How to Improve Daily Management in a Production Facility

A Case Study at a Swedish Match Production Site

Master's thesis in Quality and Operations Management

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SUMMARY

Daily management (DM) is widely used in manufacturing companies and tightly connected with Lean production. The purpose includes to increase the routine activities in a company as well as resulting in an improved information flow. However, a unified definition of the concept is lacking, and the purpose of this case study is to understand the problems experienced at one of the sites of the Swedish snus manufacturer Swedish Match. Observations of their daily management, interviews with managers as well as operators and an Affinity-Interrelationship Method (AIM) workshop was conducted as the empirical data collection. To identify the different problems, a thematic analysis on the data collection was conducted. This implies coding the material and grouping the codes into different themes, which are describing the pattern found in the specific codes. The result was 13 codes that were grouped into five themes. With help from the derived theoretical framework in the study, improvement recommendations were given. This included a new meeting structure, a so-called daily accountability structure, within the packaging production. The recommendations were given for both day shift and evening shift, where an additional meeting is included in both shifts. Moreover, a review of each meeting's Key Performance Indicators (KPIs) and an increased focus on improvement as well as problem-solving, was suggested.

Keywords: daily management, daily management problems, lean production, visual management board, daily accountability, Swedish manufacturing

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Terms and Definitions

In this section both abbreviations as well as terminology that is closely connected with the research area or is company specific, is explained in this section. Furthermore, the text in italics shows the original Swedish word that has been translated.

Abbreviations

DM: Daily Management.

DVM: Daily Visual Management.

LMS: Lean Management System.

PS: *Packsal.* An area where packaging production operates.

PS1: The first of the two packaging areas.

PS2: The second of the two packaging areas.

NP: Nicotine Pouches. A group of products which do not contain tobacco but only nicotine.

PLG: *Produktionledningsgrupp.* The managers within the production function meet once a week to discuss various production related matters.

OEE: Overall Equipment Effectiveness. It is a measurement constituted by a multiplication of performance, availability and quality.

KPI: Key Performance Indicator. A measurable value that is chosen by the company to track and help them reach their goals.

ERP: Enterprise Resource Planning. A software system that helps a company with running its various departments, such as manufacturing and finance.

Glossary

Vertical communication: The communication flow within the hierarchy, i.e. between the hierarchical levels in a company.

Horizontal communication: The communication flow between colleagues at the same hierarchical level.

Snus: *Snus.* Almost all the products the site produces except the NP.

Line meeting: The first meeting during the day shift where all operators meet at their respective production line.

Start-up meeting: The meeting with all contact persons and their PS Area Manager.

Morning meeting: The meeting occurring after the start-up meeting, in which many of the functions at the site participate.

Handover meeting: The meeting where the Area Managers PS Day Shift has a handover to the Area Manager PS Evening Shift in the packaging production. Other functions are also participating in this meeting.

1. Introduction

The first two subsections of this section are an introduction to the topic of this research study and a short description of the company as well as the problem background. Thereafter, the purpose of the study together with the two research questions of the study are stated. In the last subsection, the scope and the delimitations of the study are explained.

1.1. Introduction to Daily Management

The concept of daily management (DM) can be equated with daily visual management (DVM), a Lean practice often observed in manufacturing organisations striving for Lean production (Kurdve et al., 2019). Even though daily management is widely spread, it lacks a clear single definition (Nicholas, 2023). It has however been defined as “routine activities that must be carried out efficiently”. DVM also serves the purpose of increasing the efficiency in an organisation as well as improving the information flow (Kurdve et al., 2019). In addition, DVM is a way to correctly distribute the right information within an organisation, often through daily meetings cascading to all management levels (Kurdve et al., 2016).

Another term used is ‘shop floor management’ (SFM), which was widely used in manufacturing organisations but now almost has been replaced by the term ‘daily management’ as the Lean philosophy has spread to other areas of work (Nicholas, 2023). In a Lean organisation, SFM has the purpose of focusing on continuous improvement and respect for people. Furthermore, having an effective SFM facilitates problem-solving in an organisation (Koenigsaecker, 2009). Contributing to this is that shop floor workers are empowered to identify problems and resolve them daily (Nicholas, 2023).

1.2 Background

Swedish Match, the company where the case study was conducted at, is the largest snus manufacturer in Scandinavia with several production facilities in Europe and North America (Swedish Match, 2024). In Sweden, there are two large facilities, of which one is in Kungälv. The facility in Kungälv focuses on production which consists of various processes such as mixing and packaging. The mixing process prepares the raw material before it is sent to packaging, where it is packaged into pouches and then into boxes. At the site there are also various support functions to the manufacturing, such as Warehousing, Planning and Quality. In total, there are approximately 260 people working at the site.

Effective and efficient collaboration between these functions is a requirement to resolve emerging problems and deviations, to mitigate the impact on the production and ensure that the site is producing according to plan. Hence, there is a need for daily interdepartmental communication to ensure the planned output is produced. The daily management in Kungälv Factory (KF) has the purpose to fulfil this need, and today their primary focus is on a morning meeting.

However, the desire to improve the daily management in KF is currently one of several focus areas at the site, since it is currently perceived as a problem. For this study, the company has explicitly mentioned various problems that are experienced at the site. This includes the daily meeting structure, how the management of deviations should be incorporated in the daily management as well as a model for escalation of problems to facilitate decision making of problems. Nonetheless, an emphasis for this master thesis has been put by the company. This is the desire to get an external perspective of their daily management, meaning that the study should investigate the daily management and by this, identify problems. Therefore, the results from the study will contribute to the current focus area and will be further developed and potentially implemented by the company.

1.3 Purpose and Research Questions

The purpose with *this thesis is to understand how the process of daily management works in a Swedish manufacturing company, to identify problems in their daily management, and to develop recommendations on how the daily management can be structured.* This purpose can be divided into two research questions:

What problems can be identified in daily management in a Swedish manufacturing company?

What improvements can be made to the current daily management process to decrease the identified problems?

1.4 Scope and Delimitations

This thesis will focus solely on Kungälv Factory (KF) and not the other production facilities within Swedish Match. The scope of this thesis is set to include activities related to daily management, and it will not focus on other activities in KF. The research is also limited to the operational activities regarding daily management and will not cover strategic aspects. Furthermore, the purpose is to investigate the problems, and propose improvements. However, neither an implementation plan nor implementations will be conducted.

In addition, the improvements will not be on the organisational structure at the company. It will also not entail bigger investments, since the company has explicitly expressed a desire to avoid this. To narrow the scope, the improvements will have primary focus on the packaging production at the site. Moreover, if changes in the daily management are conducted at the site after the empirical data collection, it will not be regarded.

2. Methodology

This section explains the methodology used in this study. It will first describe the research strategy and how the different quality criteria for qualitative research are taken into account. Thereafter, the research design will be explained, followed by the methods for the empirical data collection and the literature. Lastly, the method description of the thematic analysis conducted and the ethical considerations in this study, are presented.

2.1 Research Strategy

The research strategy conducted is a qualitative study since the results are presented in words rather than numbers (Bell et al., 2019). An inductive approach is also applied since no hypothesis and theory is tested but instead an extensive data collection has been done to generate theory. This is obtained from observations, interviews, and a workshop based on the affinity interrelationship method. Moreover, in this study the view on the social world is that it is something that is continuously evolving, due to people affecting it and not a reality that is objective. This also indicates a qualitative study (Bell et al., 2019). However, even though being a qualitative study, it does not exclude numbers, but is not used to the same extent as in a quantitative study, which also the authors stress.

There are however various types of criticism toward qualitative research. One is the tendency of lacking objectivity, and that the outcome of the study is influenced by the view of the researcher (Bell et al, 2019). Furthermore, Bell et al. (2019) explains that alternative quality criteria for assessing qualitative research has been developed, due to the established ones being seen as more appropriate for quantitative studies. These are: *credibility, transferability, dependability* and *confirmability* and these together form *trustworthiness*.

Credibility is explained as how accurately performed the study is. In addition, the criteria includes whether the obtained results have been mediated to people being part of the social world investigated, to verify that the interpretation of the researcher is done correctly (Bell et al., 2019). This has been taken into consideration by conducting the interviews anonymously and therefore the answers are not coupled with any names. Through this, the interviewees might give more honest answers and hence increase credibility. The findings of the study will also be presented to the people involved in it. However, if this will reach everyone, might somewhat be restricted by the company where the case study is conducted.

When it comes to the credibility in the literature review, doing a thorough literature review is a way to validate your credibility in the area (Bell et al., 2019). The research questions, findings, and discussion should be linked to existing literature to demonstrate that the research is credible. Furthermore, the literature review is a way of showing that the research is contributing to existing knowledge.

Moreover, transferability is how applicable the findings of the study is to other contexts, since a criticism toward qualitative studies is that results might only be relevant to one situation (Bell et al., 2019). However, they also explain that the primary purpose of qualitative research is not to draw broad and general conclusions. These aspects were considered when choosing the research questions and therefore, to some extent, achieve a transferability.

The third quality criteria is dependability, which is defined as how well-documented the various processes in the study are to facilitate an evaluation from readers. Lack of transparency in the method and how results have been obtained is also an additional criticism toward qualitative research (Bell et al., 2019). This is taken into consideration and thorough documentation has been done to increase the dependability of the study.

Lastly, confirmability is about the objectivity of the research. The lack of this is something qualitative studies are commonly criticised for as well. An example of this is the researcher choosing to include people in the study due to a non-professional connection (Bell et al., 2019). However, since there was no prior connection to the company, it reduces the risk of subjectivity regarding sampling. Bell et al. (2019) also mention that the broad initial problem formulation opens up for subjectivity due to the fact that the author can choose how it should be narrowed down along the way of the study. Since the study is of inductive nature, the broad formulation in the beginning is inevitable, however should still be regarded.

2.2 Research Design

The research design that has been used is a case study design. In this type of research design, the focus is put solely on one case, which is done on a detailed and complex level. In contrast to other research designs, the situation or system being studied has definite scope (Bell et al., 2019). They also explain that a case can be a specific person, organisation or a location. The latter one is conducted in this study, since it is defined by the authors as being for example a production site or an office. Bell et al. (2019) further describe the different types of case studies. An example of this is a longitudinal case, which regards exploring the progression of a case. However, the one being used in this study is the one defined as the typical case and it is when an organisational structure or everyday scenario is being investigated.

Furthermore, a case study is favourable to use in qualitative studies since it facilitates using various types of qualitative methods together, such as interviews and observations (Bell et al., 2019), which will be used in this research. They also mention the complexity with doing a case study and from that create theory that can be somewhat generalised to other situations, mentioned as transferability.

The Six Sigma methodology and its DMAIC-process has also influenced the method of this study. More specifically, the Define phase of the process. DMAIC consists of five phases, which are Define, Measure, Analyse, Improve and Control, where the define phase is the initial phase with the purpose to find and clearly define the area in need of improvement (Bergman and Klefsjö, 2020).

2.3 Empirical Data Collection

The phase of empirical data collection includes observations, interviews and workshops with the affinity-interrelationship method.

2.3.1 Observations

Observations were conducted on the research location to obtain information about how the site works today. By making observations, it is possible to study details that could potentially be overlooked in an interview (Bell et al. 2019). According to Bell et al. (2019), there are four different approaches when conducting observations, ranging from being a complete participant to being a complete observer. The approach was to adopt the "observer as participant" role which is a passive way of interaction wherein the researcher can ask questions, but the intention is to not influence the study (Easterby-Smith et al., 2018). The intention with the observations was to explore and gain an understanding of how the meetings related to daily management take place. The purpose was also to identify problems connected to daily management. Different types of meetings were observed to get a holistic view of the meeting structure to more easily identify which ones to focus on. Therefore, the observations were made on the start-up meetings, morning meetings, handover meetings and production management (PLG) meetings. However, as data were collected, the decision was made to narrow down the scope and put more focus on observing the morning meetings and handover meetings.

The meetings were observed silently while taking notes. Immediately after the meetings, the notes were discussed while making a brief analysis to pinpoint potential problems for further study. Meetings were observed regularly over a period of one month to understand the structure. Together with other data collection methods, the purpose was to identify patterns and get an overview of the problems in the site's daily management. Observations also served as a complement to the interviews and the workshop as it was possible to observe situations and not only rely on the respondent's perception of it.

2.3.2 Interviews

Interviews have been conducted with several respondents within the company, with the purpose being to identify the current state and understand the different perspectives of the respondents. The interviews have followed a semi-structured approach, meaning that there is a set of prepared questions but with more freedom in comparison to a structured interview (Bell et al., 2019). The interviewer can deviate from the prescribed questions in the interview guide depending on the answers from the interviewee. There is also a possibility to ask questions in a different sequence than in the prepared interview guide, which can be found in Appendix I.

The sampling of interviewees was done through snowball sampling. Initial contact was made with relevant people which then made further referrals to other potential interviewees with relevant experiences or characteristics (Bell et al., 2019). A critical concern with snowball sampling is the risk that it may not be representative of the target population. According to Parker and Scott (2019), it is used by qualitative researchers as a non-random sampling method as it might lack representation, generalisations and external validity. There is also criticism against it due to its dependency on selection bias.

Based on the initial problem description received from the company, the interviews were conducted with the purpose to explore how the company is currently working with daily management and what problems they are experiencing. The questions for the respondents were also developed based on this, aiming to gain a broad perspective on the current state. Due to the exploratory nature of the data collection phase, the questions were reviewed and adjusted throughout the interview process based on previous findings.

Interviews were conducted with employees from various levels and functions within the organisation, aiming to collect diverse perspectives, see Table 2.1. The first respondent was selected based on input from the on-site supervisor, and the respondent then made further referrals to relevant respondents. Accordingly, almost all respondents were found through snowball sampling. The one exception was the operators which were included to add a bottom-up perspective.

The interview respondents were contacted in advance via Microsoft Teams or e-mail to explain the background and purpose of the interview as well as schedule a suitable time. During the interviews, one author was responsible for asking the questions and possible follow-up questions whilst the other one was responsible for the note taking. The notes were written down as exact as possible, and they were summarised afterwards to enhance comprehensibility for further analysis.

Respondent	**Date**	**Duration**
Production Manager	19 January 2024	60 min
Area Manager Production PS2 Day	19 January 2024	60 min
Area Manager Production PS1 Day	30 January 2024	30 min
Manager Processing & Pilot Production	31 January 2024	60 min
Area Manager Processing & Mill	5 February 2024	60 min
Area Managers Production PS1 & PS2 Evening	6 February 2024	40 min
Supply Planner	8 February 2024	60 min
Purchaser	8 February 2024	30 min
Area Manager Line Mechanics	12 February 2024	30 min
Warehouse Manager	13 February 2024	40 min

Operators PS1	7 March 2024	30 min
Operators PS2	8 March 2024	30 min

Table 2.1: Interviews conducted with employees at the company.

2.3.3 Affinity-Interrelationship Method

A workshop was conducted together with personnel at the research site. The structure of the workshop followed the affinity-interrelationship method (AIM). AIM is a problem-solving tool based on the use of two management tools: the affinity diagram and the interrelationship method (Alänge, 2009). It is a step-by-step approach helpful to identify and categorise problems in an organisation.

The purpose of the workshop was to enable a discussion among the participants and to get an overall picture of the experienced problems. By getting input from multiple stakeholders, it reduces the risk of missing important issues. The workshop was conducted with several managers at the research site, see Table 2.2, and they were invited via email with an explanation of the purpose of the workshop. The ten steps provided by Alänge (2009) were followed, and the AIM session lasted for 1,5 hours. The first step is to ask the participants a question. Therefore, at the beginning of the workshop, the following question was posed to the participants:

"What are the biggest problems with the daily management?"

The following steps, shortly described, were an individual brainstorming where the participants wrote their initial thoughts on Post-its, followed by a discussion and categorization of the written Post-its. This was followed by the participants making arrows between the different categories to create a cause-and-effect relationship between the identified problems.

Participants
Production Manager
Area Manager Production PS1 Day
Area Manager Production PS2 Day
Area Manager Production PS1 Evening
Area Manager Production PS2 Evening
Manager Processing & Pilot Production
Area Manager Processing & Mill
Warehousing Manager

Table 2.2: Participants in the AIM-workshop

2.4 Literature

Literature has been used to develop the research methodology and theoretical framework in the thesis. Literature used has been mainly taken from academic books and articles. It has been sourced and selected through Chalmers Library's online service and Google Scholar, with search words such as "qualitative research", "observation + research methodology", "snowball sampling + research methodology" and "interview + research methodology", "thematic analysis". Additionally, physical books focusing on business research, such as "Business research methods" by Bell et al. (2019), and "Management and business research" by Easterby-Smith et al. (2018), have been used. For the theoretical framework, relevant keywords to the scope have been used, such as "Visual Management", "Daily Management", "Lean Management System", "Visual Control" and "Cross-functional communication".

