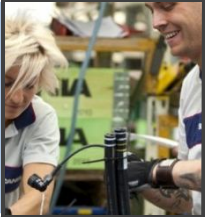


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Exploring labour flexibility in assembly plants

Final thesis Master of Business Administration (track HRM)

Configurations of labour flexibility at Scania production Zwolle



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Executive summary

This research was initiated to explore the possibilities for Scania to handle pressing situations of employability. The first situation regards the fact that co-workers of 55 years old or older can refuse doing over-time, which causes difficulties in the occupation. The second situation is that Scania would like to increase their reputation as good employer, especially when the economy attracts. The rigidity and traditional characteristics of the contracts that are offered are not of this time. Finally, the organization is not designed to facilitate flexible facilities like part time employment, re-integration or taking (reservoirs of) leave on larger scale.

In order to handle all three situations sustainably, the perspective of labour flexibility is considered to be appropriate. However, labour flexibility is often handled as a container concept for tackling a great variety of problems. The labour flexibility process model is developed in order to make this container concept more tangible. Subsequently, operationalization of the concept helps with understanding what is meant by labour flexibility and also which concrete interventions are appropriate in order to achieve desired results. The operationalization of labour flexibility led to a segmentation of five different types of flexibility, which form the fundament of the model:

- *Flexibility in time*; the flexibility to modify the duration of work relative to non-work
- *Flexibility in contracts*; every intervention that has an effect on the contractual agreement between employer and employee
- *Flexibility in skills*; the ability to influence the competences of the employees are the point of departure for flexibility
- *Flexibility in location*; the flexibility to influence where work occurs
- *Flexibility in workload*; the insight and ability to influence the workload of individual employees

Further operationalization and qualitative research methods supported the process of finding suitable interventions that have the potential to tackle the pressing situations. An internship along the production line and some internal interviews formed the orientation phase of this research. Five qualitative interviews with external organizations functioned as a source of inspiration to form a better image on what interventions are appropriate. Eventually, a kaizen (internal focus group) of a week is organized to intensively discuss every type of flexibility through the use of two models; the KATA model and the labour flexibility process model. The results of these methods are a comprehensive understanding of the concept of labour flexibility, understanding of the current and desired situation of labour flexibility for Scania and an extensive list of (un)appropriate interventions for Scania.

These interventions are tested against their expected contribution to the three situations of the research origin as well as some critical decision criteria from the strategic platform of Scania. The recommendations consist of two configurations of interventions and two supporting interventions that will enhance the positive effect of the configurations:

- *Configuration 1*; divide the current roster in blocks, stimulate and start hiring part-timers and implement a flexpool for production
- *Configuration 2*; enhance job-rotation, implement a flex-tact, reallocate elder employees along the production line and initiate a customized sustainability plant
- *Supporting interventions*; reassess the function structure and use more E-HRM

The alternative roster will help with incubating the part-timers and also support the possibility for working four hours a day, work in a dayshift or wish/reject shifts to some extent. It also supports in coping with the increasing amount of types of leave and with reducing the reservoirs of overtime hours co-workers have saved. Then, it offers the opportunity to handle elder employees in a sustainable way without too many adjustments, increase Scania's reputation as a good employer, decrease labour costs and simultaneously have more flexibility in occupation per block.

The use of part-timers will enhance flexibility in planning and the possibility to achieve a net occupation. Scania will be able to attract other target groups of potential employees or support re-integration better. Working part-time significantly lowers the physical and psychological workload which has some additional effects like a better work/life balance and better performance at work. The biggest drawback is the increased complexity of planning which is partly reduced by implementing the suggested roster.

A flexpool for production functions as a replacement for the social factor, has potential to realize a net occupation, enables co-workers to align their work and private life better and enables the organization to cope with the increasing amount of types of leave. The biggest drawbacks for the flexpool are the concern for quality and training costs. However, the feasibility analysis discussed some possible actions that could tackle these drawbacks.

Configuration 1 will have an expected positive contribution towards employership, the 55⁺ case, handling leave, reliability, volume flexibility, quality and costs.

