo's many factories. But by thinking on how involvement can lead to a more rewarding work-life for the employees and thereby a more fulfilled life. The engagement level also impacts the bottom line results making Volvo a more competitive company. If Volvo in Tuve can perform better more jobs will be kept in Sweden and in the Gothenburg area. Higher engagement also reduced the work related accidents and the sick leave leaving the employees healthier than before. The results from this study can in other words help Volvo and its employees to be a little better.

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10 Appendix

The Interview questions

1. Present myself and the work I am doing at Volvo. Make sure that the interviewee is OK with the interview being recorded.
2. Ask about the background of the interviewee
 - a. Education
 - b. Career
 - c. Work task right now
3. How do you feel about you job?
4. Why do you think that involvement is important for Volvo?
5. Do you feel involved in the change program?
6. What do you think would elevate the overall involvement level in the factory?
7. Describe the relationship between the operators and the production technicians.
8. How is the information about the project's progress being fed to the operators?
 - a. What is your responsibility
9. What is the role of the union?
 - a. What do you think it should be?
 - b. How do they contribute to the operator involvement?
10. How does the communality aspect affect the project's progression?
11. Is there anything you want to add?