To create a theoretical framework, it is important to critically evaluate literature to know what to include in the literature review (Bell et al., 2019). The quality of the literature should also be assessed according to relevant quality criteria, in this case: credibility, transferability, dependability and confirmability. The literature review for the theoretical framework in this thesis has been conducted concurrently with the empirical data collection throughout the research. Due to the inductive nature of the study, the literature review has been conducted as a narrative review (Bell et al., 2019). It is a type of review that adopts a broader perspective and is less narrowly focused compared to a systematic review, which gives the researchers a greater flexibility to discover their subject along the way.

2.5 Thematic Analysis

A thematic analysis was conducted to analyse the empirical data collected from interviews, observations and the workshop. By this, the first research question could be answered. From identifying the problems, recommendations could be given with the help of the theoretical framework, which answered the second research question. The method was initially used in psychology but is also widely used in other variants of qualitative studies (Terry et al., 2017) and it is used to identify and analyse patterns within data (Braun and Clarke, 2006). Besides thematic analysis, there are other ways to do this as well, such as grounded theory. However, this method is based on a specific theoretical framework when used, whereas the thematic analysis is not. Due to this, the latter has a higher flexibility but still generates a detailed report of the data. In addition, the goal of grounded theory is to generate theory (Braun and Clarke, 2006). When considering these aspects, the thematic analysis was chosen instead of grounded theory.

Moreover, Braun and Clarke (2006) describe a thematic analysis to consist of a predetermined set of steps that should be seen as guidelines and not rules. These are:

1. Familiarising with the data by reading through the data several times and to write down some first thoughts.
2. Creating codes for the different patterns that are found interesting within the data gathered and sorting the data connected with each code.
3. Grouping of codes into themes and organising the data related to the specific theme.
4. Reviewing how well the themes represent the grouping of codes as well as the data set.

5. Conducting a progressing analysis and specifying the themes in order to have a good understanding and names of each one of them.
6. Finalising the analysis and with that the report by gathering examples within the data, doing an analysis of those and connecting this to the posed research questions and the literature collected.

Even though the steps are numbered with a certain order, Braun and Clarke (2006) stress that the process of conducting a thematic analysis is iterative. They also describe the analysis to be developed over time, thus being quite time consuming. As mentioned, the method needs to be adapted by the researchers to their specific study and situation (Braun and Clarke, 2006). However, the analysis method is primarily divided into two different approaches: inductive and deductive. To deductively conduct coding and find themes, implies already having theoretical concepts under consideration when doing the analysis. By doing it inductively instead means to only generate codes and themes from what is found in the data itself, even if the researchers will inevitably bring some theory into the process (Braun and Clarke, 2006; Terry et al., 2017). Since the approach for this study is an inductive one, the thematic analysis will be of inductive nature as well.

From the guidelines the thematic analysis was conducted by colour coding the empirical data collected. New codes were created as the data was reviewed, when the need for a new code emerged. Meanwhile, the relevance of the codes was also considered when creating new ones. This, since it should be connected to the research topic of the study. In the sixth step, the examples were gathered in the form of illustrative quotes to represent the codes.

After the codes were created, they were grouped into different themes and the data was organised accordingly, which was then reviewed to ensure that the theme adequately covered the data within the specific themes. Thereafter, the themes were gradually refined to get a more detailed definition and understanding of them. The results are compiled in Figure 5.1 in the Thematic Analysis section. However, not every theme was chosen to be investigated for the second research question, as mentioned in the last step of the thematic analysis by Braun and Clarke (2006). This was done due to lack of resources leading to delimitations.

2.6 Ethical Consideration

Diener and Crandall (1978) breaks down ethics in business research into four main ethical principles: *harm to participants, lack of informed consent, invasion of privacy* and *deception.* These will be taken into consideration during this research study. The research should avoid harming participants, both physically and psychologically. To avoid this, participants will be informed about the study’s purpose and reassured of their anonymity. Further, the participants should receive enough information to enable them to decide whether to participate. This includes that the researchers present themselves clearly, and don’t hide their intentions. To prevent invasion of privacy in the research study, it is essential to respect the participants' preferences and handle each participant with sensitivity and individualised consideration. To avoid deception, the results collected in this study should not be utilised for purposes other than those communicated to the participants.

3. Theoretical Framework

The theoretical framework is presented in this section, which will help with giving recommendations for some of the identified problems within the Thematic Analysis. Thus, it will be used for the second research question.

3.1 Lean Production

Lean production originates from the principles of the Toyota Production System (Dennis, 2007) and is an approach that aims to deliver products or services that meet the exact demand in terms of the right quantity and quality (Slack & Brandon-Jones, 2019). It should also be done at the right time and location, with a minimised cost. The authors describe three perspectives of this approach which are: a method for operation planning and control, different tools to enable improvements, and philosophy. The latter implies seeking a greater engagement of the staff in the operations, committing to continuous improvement (CI) and reducing all waste (Slack & Brandon-Jones, 2019). Further, the method of planning and controlling the company's operations emphasise the organisation and management of the flow of information, customers and materials. The tools of Lean instead have the purpose of improving the company's operations performance by eliminating waste.

One of the ways waste can be reduced is the 5s terminology (Slack & Brandon-Jones, 2019) and implies simplifying things. This terminology consists of five different S, which are: *Sort*, *Straighten*, *Shine*, *Standardise* and *Sustain*. Sort emphasises separating what is required and what is not. Straighten regards stationing things so they are easily accessed whereas Shine is to keep the work area tidy. Moreover, Standardise represents the maintenance of the order, meaning to having it as a habit. Lastly, Sustain concerns the development of an engagement as well as a pride in sustaining the set standards. By applying this, for example, uncertainty and waiting can be reduced. In addition, by keeping the work area in order, is the foundation of improvement (Dennis, 2016). This terminology together with Visual Management is the starting point to create a stability in for example the equipment as well as the methods used.

3.1.1 Lean Management System

A Lean Management system (LMS) is a complementary system that should be implemented in an organisation with a Lean Production approach (Mann, 2014). However, this is not equivalent to developing a Lean culture but the culture is instead the result of the management system, since the management is tangible in comparison to culture. It is further explained to be the part of Lean where the biggest focus should be, but it is easily forgotten due to it being less apparent than the physical changes within the production. If the Lean management system is not considered, the physical changes will not be sustained in the long-run (Mann, 2014).

The management system encourages a process focus in order to preserve the implementations (Mann, 2014). This implies for instance to continuously observe the process in order for it to produce the desirable results. A so-called conventional production with a batch production has instead a focus on results and not on the process itself. The author explains that commonly occurring measures in this conventional structure are: if the schedule for a specific day or week has been met, the amount of defects identified when quality control was conducted, and if the objective for material expenditures as well as if the manufacturing labour was met. These key performance indicators (KPI) are analysed when published in a report for a previous time interval, with a range determined by each specific company.

Furthermore, if problems emerge that could potentially risk not keeping the schedule, they are solved by taking short term measures, which are often costly (Mann, 2014). For example, these measures can be to call in more workforce or increase the work in progress. The focus on a daily basis is also to meet the daily schedule, and emerging problems during previous days are not considered, nor is the future schedule and how it should be reached. In comparison to the conventional structure, LMS entails not only focusing on KPIs that are result-based but also process-based ones. The process KPIs should also be continuously measured against the expected incremental achievements to more quickly take measures when problems occur in order to minimise the impact on the result-based KPIs.

Mann (2014) further describes that another way to do this is through system thinking. A system is defined by Dennis (2006) as: “an integrated series of parts with a clearly defined goal.” Hence, to have a system thinking implies having a holistic end-to-end view on the processes and by that in an early stage identify problems in supporting or upstream processes, which can prevent them from growing into bigger ones downstream (Mann 2014).

In addition, a process focus can be accomplished by using visual controls, which is used to identify deviations such as defects and disturbances (Mann, 2014). The author stresses that these controls should be continuously revised and to what extent this is followed indicates the discipline of the leaders. Thereafter, the data of the process is taken up in a daily accountability meeting and when needed the deviating events turn into task assignments. These tasks can for example include taking interim measures or conducting a root cause analysis. Mann (2014) further describes that follow-ups on the measures taken in these tasks then, for some time, become a part of the standard work of the leaders. Hence, the three principal elements within the Lean management system are: visual control, daily accountability and leader standard work.

3.1.2 Daily Accountability

One of the three principles in the Lean management system is daily accountability (Mann, 2014). This implies creation of task assignments based on the previous day in order to understand the underlying reason of emerging problems and then taking actions on them. Leaders should thereafter conduct follow-ups on these task assignments. It entails a facilitation of improvement, the required resources and establishment of a due date. Another purpose is explained to be to have a process focus. The author stresses daily accountability to be vital when using visual controls, since the problems identified in the visual controls will not be resolved otherwise. By using daily accountability meetings, it helps with resolving issues rapidly.

Furthermore, in comparison to the conventional production, the daily accountability in Lean management emphasises follow-up by identifying and comprehending the reason for the prior day’s issues and therefore being able to take action on them (Mann, 2014). In the former production approach, the primary focus is on current day with a common practice to work around former problems that could jeopardise the schedule. There is also a lack of follow-up as the task remains the same for the upcoming day, i.e. taking all necessary measures to adhere to the schedule. The big difference, Mann (2014) describes is that conventional production has an established way to for example handle repeated delays. In Lean, it concerns reducing the reason for the problems by making improvements to the process.

Hoeft and Pryor (2017) claim that the accountability process needs to have interconnected points so that various ideas can be escalated when necessary. It is also important with a simple way of communicating changes and priorities within the hierarchy. The authors describe that these are done by huddles, i.e. meetings. Thus, these facilitate a two-way communication. Mann (2014) explains the daily accountability occurring as three-tier meetings and the process is described as:

"*The daily accountability process typical of a reasonably quickly cycling daily work process takes place as an interlocking set of three brief, structured, daily meetings (...).*"

Moreover, the three tier meetings have the same four characteristics (Mann, 2014). The first one is that they are brief, meaning that they are often maximum 15 minutes long and the second regards that the meetings are held by every participant standing up. By standing up, Hoeft and Pryor (2017) explain that the meeting is required to be short as well as getting more engaged participants. It also requires a smaller amount of space than using chairs, which enables the meeting to be held in various locations at the company. Another characteristic is that they are held close to the manufacturing area or unit (Mann, 2014). The last one is the structure of using a visual board. Further, the different meetings are:

1. The *first tier meeting* often occurs at the beginning of a shift and implies the team leader having a meeting with the team members.
2. The *second tier meeting* is called a *"*supervisor meeting*"*, where the team leaders meet their supervisor, i.e. all team leaders that have the same supervisor meet together in a meeting.
3. The *third tier meeting* has the similar arrangement as the second tier-meeting but where a so-called value stream manager or similar, meets all supervisors that he or she is responsible for. Other participants are people representing the support groups.
4. An additional *fourth tier meeting* is sometimes taking place. This includes for example that the unit or plant has a meeting with the production as well as people within the support groups.

Mann (2014) describes that all meetings except the first tier meeting to have two different focuses. Both a focus on improvement of the business and on managing the operational work. The author stresses that an enhanced accountability is developed through these meetings. These meetings consist of three parts: to evaluate the data from the visual controls, delegation of tasks for improvement according to the insights received from the visual controls, and lastly control if the tasks that have a deadline for the present day are accomplished. However, the tasks can also be created based on other insights than solely the ones gotten during the meeting.

Mann (2014) mentions in contrast, that the main purpose of the first tier meetings is to get a bottom-up perspective and engagement, i.e. from staff on the production floor. However, all meetings have the common denominator of communicating and creating an accountability for the performance by visualisation. Furthermore, Hoeft and Pryor

(2017) emphasises that all the meetings should investigate the problems. If the root cause is not known, it should be investigated by using the 5 Whys. This is a method that implies asking “Why?” five times in order to find the root cause of a problem (Ohno, 1988; George, 2007). Each meeting is also held by the respective manager, meaning that for example the second tier meeting is held by the supervisor (Mann, 2014). The first topic brought up is also always the present day’s work plan, but this differs between the meetings in terms of how it is discussed.

First Tier Meetings

At the first tier meeting the current day’s work plan is brought up by visualisation of it or the staffing plan (Mann, 2014). The staffing plan includes initial locations for all employees and tasks that should be conducted during the day. The accountability of covering potential staffing gaps is also collectively determined and delegated during the meeting. Further, this team meeting has the focus on the present day and its associated tasks. The team leader also mentions the prior day in terms of performance, any other relevant information from it as well as if this will affect the current day. The board used in the meeting can consist of an overview of the current projects within the area, which includes for example objectives, measurements of accomplishment, dates and members. Also, days have a predetermined topic that is touched upon, such as quality, safety or inspection findings on 5S. When the boards contain information that is related to the staff’s performance, the author explains that the staff will be interested and the board will be properly used. Otherwise, it will create confusion and a lack of use of the board.

Second Tier Meetings

The second tier meeting instead discusses the staffing plan by reviewing if there are any staffing gaps in any area and if so, how it can be supported to still adhere with the plan (Mann, 2014). Comparable to the first tier meeting, this meeting highlights the notable subjects from the prior day and current problems. The board at this meeting often contains the status of the main processes and equipment. It also contains cumulative information about delivery, safety, quality as well as the productivity or the cost. Usually, the three greatest problems in terms of dimension and current measures taken for them, are presented on the board as well. Prior day’s charts visualising the progression of the production is also put on the board by each team leader participating in the meeting. visualising trends are also displayed on the information board. The author emphasises that all issues identified as trends in the charts should be understood, since it will be mediated by the supervisor at the third-tier meeting.

The other part of the meeting, being the improvement part, implies having a board formed as a matrix, a so-called “visual task assignment board”, where the tasks are based on what has been seen in the charts of the production as well as potentially other ways the organisation can measure performance (Mann, 2014). In addition, tasks can be created from inspections conducted, where they have the purpose of being a follow-up on these. Every name of the participants are constituting the rows in the matrix and the columns are the days, as seen in Figure 3.1. The range of the days are between one to eight weeks. The tasks on the board are created and delegated by the supervisor to the participants. These are written on for example Post-its and are then put on the day the tasks should be finished and the persons getting the respective task. Hence, the green squares in the figure illustrate these notes.

Figure 3.1: The visual task assignment board illustrated from the description by Mann (2014).

Mann (2014) further explains that during the meeting, all the assignments that have the present day as deadline are reviewed. If it is finished, a green dot is put on the Post-it and if not, the supervisor investigates the cause and puts a red dot on the note. This is demonstrated in Figure 3.1. Also, the person having the task is asked to set a new date which is negotiated between the person and the supervisor if needed. However, the note is still placed at the same date as before and the notes with red dots are the ones being reviewed the day after. Further, the red dot is never removed but instead a green dot is placed on the Post-it as well, when the task is performed and done. If a lot of red dots is gradually increasing on the board, the author highlights that this should be investigated, to identify the reason for it. One of the most common reasons is that others outside the unit or area are the ones impeding the execution of the assignment. This should be escalated to the third-tier meeting, to be resolved. An advantage of this method Mann (2014) stresses is that it not only increases accountability but that it creates a feeling of recognition among staff. Biskupska and Ratnayake (2019) also explain that daily accountability meetings have a positive influence on the performance of teams.

Third tier meeting

The staffing plan in the third-tier meetings has a departmental focus, i.e. if any department has absence among staff that will jeopardise the completion of the present day's production plan (Mann, 2014). When those situations occur, a relocation of staff is discussed in order for it to not affect the plan. Quality, delivery, cost and safety for the previous day, as well as other relevant topics for the company, are covered in this meeting. This is viewed by trend charts, which is explained by Mann (2014) to be a advantageable, since it is equivalent to a focus on the process. Notable subjects from the previous day's performance or something that will occur, is also mentioned. Thereafter, assignments are created based on the trend charts and put on the visual task assignment board. The improvement part of this is identical to the second-tier meeting's part, besides that the participants from the support groups can receive tasks, which they can not get in the second-tier meetings if attending. If the supervisor receives a task at the third tier meeting, it can be divided into different tasks delegated at the second tier meeting. Moreover, if the fourth-tier meetings have a similar structure to the third-tier ones.

However, Mann (2014) mentions that the boards differ between companies, since they must be adapted to their specific requirements. How they are used are the most vital aspect, meaning that they are used in the right way. Also, when giving managers the responsibility of experimenting with what they want to measure they have to think of the reason for it, which is explained as valuable by the author.