Job rotation will stimulate the commitment of ambitious co-workers and provide opportunities to learn more from other departments in the long term. More job rotation will stimulate Scania to move towards the ultimatum where co-workers are not bound to a specific department but more organization wide. A flex-tact will help Scania to produce more efficiently and reduce costs. Scania should reallocate elder employees so that the burden while doing overtime is equal in every department. However, this is a short term solution. In order to cope with elder employees for a sustained period of time, Scania can introduce a customized sustainability plant. Even though the investment costs are considered to be high, Scania will cope with all problems concerning elder employees in a sustainable manner and meet every other request for sustainability.

Configuration 2 will also enhance employership, the 55⁺ case, possibilities for handling leave, reliability, volume flexibility, improvement capacity and quality. However, the biggest contributions go to employership and the 55⁺ case.

Considering the contribution towards all decision criteria and the expected effort that both configurations require in order to implement, configuration 1 is recommended. Note that it is highly recommended to implement the alternative roster and part-timers, whereas a flexpool is recommended in a subsequent stage.

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1 | Introduction

1.1 Scania Group

The Scania group is a globally oriented organization that contributes to the world of transportation in more than 100 countries. Their reputation is built upon the production of trucks, which is their core business. Nevertheless, Scania also delivers busses, industrial and marine engines and financial services. Their main office is located in Södertälje (Sweden), and their production plants are distributed throughout Europe (France, Netherlands, Poland, and Russia) and Latin America (Argentina, Brazil). Besides these production plants, Scania provides sales and services in more than 1600 service points around the world and employs approximately 37,500 employees. The production plant in Zwolle (Netherlands) is the largest production plant worldwide and is responsible for 60% of the production in Europe. Although every production plant of Scania works according the same standards, insights gained throughout this project are based upon individuals, documentations and processes within the production plant Zwolle.

1.1.1 Scania Production Zwolle

Scania Production Zwolle is assembling the entire truck (except for some preassembly, the cabin for example) by the use of a production line. From the beginning until the end of the process, this line is being staffed by co-workers that execute every handling that needs to be done in order to build a truck. Every truck is being assembled according to specific customer demands, and requires the appropriate handlings and specifications. Although the entire plant is designed to (automatically) supply the correct parts towards the right place in the right order, the co-workers have to check and assemble the parts in the right way before time runs out and the chassis automatically moves towards the next station. This means that (a flawless) advancement of the production line is highly depending on the effort of every individual working along this line. In normal situations, the production line is operating from 6:00 AM in the morning until 10:30 PM, using two shifts switching at 02:00 PM every day from Monday until Friday (see appendix 1). Because of this traditional rigid working system and the nature of the work, mainly full-time contracts are offered and the majority of the co-workers are male. The organization of Scania is known as a good employer because of its proper working conditions and respect for the individual. Scania puts Emphasis on efficiency, safety and ergonomics by focusing on spills, providing sufficient safety equipment and training co-workers on ergonomic working attitudes. The average age of the employees of Scania is 47 years old, which is high compared to the national average of 41,4 years in 2012 (CBS, 2013). The average tenure among employees within Scania is 18 years in 2012, which is also high compared to a national average of 10,2 years in 2011 that is slightly decreasing since 2006 (OECD, 2013).

1.1.2 Labour market

The labour market of the Netherlands is changing towards new types of employability and other than the traditional 9 to 5 jobs are becoming more popular. During this domestic trend, more types of leave are being introduced for employees of all Dutch firms (if not for substantial business interest). Scania invested funds in examining how they can facilitate “the new way of working”, a rising trend which provides employees the opportunity to plan their own work in time and location. Although they are trying to implement this “new way of working” for office workers, it is obvious that this trend is not suitable for the co-workers’ positions working along the production line. It is clear that the labour market is moving towards more flexibility and autonomy for employees, and Scania recognizes that they have difficulties with implementing new facilities along with this movement which has a negative effect on their reputation as a good employer. Another challenge that Scania is facing is caused by collective labour agreements, which state that co-workers of 55 years old and older have the right to neglect doing overtime. This agreement is originated from the collective desire to foster the sustainability of older employees and lower the physical strain for this target group. The practical result of this agreement is that whenever the co-workers of Scania need to do over time, they have to do it with a couple of co-workers less and supervisors have to figure out how to staff these positions in order to comply with the demands of the production line. These examples of trends regarding the labour market provide complications for the rigid side effects of Scania’s production processes. This is even being enforced by cyclical changes derived from the consumer market. The volume of truck orders is bound to seasonal changes, changes in the economy and simply customer demand which makes it fluctuate.