3.2 Visual Management

Eaidgah et al. (2016) describes visual management as a Lean manufacturing approach, and defines it as "different types of tools and methods which can be used to visualise information and display requirements and guidelines". Visual management is further useful for aligning the company's strategic goals and customer requirements with the operational work performed (Eaidgah et al., 2016). It provides management with possibilities to acknowledge and establish the corporate values, vision and goals (Mestre et al., 2000). This in turn enables the company to ensure that they are focused on creating the correct values (Eaidgah et al., 2016). It is further a tool for companies to visualise their progress in terms of reaching their goals, but also to remind and motivate their colleagues (Mestre et al., 2000). Visualisation also facilitates the transfer and sharing of knowledge between stakeholders in an organisation as it creates a linkage between the individual and their corresponding organisation (Whyte et al., 2008).

Visual management can be used in two different ways, either as an informative tool or as a directive tool (Eaidgah et al., 2016). When used as an informative tool, its sole purpose is to visualise information and it does not contain any performance management. However, as a directive tool, it is both used to visualise information but also to set directions and guide actions. One example of this is visual management boards containing key performance indicator charts together with targets. When used as a directive tool, the visual management also has a performance management implication, and is used to follow up on metrics and manage the effectiveness or efficiency of actions. However, it is of importance that information is displayed in a simple manner and only if it is of relevance for the process (Parry & Turner, 2006).

3.2.1 Organisational Impact

Visual management can contribute to the transparency within organisations by visualising the main process flows and making them more comprehensible throughout the process (Tezel et al., 2009; Koskela, 1992). This can be done through organisational and physical means, measurements, and public display of information (Kosekela, 1992). Visual management further increases the transparency by allowing the information to be available to anyone in a given work area, and not restricting it to a certain group of individuals (Greif, 1991). However, as information is accessible to all and not directed to specific individuals, fostering a positive work culture is vital. It requires active engagement from individuals to engage with available information to ensure that they do not make themselves uninformed.

Practical impacts of an increased transparency is that it contributes to the fostering of informal contacts between hierarchical levels (Moser & Dos Santos, 2003). It may further provide organisations with a more effective allocation of responsibilities, facilitate streamlined and coherent decision-making processes, and create more effective production scheduling. In addition, Slack and Brandon-Jones (2019) explain that visual management can contribute to a shared focus during meetings and a wider understanding of priority and tasks. Another benefit is that it provides clear communication to all staff about how the performance is assessed.

Visual management also has the purpose of empowering employees (Eaidgah et al., 2016). Giving the information directly to the process owners enables them to take responsibility for their processes and participate in the operational day-to-day decisions. This also contributes to an increased effectiveness and efficiency.

Another purpose of visual management is that it provides possibilities for continuous feedback which facilitates an understanding of the instant effects of actions, in comparison to receiving feedback at the end of a performance-planning interval (Eaidgah et al., 2016). Visual management can also deliver a solid base for continuous improvement, and give organisations tools for listening and responding to people's ideas (Tezel et al., 2009). It provides visibility and transparency to the organisation which is helpful for recognizing deviations from standards and facilitating the creation of adapted standards. By fostering employee involvement, visual management also encourages employees to work with quality improvements.

Visual management can also contribute to creating a more unified organisation and reduce the boundaries in an organisation (Tezel et al., 2009). Through enhancement of information sharing and dialogue creation can the boundaries in an organisation be reduced, both vertically between hierarchical layers in the organisation, and horizontally between different functional groups (Ashkenas et al., 1995).

3.2.2 Digital or Analogue Visual Boards

Whether the visual boards in manufacturing should be digital or analogue is a debated question, and there are advantages with both alternatives. One advantage with digital visual boards is that managers can access the information from anywhere, which increases their possibilities to support their operators (Meissner et al., 2018). Another benefit is that it saves time as the information does not have to be updated manually by the staff. However, this could diminish employees' ability to identify with the information since they are not actively taking part in retrieving it.

Another difference is the amount of information that can be visualised. Parry and Turner (2007) argue that analogue visual boards are more beneficial as they have a limited space which reduces the risk of visualising unnecessary information that don't add value to the process. Meissner et al. (2018) also highlights this and mentions the risk of keeping up with an excessive amount of KPIs.

Another benefit of digital visual boards is that managers can access the information from anywhere, which increases their possibilities to support their operators (Meissner et al., 2018). Having the information digitally also increases the transparency of the production process as problems can be detected earlier (Nilsson et al., 2019). Using analogue boards can create difficulties in archiving the data, potentially leading to reduced organisational transparency and silos of knowledge as not everyone can easily access the discussed information.

Regarding the visual task assignment boards, Mann (2014) describes that the most effective ones are located near the work area. The reason is that they are continuously visual for the staff, which sees the task and the due date for it and eventually if it was done on time, due to the either red or green dots. However, at third- or fourth-tier meetings, people can sometimes be in different locations and therefore, can not attend physically. The task board is then often a digital one, in the form of an Excel document, with a similar structure as the matrix on the analogue board. Instead of a red or green dot, the cell is then instead filled in with red or green colour. Having some kind of video conferencing for the meeting is also convenient.

How effective the digital solution for the accountability board is depends on the discipline of the manager having the meeting (Mann, 2014). Nonetheless, the author suggests that if people have the possibility to physically participate, it is more effective to use the analogue accountability board. One reason is that eye contact between the participants leads to an increased accountability.

3.3 Daily Management

Daily management, also called daily visual management (DVM), is a practice often used in manufacturing organisations aiming for a Lean production (Kurdve et al., 2019). Its aim is to increase the efficiency within an organisation and improve information flows horizontally and vertically. Kurdve et al. (2016) defines DVM in practice according to the following:

"*DVM is a meeting structure for short (usually standing up) meetings for all teams and cascading to all management levels. The DVM are centered around a board, visualizing status, PMs and KPIs. The KPIs should be balanced around the company's strategic challenges but usually at least include: safety, quality, delivery and improvements."*

Daily management also emphasises improvement with the definition "While maintenance [of daily work] activities are the main concern, improvement activities are also a part of daily management" (JUSE, 1989; Ando & Kumar, 2011). DVM serves as a foundation for continuous improvements, as a vital part of it is to present current deviations and visualise the gap between current and desired state (Kurdve et al., 2016). Daily management also emphasises the importance of empowering managers to coach their employees in enhancing their skills in decision-making and leadership (Rother, 2010).

Moreover, in today's DM, managers should coach their employees in enhancing their skills in decision-making and leadership (Rother, 2010). Additionally, it emphasises that workers should be encouraged to actively contribute to problem-solving. According to Hertle et al. (2015), Lean production brings higher expectations on the shop floors workers which requires new competences to be developed. Shop floor workers should be responsible for KPIs on their shop floors which includes both collecting and interpreting relevant KPIs within their area.

3.2.1 Daily Management Practices

Two practices summarised by Nicholas (2023) is 'daily huddles' and 'KPI boards for visual monitoring and control'. The former is described as short (≤ 15 min) meetings for the shop floor workers and local (or higher) managers, while the latter is visual boards where goals, performances, issues and solutions are displayed and monitored.

Kurdve et al. (2019) also discusses DVM meetings with visualisation boards and highlights that it is a vital part of DVM in manufacturing organisations.

The DVM meetings generally have a standardised agenda, and it can be combined with a standardised, either digital or manual, DVM-board. Specific KPIs are also a common element to bring up in DVM meetings. All employees should be involved in the DVM and meetings should occur at cascading levels (Kurdve et al., 2016). A study by Kurdve et al. (2016) also showed that the daily meetings in general lasted for 10-15 minutes, and that companies with several shifts had a DVM meeting at each shift start. It is also emphasised by Kurdve et al. (2016) that operational losses should be presented and visualised in DVM. Information and measurements visualised and distributed on the DVM boards should be relevant and useful for the daily operations.

DVM meetings can be executed across different management tiers within the company, such as at the operator level or the site management level (Kurdve et al., 2019). Problems and deviations are reported at these meetings and if the matter cannot be solved, it is escalated to the next level or postponed to an improvement meeting (Kurdve et al., 2016). Reporting deviations aims to prevent their recurrence by identifying root causes and potential solutions. Similarly to this, one practice in DM mentioned by Nicholas (2023) is the ‘Escalation measures/tiered huddle structure’ where matters are escalated to the next management level and are addressed in a daily or weekly meeting. Nicholas (2023) further discusses handover meetings as a DM practice used in factories where the current work shift updates the next shift about status and issues on the shop floor.

Other practices mentioned by Nicholas (2023) include ‘daily status checking/performance audits/accountability’, which purpose is to empower the employees of an organisation to follow up on performance data and pinpoint problems. Following up on this, the practice ‘daily problem-solving/root-cause analysis/PDCA process’, is about empowering the employees to solve identified problems.

3.2.2 Key Performance Indicators

One common visual element in daily management meetings is the key performance indicators (KPIs) of the production site, which often aim to reflect the company’s strategy (Kurdve et al., 2019). The selected KPIs should also reflect and correlate with the company’s challenges and local goals (Kurdve et al., 2014). When deciding which KPIs to include, it is worth noting that a large amount of indicators can lead to an overload of information, making it difficult to distinguish which information to focus on (Tangen, 2005). However, having insufficient information is also a cause of waste in an organisation (Kurdve et al., 2016). Therefore, it is important to differentiate which indicators should be measured at different levels within the company (Landström et al., 2016). It is furthermore also important that the concerned people within the organisation understand the indicators (Crawford & Cox, 1990).

In a study by Kurdve et al. (2016), DVM were implemented at five SMEs and further compared to six large companies’ DVM. The study highlights the importance of creating a linkage between the company’s overall strategy and the team level work. This is reflected in the DVM-board as the daily operational work should be linked to the chosen KPIs visualised on the board. The parameters chosen on each level should be adapted from the top level KPIs and be clearly and easily measurable parameters.

The company's overall challenges should also be reflected in what KPIs each specific operation decides on.

Furthermore, in the study by Kurdve et al. (2016), most companies were going through the following KPIs in their DVM meetings: safety (S), personnel availability (Pa), status and planning of production, i.e. delivery (D), deviations, i.e. quality (Q), and current improvement activities (I). Some companies also included a wider set of indicators, such as financial or environmental ones. One commonly implemented measurement visualising the KPI safety is the 'green cross' which visualises accidents and incidents occurring each day. Kurdve et al. (2016) highlights that the process related KPIs need to be adapted to the differences in the production processes. Common process related measurements in the studied companies include quality, delivery and machine availability.

In a study by Landström et al. (2016) where seven Swedish production sites are compared, they conclude that there are differences in how performance is measured between organisational levels within a manufacturing organisation. In hierarchical order, three of the organisational levels in the study were site level, area level and work centre level. The performance indicators were divided into twelve different topics, and there were different focuses on different levels. On site level, the most used topics were delivery reliability, quality and finance. On area level and work centre level, it was instead quality, safety and delivery reliability that were the most used.

Another difference in the study by Landström et al. (2016) was the number of measured performance indicators, which was greater on site level compared to on area level, with the lowest number of indicators on work centre level. On site level, there were also a greater number of functions included, e.g. sales and marketing, human resources and finance. How often the results were updated also differed between the organisational levels. At work centre level, almost half of the performance indicators were updated daily, while on site level the bigger part of indicators were updated monthly. On area level, 30 percent of the indicators were updated daily while almost 60 percent were updated monthly.

Another difference between the organisational levels in the study by Landström et al. (2016) was the structure of the daily meetings. At area level and work centre level, there were daily production meetings at all research objects while on site level, there were only daily meetings at some of the studied sites. The subjects discussed in these meetings were deviations from target and the necessary actions to reach their target. There were differences in the set agenda as well. In some production sites, they used a standardised KPI board while in others, the performance indicators on the KPI board depended on the manager for the unit.

Another frequently used KPI is overall equipment effectiveness (OEE), which measures internal efficiency by assessing performance effectiveness (Tsarouhas, 2018). It can be used for individual equipment or an entire process. It is built up by multiplication of three measurements: quality, availability and performance, which is illustrated in Figure 3. Quality concerns the share of the manufactured parts that are defective, i.e. that do not meet the quality requirements (Dal et al., 2000). Further, the availability considers the time that planned production is stopped, but only the situations when the downtime is unplanned. Hence, it is the actual operation time in proportion to the planned time. The last parameter, performance, regards all that contribute to the process not running at maximum speed, meaning the proportion of the actual speed to the optimal one. According to Tsarouhas (2018), there are limits which should be met to perform on a high level. The availability should be above 0,9, the performance efficiency should be above 0,95, and the quality should be above 0,99. In total, these limits would equal an overall OEE > 0,84.

Overall Equipment Effectiveness (OEE) = Availability ✖ Performance ✖ Quality

Figure 3.2: an illustration of the mathematical formula for OEE.

3.4 Virtual or Physical Meetings

During the COVID-19-pandemic, people had to adapt their work methods, resulting in an increased amount of virtual meetings (Karl et al., 2022). This shift has come with both benefits and challenges. Compared to physical meetings, it can be challenging to read body language among the attendees or to have informal conversations (Standaert et al., 2021). Virtual meetings also limit the possibilities to have coincidental interactions where innovative ideas are born (Ben-Menahem & Erden, 2020). Decreasing motivation to engage in the meetings has also been shown among participants that participate in virtual meetings (Kuzminykh & Rintel, 2020). Participants also tend to multi-task in virtual meetings, leading to less focus on what is discussed during the meeting (Cao et al., 2021).

Conversely, reported benefits with virtual meetings include enhanced scheduling flexibility within the company, decreased travel time, and improved meeting efficiency since less time is spent on unrelated discussions (Standaert et al., 2022). However, according to Mascitelli (2011), the strongest visual management tool is to have face-to-face interaction, therefore having physical meetings where you meet each other is advantageous. Having the meetings standing-up is also beneficial as it creates a sense of urgency.

4. Empirical Data Collection

In this section empirical results of this study are presented in order to get a context and a good understanding of the thematic analysis in Section 6.

4.1 Site Description

The Swedish Match Factory in Kungälv is a production unit producing various sorts of the company's product. The production consists of two main processes: the processing and mill of raw material, and the packaging of the product. The processing and mill is a process that takes place in advance to prepare the material before it is packaged. The raw material is grinded and mixed with flavours, before it is packaged into pouches and placed in boxes. The boxes are then plastic wrapped in sets of five or ten boxes, packaged in cardboard boxes and transported to the finished goods inventory. The main packaging process is divided into two different areas, called PS1 and PS2, with different production lines in each area. There is an additional packaging process called NP occurring in parallel to the main processes in PS1 and PS2. The production is occurring in one day shift and one evening shift, and it is always the same personnel on each shift. Within production, there are also line mechanics assigned to each production line with the task of supporting the production with mechanical expertise.

The factory in Kungälv has implemented 5S as a part of their daily operations. The aim is to be more efficient in their daily work by reducing waste and driving improvement. The factory has also implemented improvement boards, as a part of their Six Sigma program. The operators on the production lines can write improvement suggestions on a physical board, and they have weekly meetings discussing the suggestions. They have a physical board for each shift in each PS, and the Area Manager is in charge of the meetings. The purpose with the improvement boards is to engage and encourage the operators to be active in improving their daily operations.

Furthermore, the factory has implemented several types of visual control. They have visual boards on the production line where they in real time can follow how each machine is working, and where problems are occurring. There is also a support service called Bryggan, which is closely linked with the line mechanics. Bryggan has a more detailed visual overview of the production's current status, how they are performing, and if there are any disturbances in the production. On the visual boards, each production line is visualised with current OEE and amount of waste. Bryggan contacts the personnel on the line when they notice something out of the ordinary, and they are also responsible for coordinating resources if the line mechanics need more support.

4.1.1 Organisational Structure

There is one Production Manager responsible for packaging production, the Production Manager works together with four Area Managers that are responsible for one shift and packaging room each. Each Area Manager in the packaging production has a coordinator that is working as operator but is assisting them in their daily work as well. There is also one Area Manager responsible for the NP processing, and one Area Manager responsible for line mechanics and Bryggan, see figure 4.1. In addition, there is one Area Manager responsible for the Processing and Mill, who reports to the Manager of Processing and Pilot Production.

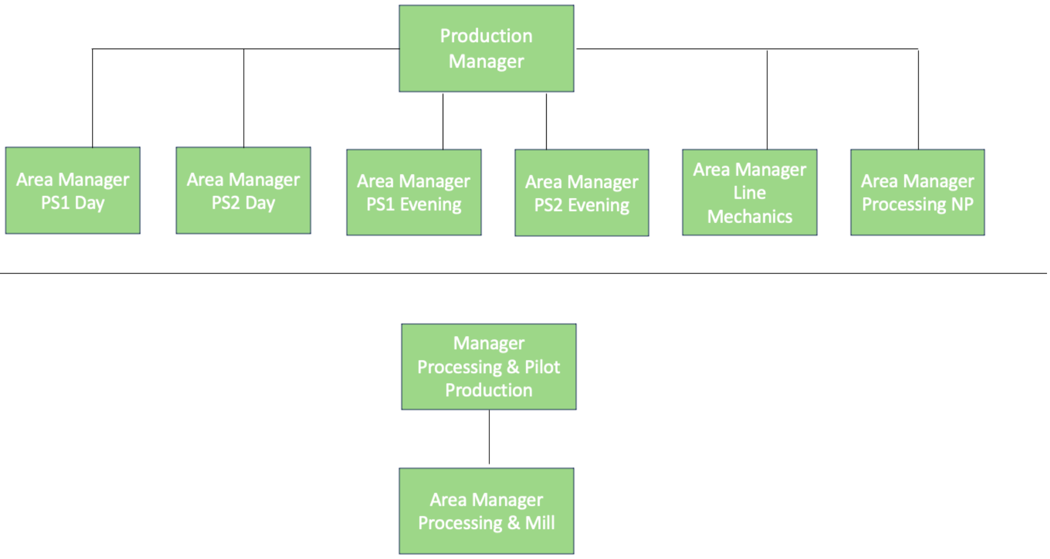


Figure 4.1: Organisational structure within the production function

There are several supporting functions located in Kungälv, such as Planning, Purchasing, Warehousing, Maintenance, Process development, Quality, and other service functions. The Warehousing function is responsible for the supply of materials from the storage to the production units, and for the storage and distribution of the finished goods. They are working during both the day shift and evening shift.

The Planning function is working both long-term and short-term with production planning, based on a prognosis. Together with production, they establish the production plan once a week, one week ahead for the mill and processing and two weeks ahead for the packaging production. If production needs or wants to change the production plan, they need to communicate this with planning before they make any changes. The same goes for planning, if they make any changes in the production plan, they communicate it to the production and to other concerned functions. The Purchasing function works with all purchases related to the Kungälv factory, and they receive an order suggestion based on the production plan.

4.2 Meeting Structure

The daily management meetings occuring during the day shift are line meetings, start-up meetings and a morning meeting. For the evening shift, there is a similar structure with operators having handover between each other at the end of the day shift, a handover meeting between managers as well as start-up meetings. However, there is a difference between the two shifts regarding the sequence of the meetings and the content discussed. These two structures are summarised in Figure 4.2. Both shifts also have the same arrangement with regard to having a role called contact person, which implies being a representative for a specific line in the start-up meeting. The delegation of the role is based on a rotating schedule, meaning that an operator has the role for two weeks before it is taken over by someone else.

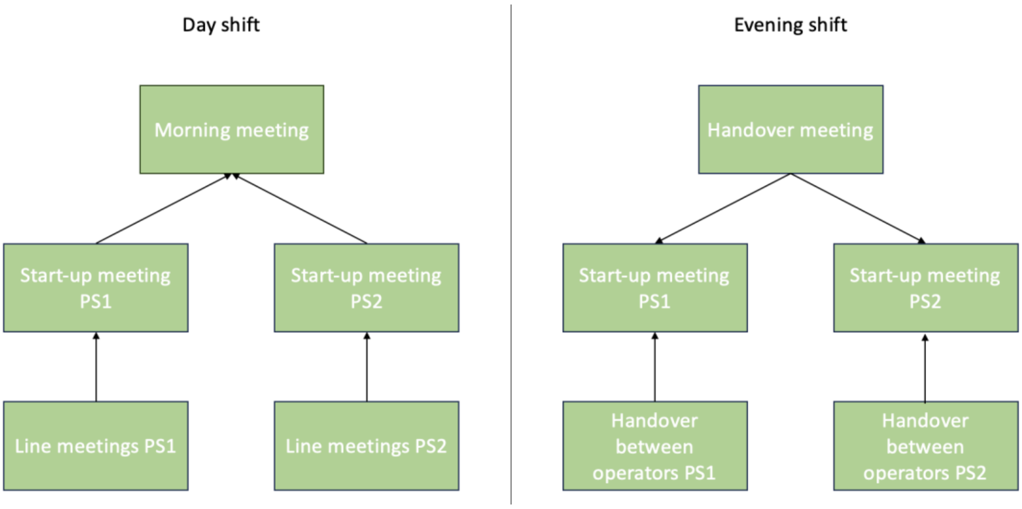


Figure 4.2: Meeting structure and its information flow within the production function

4.2.1 Prior Meetings

At the beginning of the day shift, every line in each PS holds its separate line meeting. During these meetings, every operator in the line team reports to a contact person if the machine startup has been successful or if any problems have arisen. This is conducted physically on the line and information from the line meeting is forwarded to the Area Manager during the start-up meeting.

The start-up meeting in PS1 as well as in PS2 takes place on site and for each PS the meeting is held in the same conference room. During the start-up meeting each contact person not only reports the start up for the current day but also reports if any accidents occurred the previous day. An aggregated Overall Equipment Effectiveness (OEE) for each line from the previous day shift is also reported. Additional information is brought up by the Area Manager that is believed to be of importance for the operators. One example of this is that waste is discussed in one of the PS start-up meetings but not in the other PS.

In contrast to the day shift's line meeting, there is instead a handover between the day shift and evening shift operators at the end of the day shift. The information from the handover is then forwarded in the start-up meeting by the contact persons. In the start-up meetings, each Area Manager also communicates the information they have received during the handover meeting. However, in comparison to the day shift's start-up meeting, the focus is only put on the current day and not on the previous day.

4.2.2 Morning Meeting

The information from the start-up meetings is then communicated in the subsequent so-called morning meeting, which is held virtually on the platform Microsoft Teams. The meeting takes place approximately one hour after the day shift commences. It is usually held by any of the following managers: Production Manager, Manager Processing and Pilot Production, or Area Manager Mill and Processing. This morning meeting has a predetermined structure with two parts, where the first part of the meeting is illustrated in Figure 4.3. The second part of the meeting is the focus area where each weekday has its assigned topic. These topics are environment, quality, Bryggan and the enterprise resource planning (ERP)-system that the company works in. There is also a residual day where it is free for anyone to bring something up. However, the topic of environment is currently paused, due to lack of staff working with this. The day for the ERP-system is also only utilised when something new within the system has arised and needs to be announced. These focus areas are recorded and uploaded for everyone to access.

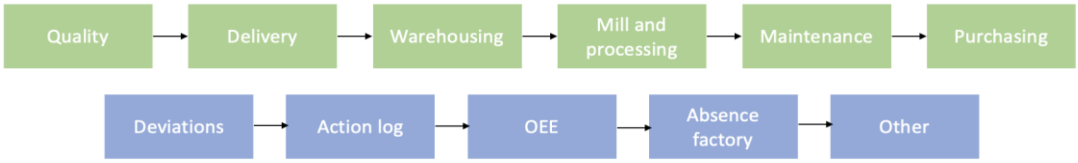


Figure 4.3: Structure and topics of morning meeting.

Nearly all the various topics in the first part of the meeting, but also the recorded second part of the meeting are located on a page in the company's intranet, which is accessible for all employees on the Kungälv site. On the intranet, there is also a basic schedule for the current and upcoming week. This table is used to mediate information, which is often about transports as well as information about a specific event affecting the production and is occuring every other Friday.

A reference guide for the site’s daily management is also summarised by the company in one picture available at the same intranet page. The picture seen in Figure 4.4 explains the set time and length of the meeting but also the functions that should attend, which are: Area Managers PS Day/Evening, Quality, Planning, Warehousing, Processing & Mill, Maintenance and Purchasing. In addition, it explains what the expected input and output of the meeting should be. The agenda in Figure 4.3 is also explained in this figure. Further, a description of the daily management is found, which is said to be reporting deviations in the set production plan, but also to take decisions about required actions when trends are identified. Lastly, the rules of the meetings are stated.

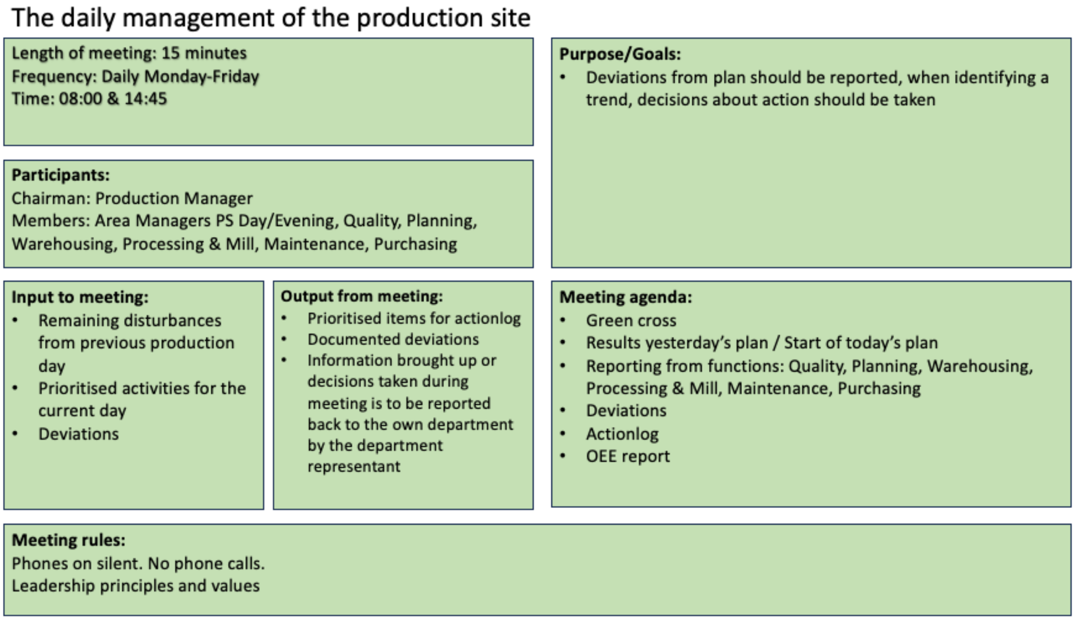


Figure 4.4: The reference guide emulated from the original one found on the intranet page for the Kungälv site.

1. Green Cross

The first topic raised is the green cross, which is emulated in Figure 4.5. This is done to visualise the safety, and each number box represents the respective date in the current month. A day gets filled in with either a green, yellow or red colour which is done the day after it occurred, but before the morning meeting. When a box gets filled in with either a yellow or red box, it means that a safety risk has been identified or an injury has occured. The table to the right is then filled in with the date it happened. Information regarding what shift it happened during is also filled in, together with information whether it is reported or not. However, when the cross is filled in with green, it means no accidents have occured, and therefore no information is added to the table.

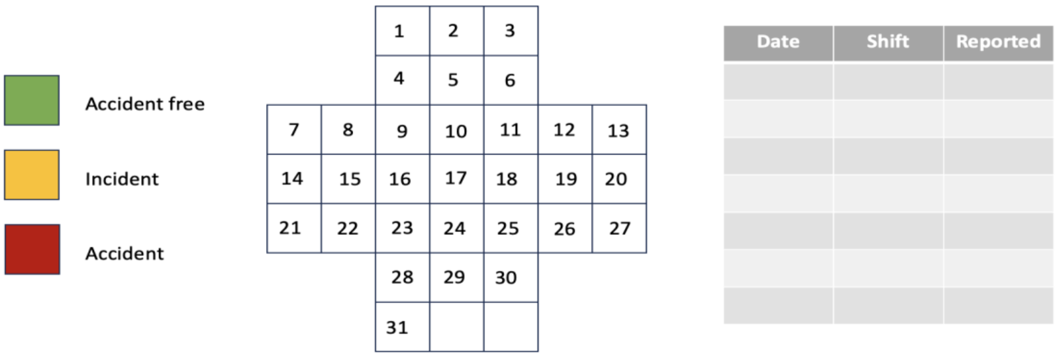


Figure 4.5: Visualisation of how the green cross is built up.

2. Start up and Bryggan Report

Thereafter, a visualisation of the current day's OEE is shown, which is a part of an Power BI report used by Bryggan. The KPI is in the same aggregated form as the one mentioned in the start-up meeting, but in this meeting the KPI for the current day is discussed. As the two Area Managers in PS1 and PS2 explain the start up in their respective PS, the OEE for the different lines is visualised for everyone in the meeting. If problems have emerged during the start up and it has affected the OEE for the specific line, it is also explained. In addition, a visualisation in the form of three different bars is displayed when showing the OEE for each line. One of these bars shows the planned total amount of units that should be produced during the day and evening shift. The second bar shows the amount of units produced in relation to the planned amount, both in concrete figures and in percent. The discarded units are also visualised, constituting the third bar.

3. Function reporting

After the OEE has been recognised, the different functions mentioned in the reference guide in Figure 4.4 as well as in the green boxes in Figure 4.3, report the things they believe to be of relevance. This can for example be current problems, general information that they want to mediate or positive aspects. The reporting sequence of the different functions is also visualised in Figure 4.3.

4. Deviations

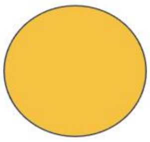
The next topic being discussed, seen as the first blue box in Figure 4.3, is the deviations. The manager having the responsibility of the meeting asks if any deviations have been written the previous day. Deviations are reported by the manager detecting them in a digital system and are received by the function that the deviation concerns.

5. Action log

A document with the action log, illustrated in Figure 4.6, is then brought up. The manager having the responsibility of the meeting asks if any new actions should be added to the action log. This is then filled in the table seen in the figure. The actions added in the action log can be both of a more informative characteristic but also in a problem solving oriented one. The current actions are brought up during the meeting to see if it should be altered and if the actions that have reached their due date are completed.

When an action is added, each action is numbered when added to the action log and the KPI column is filled in when it regards a certain KPI. Further, the area column contains the concern that an action has to be taken for, and in the action column, the action that should be taken is explained. The table also contains the ones responsible for taking the action, the date when the action should be taken and finished, the status for the action, together with a comment field. The status is either a red, yellow or a green and stands for if the action is delayed, ongoing or if it is finished. A circle diagram is also displayed to show the ratio between the current actions in their status, i.e. when being completely yellow all current actions are ongoing.

Colour	Status	Quanitity
	Delayed	...
	Open	...
	Finished	...
Date: ...		



Number	KPI	Area	Action	Responsible	Finishing date	Status	Comment

Figure 4.6: An illustration of the action log

6. OEE report

Furthermore, the so-called OEE report is brought up and updated during the meeting. This consists of an Excel document, where each spreadsheet concerns one week at a time. The spreadsheet includes various measurements, with separate columns for the day and evening shift, but only the day shift column is filled in. The KPIs are filled in during the meeting or right before it. In addition, most of the numbers are for the previous day and they are also filled in for that same day. However, two measurements are the present ones, hence are filled in for the current day. These measurements are:

- OEE for the each operating line right before the meeting
- Number of pallets in the finished goods inventory

The measurements for the previous day in the OEE report are:

- Waste in kilograms, for the mill & processing production
- Accumulated amount of complaints from customers during the current month
- Accumulated amount of complaints about nicotine pouches during current month
- The number of times a set production plan is changed and a code for it to represent the reason
- Delivery accuracy in percent
- Adherence to plan in percent

The KPI OEE is filled in right before the meeting and it is the OEE for that point in time. A written limit in the document can be found for the two shifts. If the KPI is over 50 percent for the day shift or 68 percent for the evening shift, the OEE cell for that line is coloured green, otherwise it is coloured red.

Furthermore, there are different codes to represent the reason for changes in the set production plan. These codes have a range from A to F; A being a changed need/prognosis, B being shortage in packaging material, C being shortage in staff, D being technical problems, E being shortage or excess of NP powder or snus and lastly F being other reasons.

The delivery accuracy is instead how well the delivery is adherent to the predetermined delivery plan. Similar to this measurement, the adherence to plan is how well the predetermined plan has been followed.

7. Absence factory

The absence of staff in the factory is also raised as a topic by having an Excel sheet taking the current month in regard. This is divided into every manager and the number of employees that they are responsible for. Thus, for each day the number of people being absent is filled in for each manager participating in the meeting.

8. Other

This is the last topic in the meeting and is where anyone in the meeting can bring up something that is not appropriate elsewhere.

4.2.3 Handover meeting

The handover meeting takes place on Microsoft Teams as well, approximately 10 minutes before the evening shift starts and is said in Figure 4.4, to follow the same structure as the morning meeting. However, these structures differ, e.g. how the information flows before and after these meetings, which can be seen in Figure 4.2, the information mediated during the meetings and the duration of the meetings.

The meeting is held by one of the four Area Managers for a PS and the duration in practice is approximately five to ten minutes. During the meeting, the Area Managers for the day shift update the Area Managers for the evening shift on their respective PS. This entails showing the same Bryggan Report that visualises the OEE for each line, as in the morning meeting. At the same time, it is explained how every line has operated during the day shift. Any other information that is found relevant for the managers for the evening is communicated as well.

Besides this meeting, a handover from the day shift to the evening shift is also conducted daily through a digital document, where each production line is marked out. Meaning, the two Area Managers on the day shift responsible for a PS respectively, write information that they found important to communicate to their corresponding Area Manager for the evening shift. This document is also used in the same way, to have a handover from the evening shift to the day shift.

5. Thematic Analysis

Based on the six step-process explained by Braun and Clarke (2006), a thematic analysis was conducted on the observations, interviews and AIM-workshop. The thematic analysis will be the foundation for the Discussion in section 6. The quotes in the tables are derived from the interviews and translated to English. In Appendix II the quotes are found in the original language. When reading through the data collected the codes listed below was found:

- Different views on the definition of daily management
- Opinions differ regarding structure of the daily morning and handover meetings
- View of which function that should be focused on
- Redundant information in meetings
- Too information-oriented meetings
- Lack of clear priority
- Lacking communication between functions
- Lack of ownership
- Uncertainty when actions should be taken
- Lack of deviation follow-ups
- Lack of other follow-ups
- Difference in structure of start-up meetings
- Communication between day and evening shift

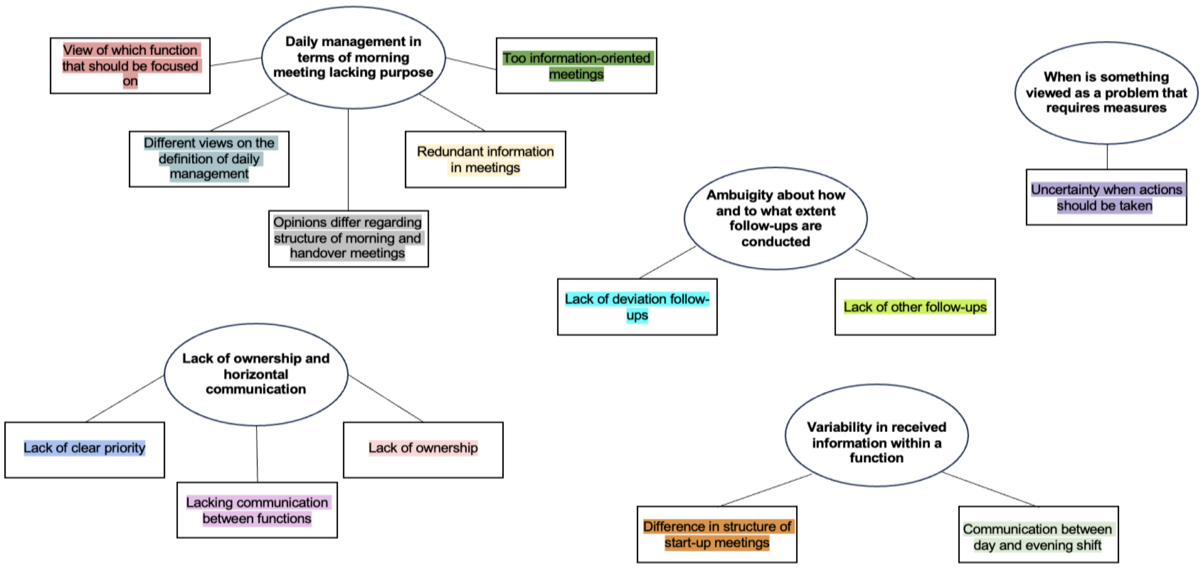


Figure 5.1: The different themes and the constituting codes.

5.1 Daily Management in terms of morning meeting lacking purpose

Daily management in terms of morning meeting lacking purpose	Illustrative quote

View of which function that should be focused on	“I have a feeling that the meetings could be improved. They are very production oriented and the focus is put on the production lines. However, we are a supporting function and that is something we comply with.”
Different views on the definition of daily management	“The daily management should have a short-term perspective. If you look at the management, it is about having control of what happened yesterday and how today’s work should contribute to tomorrow’s delivery. To manage the previous day, present day as well as upcoming day.” “There is a lack of focus put on the present day and too much focus on previous days.” “Some people have not really understood the purpose of the meeting.”
Opinions differ regarding structure of morning and handover meetings	“At the handover meeting you do not get any input from the supporting functions.” “To have a handover meeting is really between the Area Managers and it feels like it is just for show.” “The meetings should be on site; I would like more focus and right now you cannot see if everyone is paying attention and listens. I think that the ones participating should be focused.” “I think it works great with having the meetings on Teams.”
Redundant information in meetings	“There is a lot of information that is irrelevant and does not have anything to do with daily management.” “I would like to include things that affect us but there are seldom things that are not already taken care of.”
Too information-oriented meetings	“Many employees see the 8-meeting (the morning meeting) as a form of informative meeting. Information to let people know what is happening and how it looked yesterday.” “Regarding the action log, we do not use it in the way that we should, even though we have

	a lot of deviations. There should be more actions for those. It should not only contain information about the specific event occurring every other Friday.”

Table 5.1: The theme “Daily Management in terms of morning meeting lacking purpose” and its constituting codes with illustrative quotes from interviews.

Different views on the definition of daily management

The first code, *Different views on the definition of daily management* was a pattern distinguished in the different interviews. One of the first questions asked during the interviews was how the respondent defined the term daily management and with that followed different responses. One aspect of the definition is the time perspective. Some of the respondents believe that the daily management should focus on the previous day, the present day and the upcoming day. In contrast, some think that there is currently too much focus on the previous day and the central part in the morning meetings should be the present day. This is explained by seeing the purpose of morning meeting to be only solving present problems that can be done during the day. However, a common denominator among many of the respondents was the focus on the morning meeting when talking about the daily management, meaning that many of the respondents see the daily management as equivalent to the morning meeting. The exception is two respondents that defined the daily management as the entire structure, with the different daily meetings, but also the weekly meetings such as the PLG meeting.

In addition, the reason for the importance of daily management also differs. Some of the respondents see the purpose of the daily management to be of help to assure that the production will be carried out according to plan for the present day. This, by reducing disturbances. If the Area Managers believe that the plan for that day will not be fully carried out, it should be brought up during the meeting so that the supporting functions can put resources into resolving the situation. Others believe that the daily management in terms of the morning meeting, has the purpose of both resolving current short-term problems and disturbances as well as a forum where information to different functions can be communicated. In contrast to other functions, one function explains the daily management at the company to only be important for them if they have anything to inform the other functions at the meetings.

View of which function that should be focused on

The view of which function that should be focused on is another code that explains a pattern found particularly in the interviews, but also in the observations and the workshop. The code partially concerns the fact that only the packaging production is included when talking about production. When several interviews were conducted, a pattern could be identified when it comes to misunderstandings, due to the processing and mill part of the production not being included in the term production. Therefore, the morning meeting being mentioned as a production meeting, implies a view on the processing and mill as a supporting function, which some of the respondents explain to cause confusion and miscommunication.

Furthermore, the code also implies an existing disagreement regarding what function the morning meeting should have its focus on. The morning meeting has historically been run and developed by the packaging production and is therefore seen as a meeting primarily for the packaging production. Some respondents from the other functions describe that they are viewed as supporting functions and that many problems mentioned in the morning meeting are not relevant for other functions than the packaging function. Indications of this have also been seen when conducting observations and workshops as well as that other functions' problems are not being prioritised. However, the respondents also point out that the packaging of the goods is the main process for the company and that they understand that the primary focus is on the function.

Opinions differ regarding structure of morning and handover meetings

Moreover, diverging opinions about the structures of morning and handover meetings was also identified when doing the thematic analysis. This is summarised in the code *Opinions differ regarding structure of morning and handover meetings* and in contrast to the code *Different views on the definition of daily management*, it includes more of the opinions about the circumstances around the two meetings. When conducting the observations it was identified that there is a difference between the morning and handover meeting regarding attendance of the function representatives. At the morning meeting more people and functions are present to give input, compared to the handover meeting. This is also mentioned by several respondents. Some of them imply that this is a problem, since the evening shift does not receive the same information from the functions as the day shift does. They also explain that subjects discussed during the handover meeting can concern the absent function. When interviewing a manager of one of the sometimes absent functions, the reason for it is explained to be that it is seldom things brought up during the handover meeting that is relevant for them. The other function instead describes that the function only attends the meeting if they have any information that needs to be communicated to the others. As seen in Table 5.1, one respondent also believes that the handover meeting is only for show and that it would be sufficient with the Area Managers having a handover between themselves.

Additional beliefs about which functions that should attend the meeting were found among several of the functions. Some of the respondents were satisfied with the current participants while some believe it could be improved. An example of improvements is that Bryggan should attend the morning meeting and not only the handover meeting. This is since they are regarded as a connecting point that has a good overview of the production. Currently, the maintenance function is mediating the information that Bryggan wants to communicate in the morning meeting. A further improvement mentioned is to limit the number of participants. By that, the meeting can be shortened, which would also address the perceived problem with its length.

Another way in which the opinions differ is if the meetings should be virtually held or if they should be on site. As illustrated by one of the quotes in Table 5.1, some believe the virtual morning and handover meetings to be disadvantageous, since they are not held on site. The reason is that it is much more difficult to track the focus of the participants in the meeting in comparison to on-site meetings. Thus, they explain that an improvement in focus would be created if the meetings were not virtual. An opposing opinion that the virtual meetings are beneficial was also identified when conducting the interviews. The argument for this is that it enables flexibility for everyone to attend, independent of their physical location.

Redundant information in meetings

Redundant information in meetings is a further code found when conducting the data collection. Nearly every respondent mentioned the morning meeting to contain information that is irrelevant in some way. The two quotes of this code in Table 5.1 illustrates this. Several managers that have been interviewed mention that problems that are brought up in the morning meetings are already solved, and therefore they believe that these things should not be mentioned. Instead, they wish to utilise this forum to hear about current problems that are not yet taken care of so that the participating functions in a collaborative way can put their resources on these. Regarding the information communicated, the respondents emphasise that a substantial part is outside the scope of daily management. Protracted discussions that are only relevant for some participants, is also described as a problem with the meeting.

The insights gained from observing the morning meeting contain similar problems as the respondents' mention. An example is the information of a specific event that occurs every other Friday, which is always written as an action in the action log. There is also a lot of information brought up that is only stated but is not further elaborated on nor concerns many participants at the meeting. Another example of redundant information is the absence file that is brought up, which the respondents also have explained as information that only prolongs the meeting. They explain that the absence only should be mentioned if it will affect the plan for the present day.

Too information-oriented meetings

A similar code to *Redundant information in meetings* is the code *Too information-oriented meetings*. The difference is that the former one concerns the irrelevance of information that is brought up at the meeting, whereas the latter regards that a considerable part of the meetings consist of information instead of problem solving and management. When conducting the AIM workshop and asking the question about what the biggest problems with the daily management are, one of the problems that was brought up and agreed upon, was this. More specifically, it was discussed that the daily management in terms of the morning meeting has too little actions included and is too information-oriented.

Another common denominator among the many of the interview respondents is that they believe the action log to be incorrectly used. Meaning, that it is currently often used to inform the different functions rather than creating actions that should be accomplished during the day. The quote in Table 5.1 also demonstrates this as well as the desire to have an action log that is accurately used, since it is experienced that the site has a lot of deviations. In addition, the information in the action log is long term oriented. This has also been seen through the observations when the action log is discussed, since the question "Should we add something to the action log that we want everyone to know?" has been asked.

5.2 Lack of ownership and horizontal communication

Lack of ownership and horizontal communication	Illustrative quote
Lack of clear priority	"But the connection between the that someone (function) are experiencing problems and what we have to prioritise is missing"

Lacking communication between functions	“If something occurs, the communication to the other functions is bad and when information is mediated, is not done properly. This leads to miscommunication and maybe a clearer structure is needed.” “Many are focused on informing the ones they are working with and forget to communicate this to other departments. Everyone does not think of the problems it can create for others.”
Lack of ownership	“It is about a lack of ownership. It is easy to think that someone else will take responsibility.” “When it comes to decisions about deviations, there is no one that takes action. Even though everyone wants the same thing.” “I usually ask someone (...) to report the information I want to communicate at the meeting, if I am not able to participate. Perhaps other managers do not do this and if they are not able to attend they do not delegate this responsibility.”

Table 5.2: The theme “Lack of ownership and horizontal communication” and its constituting codes with illustrative quotes from interviews.

Lack of clear priority

The first of the three codes constituting the theme is *Lack of clear priority*. The quote in Table 5.2 from one of the interviews conducted, illustrates the lack of a clear priority when problems emerge. Another interviewee also explained that the connection between when people are experiencing problems and what should be prioritised is missing. This was brought up during the AIM workshop as well and was then explained as there is no appropriate way of visualising what the priority is. A further aspect was identified from the interviews, which is that the evening shift is not always given clear priorities. This is often solved by them having a communication with the planning function, where the planning function gives prioritisation guidelines. However, an explicit desire to have this more automatically solved has been mentioned.

Lacking communication between functions

A further code is *Lacking communication between functions*. This code was one of the most apparent due to the fact that every interview has indicated that the communication between functions is lacking in various ways. One of the illustrative quotes from an interview, found in Table 5.2, explains the problem with the communication between the functions to occur when something is happening and the information needs to be passed on to other functions. Also, the respondent explained that when the information is communicated, it is not properly done, meaning that it reaches some of the concerned parties but not all.

The communication is further described to be particularly lacking when quick changes arise, such as a sudden change of the plan for the packaging production due to the discovery of shortage in packaging material. This is then communicated to the planning function in order to change the plan as optimally as possible given the circumstances, but can be forgotten to be communicated to other functions that are affected. The result of this miscommunication can instead be new problems, for example downtime in the production, which is time that needs to be recovered somehow. Thus, a desire to have clearer structure for this has been stated in various interviews. However, from the interviews it is also identified that this communication to the planning function does not always occur. Hence, the production plan can be changed without talking to the planning, which is considered a problem among the respondents.

Furthermore, the second quote in Table 5.2 describes the reason for lacking communication between the functions, to be that people do not take into consideration the problems a miss in communication can create for others. Several of the managers interviewed also experience that the information about quick changes in the plan is communicated to them by their workers, which they believe to be problematic. They express a desire to have it the other way around, i.e. that they are the ones communicating the changes to the workers. Moreover, when interviewing the operators, they explain that they describe that the communication to them is not the problem. They get an email from the planning function with the updated plan, which also the warehousing and processing and mill function receives. Instead, they explain that the problem is that the communication does not always reach all the concerned functions.

How the quick changes are communicated has been investigated and identified from the interviews as well. Both group chats in Microsoft Teams, phone calls and emails are communication channels that are used for this. It is stated in several interviews with managers that this sometimes can cause confusion about where to look, which also can lead to communication misses. A further consequence of this is explained to be an overload of information in the Microsoft Teams group chats, since all information does not concern all group members.

Lack of ownership

A code describing another pattern found especially from the interviews and the AIM workshop is *Lack of ownership*. This entails different things and one of these is an ambiguity regarding which function has the responsibility of ensuring an adherence to the production plan, hence generating the expected outcome. When interviewing different managers, they explain that a common misunderstanding and miscommunication originates in the differing view of what each function is responsible for and also where the limit is drawn. This is particularly described to be a problem when the production plan has not been followed, i.e. either the correct amount and/or the correct sort of finished goods has not been produced. Therefore, a recovery plan is required. From the interviews a frustration regarding this has been identified, since the function that they believe to be responsible for this recovery plan does not take ownership for it. A potential reason is explained, seen in Table 5.2, to be that it is comfortable to think that someone else will solve it.

As one of the quotes in Table 5.2 describe it, there is also lack of ownership concerning the identification of deviations, meaning that no one is taking an action to mitigate or even resolve the deviation. It is further explained that everyone in fact wants the same thing, but there is still a lack of actions. During another interview, a respondent mentioned the same problem. This was instead specifically regarding the morning meeting and how the actions in the action log are not properly acted upon, nor are the actions fully documented except what is written in the action log. There are also equivalent opinions among the respondents regarding other actions that are discussed outside the action log during the meeting, but are not explicitly titled as actions.

A further aspect of lack of ownership is the absence of certain functions during the handover meeting. This is verified by being both explicitly mentioned by the respondents representing the absent functions as well as identified from the observations conducted. One of the respondents argumented the absence by explaining that the information being brought up is irrelevant and non-valuable for them. Another respondent instead mentioned that they are not participating if they do not have anything to communicate. The last quote in Table 5.2, instead demonstrates how the other managers perceive the other functions' lack of participation. Their perceived reason is that they do not take responsibility for sending a representative if they do not have the possibility of attending the meeting.

From the AIM-workshop the pattern is revealed as well. An aspect that was brought up as a problem with the daily management at the company is the fact that they too often give the benefit of doubt. They exemplified this by mentioning that they often say that they will reach the daily goal according to plan, when in fact they will not. Another example is when they described the issue with recurring problems. When trying to get to grips with them by finding the root cause, one of their colleagues can mention that it is hard to solve since it always has been a problem. Hence, some people at the company do not take ownership for recurring problems, in order to solve them.

5.3 Ambiguity about how and to what extent follow-ups are conducted

Ambiguity about how and to what extent follow-ups are conducted	Illustrative quote
Lack of deviation follow-ups	"We do not get any feedback on what is happening with the different written deviations in the system. I have not gotten any response on my deviations I have written. I would like to know how we should improve in order to prevent it from happening again. However, it is said that we should do the 5 Whys on our deviations."
Lack of other follow-ups	"We have a lot of recurrent problems of the same kind, but at different occasions."

Table 5.3: The theme "Ambiguity about how and to what extent follow-ups are conducted" and its constituting codes with illustrative quotes from interviews.

Lack of deviation follow-ups

The code *Lack of deviation follow-ups* implies that a proper follow-up on the written deviations in the company's deviation system, is not done. When conducting the interviews, several respondents describe this as an issue, as seen in Table 5.3. This is viewed as a problem, since the one writing the deviation is uninformed about how it is further processed. Therefore, that person can not get the assurance that people are trying to minimise the risk of recurrence. The assurance is described by the respondents as desirable and the current state to be problematic. This has also been identified by the observations, where during a meeting a manager highlighted the lacking information flow back to the one writing a deviation. In contrast, one manager explains this mainly as a problem when it comes to smaller problems that are occurring less often. Instead, the person describes the communication to be good for bigger problems.

A further aspect revealed from the interviews is the emphasis on the lack of summary of the deviations over time. Therefore, managers do not have the possibility to do follow-ups and by those be able to identify patterns, which can be a base for initiation of different actions to reduce or manage the deviations.

Lack of other follow-ups

Contrary to *Lack of deviation follow-ups,* this code regards the lack of follow-ups in general and not particularly deviations. This was recognized through the different observations that have been conducted of the meetings. Current numbers for the different KPIs are brought up during the meetings but are often not further discussed. It means that, when the numbers are not satisfactory, the reason for it and how it should be approached is frequently not brought up. This regards both the morning meeting as well as start-up meetings. A discussion regarding mentioned problems is occasionally not occurring as well. During the AIM-workshop, this is also mentioned as a problem with the daily management. The participants described both issues with recurring problems that are not properly resolved as well as insufficient reflection about problems that ought to be resolved, indicating a lack of follow-ups.

5.4 Variability in received information within a function

Variability in received information within a function	Illustrative quote
Difference in structure of start-up meeting	"We have a quick start-up meeting with the contact persons, where we talk about all how it goes with all production lines […] We see how aligned we are with the plan and if we lag behind. Sometimes we have information that concerns the whole shift. We do not talk about the previous day, that is the past and the focus is instead put on what has happened today and what we should think of forward." "(During the start-up meeting) we look at the previous day's OEE, waste and the number of produced cardboard boxes containing

	finished goods."
Communication between day and evening shift	"It is easy that the evening shift misses information and it also happens that they do not get the same information (as the day shift gets)." "The evening shift is sometimes forgotten about, not all the time but it happens. The information that has been discussed during the day but is not forwarded to the evening." "They (evening shift) miss what has been said at the morning meeting. Who is in fact passing on the information to the evening shift?"

Table 5.4: The theme "Variability in received information within a function" and its constituting codes with illustrative quotes from interviews.

Difference in structure of start-up meeting

One of the codes constituting the theme is *Difference in structure of start-up meeting,* which has been identified from interviews as well as observations. This implies how the start-up meetings differ regarding their structure, as demonstrated by the quotes in Table 5.4. Especially, regarding the time perspective of the meetings. The first of the two quotes describe how the focus of the meeting is put solely on the present day and also forward. In addition, KPIs for the previous day are considered to be irrelevant. In comparison to this, the other quote describes another start-up meeting that instead focuses on previous days numbers for the different KPIs. These two start-up meetings are both within the packaging production, but a difference has also been identified in other functions. The topics discussed during the start-up meetings also differ between the functions, when comparing the same shift. This is partially due to the sequence of the start-up meeting, i.e. if it occurs before or after the meeting with the other functions (morning meeting or handover meeting).

Communication between day and evening shift

In Table 5.4, the quotes for the code *Communication between day and evening shift* illustrates what it includes, which concerns the information flow from the day shift to the evening shift. Several interviewees have described that the evening shift misses out on information that the day shift gets, especially the packaging production. The information received by the evening shift is also occasionally different from the information that the day shift gets. One respondent explicitly mentions that the evening shift sometimes is forgotten about, and therefore the information is not always communicated. Moreover, another potential reason is explained during the interviews to be that they miss the morning meeting, since the handover meeting does not contain as much information as the morning meeting.

5.5 When is something viewed as a problem that requires measures

When is something viewed as a problem that requires measures	Illustrative quote
Uncertainty when actions should be taken	"We have not defined the action log. But it is said to include short-term actions, things that can be solved during the day. It is important that the things that affect us are included there. If there is a long-term or short-term action does in fact not matter." "What should be included in the action log or not, is a problem with our daily management." "I try to not bring up small things (at the morning meeting). However, it is hard to know where to draw the line."

Table 5.5: The theme "When is something viewed as a problem that requires measures" and its constituting codes with illustrative quotes from interviews.

Uncertainty when actions should be taken

The code *Uncertainty when actions should be taken* is the single code constituting the theme. As demonstrated by the quotes, there is an uncertainty among the managers at the company, regarding when something is considered as a problem. There is also an ambiguity concerning when a problem should be brought up during the meetings, both as an item on the action log and in general. The first quote in Table 5.5 highlights that the action log is not explicitly defined but that it is said that problems that can be resolved during the current day, should be added. Another quote explains that one of the problems that the company has with their daily management, is in fact the action log and the uncertainty about what should be included in it.

Furthermore, there is an uncertainty regarding what should be raised as a problem in for example the meetings. This is both identified from the interviews, which the last quote illustrates, but also from the observations of the morning meeting. On several occasions, problems raised during the morning meeting have been interrupted by one of the participants, since it has been viewed to be irrelevant and outside the scope of the meeting. This indicates that the different employees at the company view the relevancy of the problems differently, which also affects the meetings. In addition, one of the problems emphasised during the workshop was that uncertainty of when an issue should be addressed as well.

6. Discussion

In this section the research questions will be divided into two subsections where they will be discussed respectively. The first research question will be discussed under the first subsection and has a focus on discussing each theme as well as how these relate to each other. The second research question will be discussed under the latter subsection. Furthermore, the second one will relate to the theory under the Theoretical Framework in Section 3.

6.1 Identified Problems

The five codes discussed in *Daily management in terms of morning meeting lacking purpose* have the theme as a mutual element. Even though there is a predetermined structure with the expected input and output seen in Figure 4.4, a theme has been identified that the daily management in terms of the morning meeting lacks an explicit purpose. There is also a lack of purpose regarding the elements that are discussed in the morning meeting. Therefore, there are different views on the definition of daily management and what subjects it should touch upon. Also, when it comes to the time perspective of the meeting, i.e. if several days or only the present one should be discussed. This creates a dissatisfactory meeting regarding being too focused on information sharing, where the information often is experienced as redundant. Other consequences are that the people perceive the meeting to have the purpose of only serving the packaging production, and by that a lot of subjects discussed feel irrelevant for many functions. Differing opinions regarding who should attend the meeting is a potential effect of this.

In the theme *Lack of ownership and horizontal communication* there are three codes that constitute it. These two aspects in the theme already constitute two codes respectively, but within all three codes a pattern of a lack of ownership as well as lack of horizontal communication was seen. For example, the site continuously lacks the communication of a clear priority to all concerned parties. The missing connection between identified problems and what should be prioritised, demonstrates somewhat of a lack of ownership in trying to resolve the situation. This theme also concerns a lack of ownership both within the meetings as well as outside of them. For example, when deviations are brought up during the morning meeting, they are not always properly acted on. A miss in communication is also based on that the responsibility area for a function and where the limit is drawn, is unclear. Another problem with the ownership is that functions mention that they will adhere to the plan, but in fact will not, which is seen among several managers at the site to be a lack of ownership. The fact that some functions that should be attending the handover meeting are not participating, can be seen as a lack of ownership as well.

In addition to this, the problem with ownership can be found in the horizontal communication code. An example of this is that people might not consider the fact that a miss in communication to other functions can create issues for those functions. This seems to occur both in general but also to a great extent when the production plan is rapidly changed. Thus, the ownership of reassuring that all concerned functions have received the information is lacking. The horizontal communication seems to lack in general as well. The various communication channels seem to also cause confusion leading to a miscommunication between functions.

Another theme is the *Ambiguity about how and to what extent follow-ups are conducted*. The two codes in this theme both regard the lack of follow-ups, only in different situations. What can be identified is that the several managers at the site are not aware of how and to what extent follow-ups are conducted by others on subjects that concern themselves. From an interview with a manager, the 5 Whys are mentioned as a tool that should be used when trying to find root causes of deviations. However, it is not identified as a tool from the other interviews conducted nor has it been mentioned when doing the observations. Moreover, through the observations conducted it has been explicitly demonstrated that questioning as well as follow-ups on for example dissatisfactory numbers or general problems, is lacking. Recurring problems and reflection about them are also mentioned as a problem. A potential reason for this can be the lack of follow-up in general at the site and how it should be conducted. Therefore, the problems are not fully investigated and resolved by eliminating the root cause, leading to them recurring.

The two codes within the theme *Variability in received information within a function* demonstrates the problems with how people with the same role at the company receive different information. This applies to information both received from managers within the function as well outside of the function. The difference in structure and what focus the start-up meetings have, results in the operators receiving different information. In other words, one start-up meeting has a focus solely on the present day whereas one has a focus on previous day's numbers as well. In addition, there is a difference in content discussed. Thus, they have a decentralised way of structuring these meetings and when the focus is different, the emphasis on what is important diverges.

Instead, the information received from outside the function regards the difference in what is communicated to the day shift Area Managers, in comparison to the evening shift. It has been identified among managers that a concern exists concerning who is in fact responsible for that the information is passed on from the day shift to the evening shift. The morning meeting includes the different topics compiled in Figure 4.4, whereas the handover meeting, explained in section 4.2.3, only consistent content is the visualisation of the OEE and how each line has operated during the day. The attending functions are also different between the two meetings, which can contribute to the difference in the information being communicated to the two shifts.

In the last theme *When is something viewed as a problem that requires measures* only one code is included. This theme regards the uncertainty about when something is viewed as a problem at the site, which should be acted on in order to resolve it. This considers both the action log in the morning meeting as well as in general. What this theme illustrates is the lack of definition of these matters and this leads to managers being uncertain about their responsibility of bringing up problems. Both to concerned colleagues in general and when it should be brought up during a meeting to enhance the awareness among the other functions.

Many of the different themes are also closely connected with each other. For example, there is an uncertainty across several of the themes. If there is an uncertainty regarding what is objectively seen as relevant problems, it can be a contributing factor to the current perception of a dissatisfactory meeting among many of the managers. Meaning, that managers might bring up too many problems, to not jeopardise leaving out problems that are viewed as relevant and important by others. A result of this is an information-oriented meeting, where some of the information is considered irrelevant for some or all functions as well as being too long term-focused.

In addition, if managers are uncertain when problems should be brought up, a risk of not resolving them arises. This in turn would lead to recurring problems, which the site currently has issues with as well. The lacking use of the action log can be a consequence of this as well. However, it can also be due to the lack of definition of the action log as well as the morning meeting having different definitions depending on the person that is asked, i.e. the purpose of the meeting is viewed differently among the different participants.

Furthermore, the lack of follow-ups when having dissatisfactory numbers in for example the OEE report at the morning meeting, could also originate in the fact that people perceive it ambiguous when something is a problem that requires actions to resolve it. In this case, there is a lack of limits indicating when the numbers for the measurements such as waste, is acceptable or not.

At the site it is also experienced that there is a difference in the received information among managers within a function, where one reason is the limited content discussed at the handover meetings in comparison to the morning meetings. Another potential contributing factor to this problem is the absent functions at the handover meetings. They view the meeting to not be relevant for them or only participating when they have something to communicate. This could be a further indication of a lack of ownership.

6.2 Recommendations

Based on the description by Slack and Brandon-Jones (2019), the studied company can be said to have incorporated certain elements from Lean production. It is emphasised by Slack and Brandon-Jones (2019) that different tools can be implemented to improve the operations performance by reducing waste. One of the implemented tools aiming to eliminate waste in the company is the 5s terminology. They also have improvement boards where operators can suggest improvements for the daily operations, aiming both to engage the operators and to reduce waste.

Another approach within Lean is visual management (Eaidgah et al., 2016), which is also implemented to some extent in the company. They have visual control boards connected to the ongoing production to get an overview of the current performance for each specific production line. In addition, Bryggan has an overview of the entire production unit, and can react to deviations. During the morning meeting, several tools that can be defined as visual management tools are used. These include green cross, the Bryggan report, Action log, OEE report and the excel sheet for absence in the factory.

As the company is using different Lean production tools, it can be complemented with a Lean Management system (LMS) in order to encourage a process focus and sustain implementations in the long run (Mann, 2014). The company focuses on both process KPIs and result KPIs and uses visual control to identify deviations. This indicates that they have a process focus, which is one critical part of having a LMS. To turn the discovered deviations into tasks, a daily accountability process can be used (Mann, 2014). By implementing daily accountability, the company would mitigate several of the problems identified in the thematic analysis.

6.2.1 Implementing Daily Accountability

As Mann (2014) explains, the daily accountability often occurs as a tiered meeting structure with three or four tiers. The company currently also has a tiered meeting structure, with line meetings, start-up meetings, and depending on which shift, a morning or handover meeting. By adapting their meetings to the daily accountability process, issues can be resolved faster as they will be escalated to the next tier when needed (Mann, 2014; Kurdve et al., 2016; Nicholas, 2023). It will also increase the focus on finding the root cause of problems (Kurdve et al., 2016). One way to do this is by investigating them with the 5 Why method (Hoeft & Pryor, 2017). This could mitigate the perceived problem with lack of follow-up. Having a structure with an interlocking set of daily meetings cascading to all management levels (Kurdve et al., 2016; Mann, 2014; Nicholas, 2023) creates possibilities for two-way communication regarding changes and priorities through the organisation (Hoeft & Pryor, 2017). The company currently faces problems with communication between functions and lacks clear priority when problems arise. Thus, implementing meetings with interconnected points (Hoeft & Pryor, 2017) could contribute to mitigate these problems.

The current meetings in the company differ in some ways from the recommended elements; the company has a focus on the operational work, but there is less focus on improvement (Mann, 2014; Kurdve et al., 2016). They use visual boards when discussing the Bryggan report and the OEE file, but there is a lack of setting direction and taking action (Eaidgah et al., 2016; Kurdve et al., 2016; Nicholas, 2023). Continuing on this, there is also a lack of delegating needed tasks and following up if tasks have been finalised, which according to Mann (2014) are crucial elements in the daily accountability process. Still, there is a will in the company to work according to this, indicated in the morning meeting's purpose, described in Figure 4.4 as "deviations from plan should be reported, when identifying a trend, decisions about actions should be taken". The output from the meeting also includes "prioritised items for action log", which indicates that the displayed information in the meeting should result in tasks in the action log.

One of the identified problems in the thematic analysis is that the (morning) meeting is too information-oriented, and that it lacks action-taking. This is especially emphasised for the action log, which often is filled in with information instead of decided actions. A daily accountability process for the meetings could mitigate this, as the usage of a "visual task assignment board", see Figure 3.1, would increase the focus on improvement (Mann, 2014).

There is an experienced problem in the company with different views on the definition of daily management, as well as a common theme among several problems being that people experience that the morning meeting lacks purpose. By clearly defining the focus and time perspective of each meeting, the purpose of the different meetings will be clearer for the employees. If the employees know what to expect from each meeting, it will contribute to a more coherent view on daily management. A clear definition of the meetings and their content will also mitigate the problem with redundant information in the meetings.

6.2.2 Line Meeting and Start-up Meeting

Today in the company, the first meeting of the day is a brief informal meeting at each production line where the operators discuss the current day's start-up. There is no concept of a team leader in the company, but instead they have a contact person responsible for the meeting. At the start-up meeting, the Area Manager meets with the contact persons. As they don't have a team leader, the line meeting's structure will not be changed and instead the line meeting and start-up meeting combined could be seen as the first tier meeting. The contact person brings information and KPIs from their respective production line, which creates a bottom-up perspective with input from the production staff (Mann, 2014; Hertle et al., 2015). These two meetings should have interconnected points to facilitate escalation of matters (Hoeft & Pryor, 2017). This could be particularly important as there is a rotating contact person instead of a determined team leader, which could risk an inconsistency in the line meeting's content and what is escalated to the start-up meeting.

Furthermore, there should be a standardised structure when it comes to the meeting agenda and what KPIs that are discussed in each start-up meeting. This should be standardised for the same information from each area to reach the next tier meeting, by making sure that there are interconnecting points that are discussed in every start-up meeting (Hoeft & Pryor, 2017). Today, there are some differences between the different Area Managers' meetings, as seen in the thematic analysis. This also affects each area's performance, as different things are focused on depending on what each Area Manager finds important. Standardising the start-up meetings would also mitigate the problem with the variability in received information within a function. Furthermore, it could lead to a clearer purpose for daily management among the operators.

The start-up meeting should have an operational focus and go through the staffing plan and tasks for the present day (Mann, 2014). They should also go through the performance and relevant information of the prior day, including the evening shift, and how that will affect the current day. They should further implement a visual board to use in the start-up meetings as this is currently missing. This is a vital part of the daily visual management in a manufacturing organisation (Kurdve et al., 2019). The board can advantageously be placed close to the production, as it will function as a daily reminder for the operators to know what to focus on (Mann, 2014). Having it available to anyone in the work area will also increase the transparency in the organisation (Greif, 1991). The visual board should include current projects in the area together with information related directly to the staff's performance. This can also increase the ownership, as the staff will be more engaged in the board and use it. What specific KPIs that should be touched upon will be further discussed in Section 6.2.8. However, the Area Managers should discuss the agenda together, and experiment to find out what works best for them (Mann, 2014).

6.2.3 Daily Production Meeting and Morning Meeting

A new meeting that should be implemented is a second tier meeting which should be held by the production manager, and the different managers under that person's supervision. This includes the Area Managers for the packaging production as well as the Area Manager for the line mechanics. A proposal is that the coordinators for the packaging production are included in this meeting as well, as they are involved in assisting the Area Managers in coordinating the daily work. In this meeting, the Area Managers can escalate issues that couldn't be resolved on the previous meeting tier (Mann, 2014).

In the daily production meeting, the staffing plan should be reviewed to identify any gaps that may need to be covered with assistance from the other area. Furthermore, they should use a visual board containing the current status of main processes and equipment

(Mann, 2014; Kurdve et al., 2016). Today, this is something that is discussed at the next meeting level, i.e. the morning meeting, where they discuss the Bryggan report which contains the different production lines' current status. The different Area Managers should also bring prior day's charts showing the progress of their respective production areas and add them to the visual board. In addition, the visual board should contain relevant KPIs in terms of the cumulative status for delivery, safety, quality and productivity. The three currently biggest problems connected to packaging production should also be included on the board together with information on how they are proceeding with solving them (Mann, 2014).

The daily production meeting should be followed by a third tier meeting (Mann, 2014), similar to how the company operates today with their daily morning meeting. This meeting should follow the structure of a third tier meeting, with some slight adaptations to better fit the company's structure (Mann, 2014). One is that it will not be held by a value stream manager, as the company does not have one. Furthermore, a second tier meeting is not limited to the packaging production function, but can be implemented in more functions where suitable.

By implementing a daily production meeting on the tier in between the current start-up meeting and morning meeting, less function-specific information would need to be discussed in the morning meeting. Identified problems in the thematic analysis show that there are experienced problems with the content of the morning meetings. One of these is "View of which function that should be focused on", and it has been expressed that the morning meeting focuses too much on the packaging production. It has also been expressed that a problem with the morning meeting is "Redundant information in meetings", and by implementing a daily production meeting, information that does not concern the support functions can be discussed in this meeting instead.

The current third tier meeting, i.e. the morning meeting is currently including Area Managers, Production Managers and support functions. However, as a second tier meeting is implemented, it is not necessary for the Area Managers to be present in the morning meeting. Instead, their supervisor could mediate relevant information in both directions, and the supervisor can also escalate issues that haven't been resolved in the daily production meeting.

The morning meeting should discuss relevant events from the previous day as well as inform about future events (Mann, 2014). The personnel availability should be reviewed for each function, to determine if any assistance is needed to adhere to the plan Kurdve et al., 2016; Mann, 2014). This is currently done in the morning meeting, in the form of a file for the absence of the factory. Furthermore, topics such as safety, delivery, cost and quality should be discussed and visualised in the form of trend charts (Mann, 2014). Today, they do not visualise their performance with trend charts, which can make it harder to discover deviations and take action based on it. They discuss some KPIs related to delivery, quality and safety for the prior day, but rarely take any particular action on it. Instead, the morning meeting contains a lot of information about the start up of the packaging production. A lot of this is seen as redundant by other functions, and could instead be discussed at a second tier meeting.

6.2.4 Identifying Improvement Opportunities

Both the daily production meeting and the morning meeting should also contain an improvement part with visual task assignment boards (Mann, 2014). Tasks are created based on the discussed prior day's charts and delegated by the supervisor to a certain participant together with a deadline (Nicholas, 2023; Mann, 2014). A supervisor that receives a task in the morning meeting can also delegate these at the second tier meeting (Mann, 2014). Implementing visual task assignment boards in place of the current action log would emphasise an understanding of the root cause of the emerging problems together with a focus on taking action (Mann, 2014) and solving problems (Koenigsaecker, 2009; Rother, 2010). This approach would also reduce the risk of the same problem recurring the next day as the root cause would be identified instead of working around problems. This would help mitigate some of the company's experienced problems as it has been expressed that they lack follow-up on problems and experience a lot of recurrent problems.

Implementing a clear structure and creating tasks based on trend charts (Mann, 2014) would also mitigate experienced problems with the uncertainty regarding what is relevant to bring up in the meetings. This would also help with the problem with too information-oriented meetings, as less unnecessary information would be brought up. These visual task assignment boards would differ from the existing improvement boards and be a complementary tool. The visual task assignment boards should have a short term perspective in comparison to the current ones which have a more long term perspective.

A crucial part is also to follow up the assignments on the visual task assignment board (Mann, 2014). The amount of tasks that are not finalised in time is also followed up through green or red dots. When the amount of red dots is increasing, it is a sign that it needs to be investigated why there are delays. Delegating clear tasks enhances the accountability among the employees (Mann, 2014), which could have a positive impact on the identified problem with lack of ownership. Having the board close to the work area would also increase the ownership as personnel would see their tasks at all times and take responsibility for completing them.

The usage of daily visual management is also a foundation for continuous improvement, as the gap between current and desired state constantly will be visualised (Kurdve et al., 2016). This will also help the organisation recognise when they are deviating from standards and need to take action (Tezel et al., 2009). Fostering the employees to engage in visual management will encourage them to identify improvement areas (Tezel et al., 2009).

6.2.5 Improvements to the Evening Shift

The evening shift should follow the same tiered meeting structure as the day shift. However, the line meeting will instead be a handover meeting between the operators on each line. During their start-up meetings, they will have to take the prior shift into consideration as well when discussing the plan for the current day. The evening shift should also implement a daily production meeting, where the Production Manager meets with the evening shift's Area Managers and coordinators. In this meeting, the Area Managers for the day shift would also participate. This would be a handover meeting on packaging production level.

A perceived problem in the company is that the evening shift doesn't receive the same information as the day shift. This is partly since there are some functions that don't show up at each handover meeting. The handover meeting should therefore include the same functions as the current morning meeting. However, one difference from the recommended changes for the day shift is that the Area Managers for the evening should participate in the handover meeting as well. This is because that they are solely responsible in the evening, and the purpose of the handover meeting is for the evening to have the same prerequisites as the day shift.

Another difference is the order of the meetings, where the day shift will follow the order: line meeting, start-up meeting, daily production meeting and morning meeting. The evening shift will instead follow the order: daily production meeting, handover meeting and start-up meeting. The line meeting, i.e. handover between operators, will occur at the same time as the handover meeting, before the start-up meeting. This is visualised in Figure 6.1

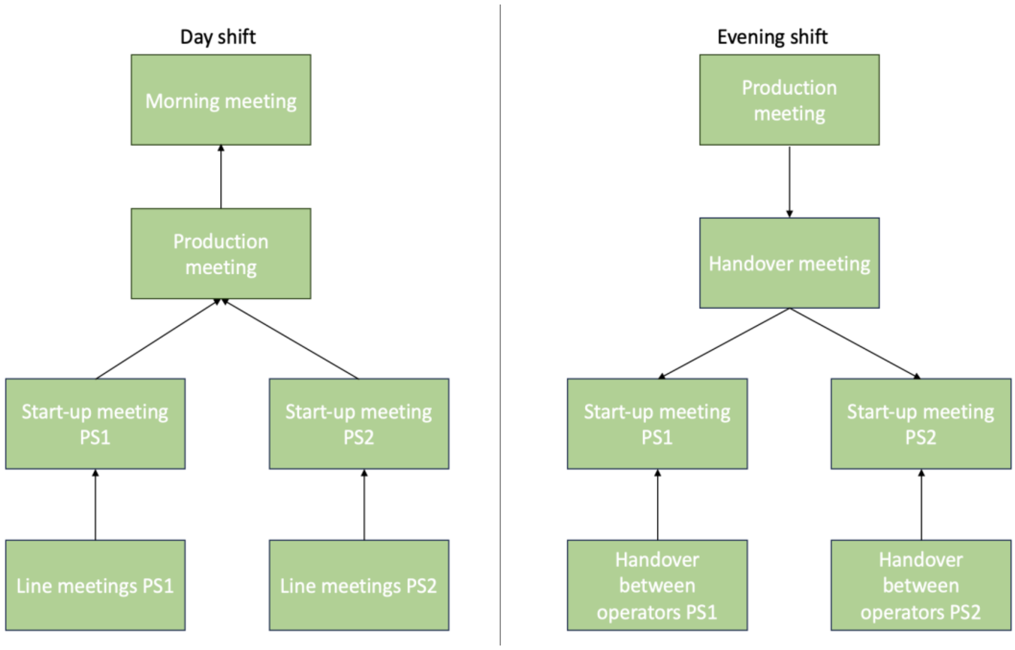


Figure 6.1: The proposed meeting structure for the day and evening shift.

6.2.6 Meeting Circumstances

When it comes to the practical circumstances for the daily management meetings, the recommendation is that the meetings continue to be very short, approximately 10-15 minutes (Mann, 2014; Kurdve et al., 2016; Nicholas, 2023). The line meetings, start-up meetings and daily production meetings should be physical meetings (Mascitelli, 2011; Cao et al., 2021) where the participants are standing up (Hoeft & Pryor, 2017; Kurdve et al., 2016; Mann, 2014; Mascitelli, 2011). It is also preferable to have the morning meeting and handover meeting in person if possible. However, if there are long travel times or other difficulties, virtual meetings could be an option (Standaert et al., 2022).

There are several benefits with using digital visual boards (Meissner et al., 2018; Nilsson et al., 2019), and the visual boards visualising relevant KPIs and trend charts could therefore be in digital form. However, the visual task assignment board is recommended to be in analogue form (Mann, 2014), as this in combination with a physical meeting increases the accountability. As the company has a perceived problem with ownership, having physical meetings could mitigate this. However, if the morning meeting and handover meeting is being held virtually, the board can instead be a digital variant.

6.2.7 Organisational Impact

Implementing new elements and standardising the different daily management meetings, both in terms of the operational part and the improvement part, could mitigate several of the experienced problems in the company. One perceived problem is the company's lack of clear priorities, which can be mitigated through the increased use of visual management (Slack & Brandon-Jones, 2019). Another perceived problem is the uncertainty regarding when something is viewed as a problem. By clearly communicating how the performance is assessed (Slack & Brandon-Jones, 2019), it will increase the understanding among the personnel on when something should be regarded as a problem.

Increasing the transparency in the organisation through visual management will also contribute to the fostering of informal contacts between hierarchical levels (Moser & Dos Santos, 2003), which could mitigate the experienced problems with a lack of communication between functions. These problems are also mitigated through the reduced vertical and horizontal boundaries within an organisation (Tezel et al., 2009) that visual management contributes to.

Empowering and coaching the employees to take responsibility for their processes and letting them participate in the operational day-to-day decisions (Nicholas, 2023; Rother, 2010) will create more efficient and effective processes (Eaidgah et al., 2016) and reduce the problems with uncertainty. If employees are empowered to be involved, it would also create a stronger sense of ownership. Establishing an effective allocation of responsibilities (Moser & Dos Santos, 2003) will also create a stronger sense of ownership as the employees will know what is expected from them.

6.2.8 Recommended KPIs

Overall Equipment Effectiveness (OEE)

According to Tangen (2005), when choosing KPIs they should not to be too many to risk turning into an overload of information whereas Kurdve et al. (2016) explain that it is also disadvantageous to have too little information as well. Hence it is important to take into consideration on which organisational levels the different indicators should be (Landström et al., 2016). Therefore, the KPIs in the various meetings, that are at different organisational levels should differentiate from each other.

However, the KPI OEE is recommended to be used across all management levels, hence in all the meetings. One reason is that it is a process focused measurement and therefore increases the process focus, which according to Mann (2014) is beneficial. In addition, when using this measurement that generates a focus on the process, it also enables taking actions more rapidly on problems before they get extensive (Mann, 2014), and therefore potentially affect other processes or functions. The risk of it affecting the result based measurements can also be reduced. The author also describes that using these types of measurements together with result based ones, are optimal. Thus, for example, to use delivery accuracy, plan adherence as well as complaints, is favourable as well, as long as it is in combination with process based measurements.

This measurement is currently used in both the start-up meeting as well as the morning meeting. Thus, it should also be added in the daily production meeting but not the line meeting, since there will be no changes recommended for the latter meeting in this study. Nevertheless, how the OEE is viewed and used is recommended to be changed. OEE is a measurement that demonstrates the internal efficiency and is both applicable on whole processes and specific equipment (Tsarouhas, 2018). Currently, the start-up meeting takes the KPI into consideration for each production line for their specific PS. Instead, the morning meeting focuses on the OEE for each line in both PS1 and PS2. At this meeting, the Bryggan Report with the visualisation for each line is displayed.

Furthermore, in both meetings, the OEE is viewed in its aggregated form, i.e. a product of the multiplication of performance, availability and quality. Thus, the three factors are not considered separately. If they are regarded, it would automatically result in an altered focus. For example, the quality factor, which takes in regard the amount of produced units that are defective. If the OEE is lower than the limits, the different factor can be regarded to investigate the underlying reason for it. This facilitates taking actions on the actual root causes and reduces the risk of recurring problems, which is a perceived issue at the site. Tsarouhus (2018) mentions the different limits for the different factors and if a factor is above the limit it implies a high performance. The limit for the availability is 0,9, for the quality it is 0,99 and the performance should be 0,95. Thus, it corresponds to having the goal to have an OEE above 0,84.

Currently, the OEE for each line brought up in the start-up meetings are the OEE for the day shift the previous day. Mann (2014) emphasises that the first-tier meeting should have a focus on the present day as well as bringing up yesterday's performance and if it will affect the current day. Hence, it would be advantageous to focus on both the OEE for the day shift and the evening shift. The reason for this is that if the OEE for evening shift is low, the root cause of this could potentially affect the current day shift as well. The Area Managers for the different PSs already have a digital handover document where the evening shift's managers write information for each line that is found important to communicate to the day shift. However, by also taking into account the evening shifts OEE, visualising it to the meeting participants and breaking down the OEE into the different factors, it might increase the understanding of the causes and the following effects. The same applies to bringing up the OEE for the day shift.

On the contrary, the OEE taken into account at the morning meeting is the current day's OEE and not the prior day's as for the start-up meeting. As previously mentioned in the morning meeting subsection, the meeting's focus should partially be on the past in terms of quality, cost, safety and delivery. Today all KPIs in the meeting except the OEE and the number of pallets in the finished goods inventory, are in different forms of the previous day's numbers. Furthermore, the different factors constituting the OEE is in fact indicating the quality, cost but also delivery. The quality factor in this measurement indicates the number of produced units that do not reach the quality requirements. This results in a cost for the company as well as it affects the delivery, since it has a direct effect on the planned amount of output.

The remaining two factors in the KPI, performance and the availability, can contribute to an increased understanding of the quality, cost and delivery as well. The former factor is the ratio of the actual to the maximum production speed whereas the latter is the actual time that the production operates in contrast to the planned time, but it is only taking into consideration the unplanned stops. If the availability and performance is low, this can for example affect the cost if the stops are extensive as well as the delivery.

Thus, by taking the different factors into account, it helps with analysing the different aspects that according to Mann (2014), should be included. However, the different factors of the OEE should be considered if the OEE is unsatisfactory and therefore, needs to be further investigated. Also, as the second tier meeting, i.e. the daily production meeting is conducted, the aspects of the current OEE and the factors that can not be resolved in that meeting, should be brought by the Production Manager to the morning meeting.

At the second tier meeting, Mann (2014) explain that the current status of the equipment and the main processes should be discussed. Since OEE is a measurement of internal efficiency (Tsarouhas, 2018), OEE should be incorporated. The OEE for both PS1 and PS2 should then be reviewed more extensively in comparison to how it's done in the morning meeting. Since they also should discuss delivery, safety, quality and productivity in an accumulated form (Mann, 2014), they should discuss the different factors of the OEE in this meeting as well. The reason is as explained before, which is that the factors can be related to the quality, delivery as well as the productivity.

Other KPIs

The meetings in terms of KPI should also differ, since they are at different management levels, according to Landström et al. (2016). Both delivery, quality and safety are topics that should be included in the morning meeting and the daily production meeting. Currently, all these topics are included in the morning meeting. In the meeting, the quality and delivery implies a general reporting from the quality function and the planning function respectively, and not how Mann (2014) describes these topics. Nonetheless, the measurements in the morning meeting can be viewed as the delivery KPIs are the delivery accuracy, plan adherence and the number of times a set plan was changed together with the reason for it. However, the plan adherence could instead be a KPI in the production meeting as well as the number of times a set production plan was changed. Considering that the delivery accuracy for the site is less department focused, it could be included in morning meetings.

Moreover, the quality in terms of a KPI at the morning meeting is indirectly connected with OEE which is brought up during the morning meeting. The waste of processing and mill and the accumulated amount of complaints, can also be viewed as KPIs for quality. At least, the waste resulting from not meeting the quality requirements. To not only take that function's waste in consideration but also the packaging production's, would be beneficial at this management level. Additionally, for example viewing this waste in terms of cost, where the latter is a topic that should be included at these meetings. In the production meeting the waste should also be mentioned but the focus is solely put on the packaging's waste.

In addition, waste is also discussed at one of the start-up meetings but not the other. To get interconnected points between the meetings, it would be favourable to incorporate waste as a KPI in these meetings as well. However, instead the waste of each line in the PS should be discussed, which is also how one of the start-up meetings are using it today.

Furthermore, the safety aspect should be included (Mann, 2014), which is the case already. On the contrary, Landström et al. (2016) does not mention this as a topic that should be brought up during meetings on site level, but instead that quality, delivery reliability and finance should be included. However, it is argued that safety should be a topic at the levels corresponding to the production and start-up meetings. Therefore, it can be advantageous with discussing safety at all three levels. Kurdve et al. (2016) mention that one commonly used KPI in daily management meetings is the so-called green cross, which is what the site also uses at the start-up meeting and the morning meeting. Hence, they should continue using it.

However, as explained for the start-up meeting, it is possible to experiment with which KPIs that will be measured and discussed in the different meetings (Mann, 2014). This is to get the managers to think of what they want to measure and therefore think of the reason for it. Additionally, this can lead to an increased understanding of the KPIs among the concerned people, which Crawford and Cox (1990) explain as important. Nonetheless, to increase the use of trendcharts in the meetings, which is vital according to Mann (2014), should be incorporated at the morning and production meeting at the site. Also, that the KPIs are aligned with the overall strategy at the site, is recommended (Kurdve et al., 2016; Kurdve et al., 2019).

7. Conclusion

The purpose of this study was to understand how a Swedish producing company works with daily management, identify which problems they experience, and develop recommendations to mitigate these problems. To fulfil this purpose, a case study was conducted on Swedish Match, a producing company in Sweden, with the aim to answer the two following research questions:

RQ1: What problems can be identified in daily management in a Swedish manufacturing company?

The answer to the first research question was developed through thematic analysis, resulting in thirteen different codes that constitute the problems in daily management. These are displayed as the coloured squares in Figure 7.1 and were grouped into themes in accordance with the pattern across the codes. The codes within each theme and a short explanation of each is written below:

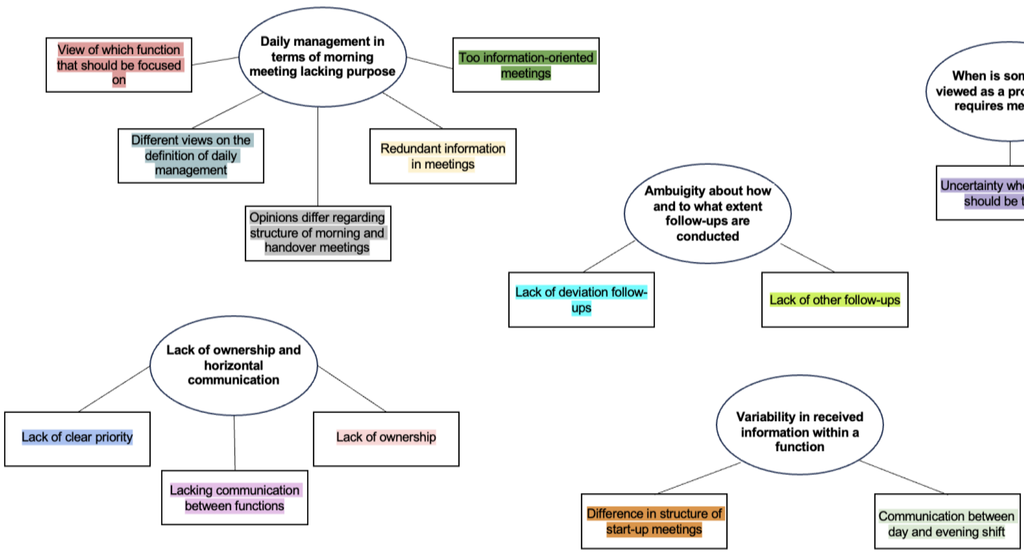


Figure 7.1: The same picture as Figure 5.1.

Daily management in terms of morning meeting lacking purpose

- **View of which function that should be focused on:** there are different views regarding what or which functions that should be focused in the morning meeting.
- **Different views on the definition of daily management:** people in the company define daily management differently and therefore, what it should include.
- **Opinions differ regarding structure of morning and handover meetings:** the opinions about the circumstances around the morning and handover meetings diverge
- **Redundant information in meetings:** the perception of the morning meeting containing irrelevant information in different ways.

- **Too information-oriented meetings:** the morning meeting is too information-oriented rather than focused on solving problems and taking actions.

Lack of ownership and horizontal communication

- **Lack of clear priority:** when problems emerge, people sometimes lack a clear priority.
- **Lacking communication between functions:** especially when quick changes emerge, a lack in communication between the different functions often arise.
- **Lack of ownership:** there is a lack of ownership in different situations at the site, such as a mindset that others will take care of things.

Ambiguity about how and to that extent follow-ups are conducted

- **Lack of deviation follow-ups:** the uncertainty of how the follow-ups is conducted of the written deviation as well as a lack in informing about it.
- **Lack of other follow-ups:** when for example, dissatisfactory KPIs are mentioned during a meeting, they are often not further discussed.

Variability in received information within a function

- **Difference in structure of start-up meetings:** the start-up meetings differ in their structures, both between the two ones in the packaging production and other functions.
- **Communication between day and evening shift:** the information that the day shift gets sometimes differs from the one the evening shift receives.

When is something viewed as a problem that requires measures

- **Uncertainty when actions should be taken:** there is an uncertainty concerning when something is viewed as a problem and therefore, when actions should be taken.

RQ2: What improvements can be made to the current daily management process to decrease the identified problems?

The answer to the second research question was developed based on the identified problems in combination with existing theoretical concepts. The recommendations were formulated to mitigate the experienced problems in the case company.

The company should both review their meeting structure as well as their content. One of the most vital learnings is that they should have an increased focus on taking action when problems occur. This could be done through implementing a daily accountability process, where deviations are transferred into tasks. The company should also increase their focus on improvement, aiming to mitigate recurring problems. One way to accomplish this is through implementing visual task assignment boards. The KPIs that are discussed in each meeting should also be reviewed to create a better understanding for the performance of the company. Furthermore, they should implement a new function-specific meeting to make sure that the meetings and its content are relevant for the participants. The proposed new meeting structure is visualised in Figure 7.2.

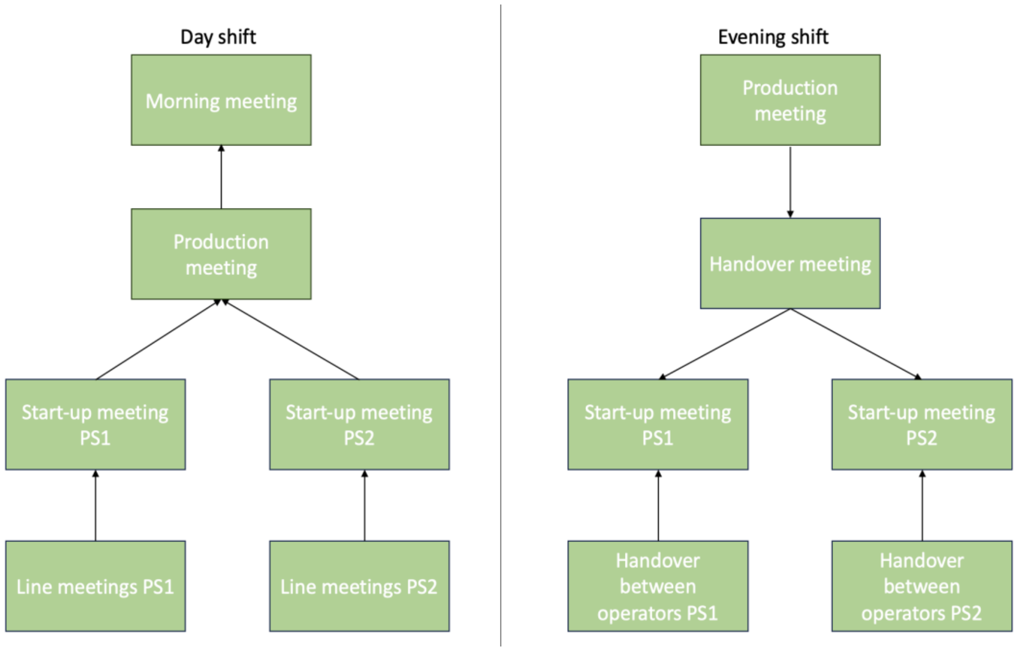


Figure 7.2: The proposed meeting structure for the day and evening shift.

Since this is a case study performed at one specific company, the findings in this study are most applicable to companies similar to the studied one. This study contributes to theory by investigating how daily management can be improved in a producing company to mitigate the particular problems identified in this research study. However, the findings are specific for the studied company, and further research is required to draw general conclusions regarding how suitable the proposed recommendations are in another context.

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Appendix I: Interview Guide

What does a typical day for you look like?

Why do you think daily management is important?

Describe the daily management at the site and what purpose it has.

What are currently the biggest problems with the daily management at the site?

Describe the different meetings that you participate in on a daily basis and what purpose do they have?

Is the meeting agenda held at the meetings?

Is there anything that you miss or that is irrelevant at the meetings?

Who should participate at the meetings?

How is the action log working, according to you?

How is the general communication at the site?

How is the communication between your function and the other ones?

Appendix II: Quotes in the Original Language

Daily management in terms of morning meeting lacking purpose	Illustrative quote
View of which function that should be focused on	“Har en känsla av att mötena kunnat bli bättre, de är väldigt produktionsinriktade och fokuserade på linjerna. Men vi är ju en servicefunktion och får förhålla sig till det.“
Different views on the definition of daily management	“Den dagliga styrningen är på kort sikt. Om man tittar på styrning så handlar det om att ha koll på det som hände igår och hur det vi gör idag ska bidra till att vi kan leverera imorgon. Hantera gårdagen, dagen och morgondagen. Detta går att fylla med olika innehåll beroende på vad för roll man har.” “Det är för lite fokus på här och nu och för mycket fokus på vad som var.“ “Några har inte förstått vad morgonmötet har gått ut på.”
Opinions differ regarding structure of morning and handover meetings	“På överlämningsmötet får man inte stödfunktionernas input.” “Överlämningsmötet är egentligen mellan områdescheferna. Att ha ett möte känns lite som spel för galleriet.” “Det fungerar bra på Teams.”
Redundant information in meetings	“Sen kommer det upp mycket irrelevant som inte har med daglig styrning att göra.” “Jag hade velat ha med saker som påverkar oss med det är sällan något som inte redan är omhändertaget.”
Too information-oriented meetings	“Många upplever även 8-mötet som en form av informationsmöte. Information för att många ska veta vad som är på gång och hur det såg ut igår.” “Gällande actionlogen så använder vi inte den på det sättet även fast vi har en massa avvikelser. Det borde vara fler actions på de.

	Inte bara att det ska stå ”sedimenttank” för det är bara information.”

Lack of ownership and horizontal communication	Illustrative quote
Lack of clear priority	“Men kopplingen mellan att någon (funktion) lider och vad vi behöver prioritera saknas.”
Lacking communication between functions	“Om det inträffar något så är kommunikationen ut till de övriga dålig och informationen går inte ut ordentligt. Det blir misskommunikation och kanske skulle en tydligare struktur behövas.” “Många är så fokuserade på att informera de som de jobbar med och glömmer kommunicera ut det till olika avdelningar. Alla tänker inte på att det kan bli problem för andra.”
Lack of ownership	“Det handlar om brist på ägandeskap. Det är lätt att tro att någon annan gör det.” “Sen gällande beslut om avvikelser så är det ingen som tar tag i det fastän alla vill samma sak egentligen.” “Jag brukar be någon (...) rapportera informationen om jag inte kan närvara. Så kanske inte andra chefer gör, och när de inte kan vara med så lämnar de inte över till någon annan.”

Ambiguity about how and to what extent follow-ups are conducted	Illustrative quote
Lack of deviation follow-ups	“Vi får inte heller någon återkoppling på vad som händer med de olika avvikelserna i systemet. Jag har inte fått någon respons på mina avvikelser. Jag vill veta hur vi ska göra för att det inte ska hända igen. Vi ska ju egentligen göra 5 varför på våra avvikelser.”
Lack of other follow-ups	“Vi har mycket återkommande problem av

	samma art, men vid olika tidpunkter.”

Variability in received information within a function	Illustrative quote
Difference in structure of start-up meeting	“Det är sedan ett snabbt uppstartsmöte med linjekontakter där vi går igenom alla linjer [...] Vi kollar hur vi ligger till mot planen och om vi ligger efter. Ibland har vi information som rör hela skiftet. Vi pratar inte om gårdagen utan det är passé och fokus ligger på vad som hänt hittills idag och vad vi ska tänka på framåt.” “(Under uppstarsmötet) kollar vi på OEE, spill och kartonger från dagen innan.”
Communication between day and evening shift	“Lätt att kvällen missar information, och att det händer att de inte får samma information (som dagskiftet får).” “Ibland glöms kvällen bort, inte hela tiden men det händer. Informationen har pratats om på dagtid men går inte vidare till kvällen. “De (kvällskiftet) missar information om vad som sagts på morgonmötet. Vem för egentligen vidare den informationen till kvällen?”

When is something viewed as a problem that requires measures	Illustrative quote
Uncertainty when actions should be taken	“Vi har inte definierat actionlogen". Men det är uttalat att det ska vara korta puckar, sånt som löses under dagen. Det som är viktigt är att det som påverkar oss hamnar där, om det är långt eller kort, spelar ingen roll egentligen.” “Vad som ska vara inkluderat i actionlogen är ett problem med vår dagliga styrning.” “Jag försöker inte dra smågrejer (på morgonmötet). Det är dock oklart vart jag ska

	dra gränsen.”

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