1.1.3 Flex-regulation

In order to stimulate an equal production flow, Scania implemented a “flex-regulation”, which is designed to comply with changing production demands without the necessity to re-arrange every work station. The consequence is that co-workers perform overtime in the sense of “Flexitime”, which means that these additional hours (which can also be negative) are documented to a max of 50 hours (positive or negative), with a maximum of 1,5 hours a day, and 5 hours a week. The amount of flexitime that co-workers are obliged to perform during a short period of time is depending on the required market output in that period. Whenever this change in demand seems sustainable, Scania re-arranges the organization according to the desired customer demand. These re-arrangements have an effect on the tact-time (amount of time every co-worker has for doing his/her handlings per truck), on the amount of handlings every co-workers has to do, the amount of co-workers working along the production line, the physical arrangement of equipment and the documentation of standards which is part of Scania’s working philosophy. Whenever a decision of rearrangement is made, the chance that co-workers have to perform flexitime is significantly smaller because the re-organizations suit customer demands optimally. The flex-regulation is the key tool for Scania to cope with changing short term customer demands and provides possibilities for flexibilization. However, within the scheduling process, Scania also requires to cope with some uncertainties like disease, leave, training opportunities and continuous improvement activities. These uncertainties are covered with buffers called; social factor (10% of the labour capacity) and kaizen capacity (5% of the labour capacity) in order to secure a smooth production flow without disturbances.

1.2 Research origin

Even though Scania is a leader in the field of innovation and has very sophisticated production processes, they still have the urge to increase flexibility. Some fundamental issues arise because of a changing environment. Whenever the context of a firm changes, the firm has to aim to change alongside with it. Other issues arise from situations that are more autonomous and internal. Those underlying situations are recognized as rigid, old-fashioned or just practically unsuitable. These situations together formed the basis for discussion, which led towards an unambiguous answer; flexibility. But before this paper digs into the buzzword called flexibility, the fundamental situations will be discussed.

1.2.1 Elder employees

The first situation regards the fact that co-workers of 55 years old or older can refuse doing over-time. This situation is also referred to as the “55+ case” or simply by the term “elder employees”. Like stated before, this is a noble idea because of the physical strain on older employees, but brings some undesired side effects. Whenever it comes to doing overtime, Supervisors (SV) have a handful of options in order to staff the open positions:

1. Fill the gaps in the occupation with Team Leaders (TL)
2. Possibly appeal to the social factor or kaizen capacity
3. Coordination between SV's on co-worker exchange
4. Goodwill of the elder employee

First, they can choose to fill these positions with a TL, whose actual function is to help with deviations and corrections in order to secure the advancement of the line. Every production department is segmented in four parts and every part has one TL. This means that there is only limited appeal on TL's which correlates with increasing risk to stop the production line in case of a technical failure that could not be fixed in time.

SV's can also use the social factor (if possible), which is actually meant for situations like disease, leave or training. Normally, every supervisor has 10% of its net-capacity extra to facilitate these situations. This ensures that there will not be any problems with staffing in case of unexpected disease, co-workers can take their entitled days of leave and co-workers can participate in training in order to develop personal skills. SV's can also appeal to these people whenever there is urgent need for them in doing overtime. Another option that SV's have is similar to the former facility, called “kaizen capacity”, which is designed to facilitate continuous improvement activities and is 5% of the net-capacity.

SV's can coordinate with other supervisors and see if there are any co-workers capable of doing work at other departments. By the use of a so called “skill-matrix”, supervisors can see which positions (standards) a co-worker can employ, and lend them to colleague supervisors for the period of an evening or couple of evenings (see appendix 7).

A final solution, if all others fail, is to appeal to the goodwill of the elder employees to stay and perform overtime, just because there is no other option. Because most co-workers work at Scania for a long time, their bond with their supervisors is solid and supervisors can get things done, but only at the cost of their co-workers goodwill. This is considered as a short-

term solution and should not be applied on structural basis, because the flexibility of co-workers has its limits.

Concluding, supervisors have enough options to staff the gaps that are created by leaving co-workers that are not obliged to perform overtime by the use of situational leadership. However, every option is not designed to do so and limits the potential of the original facility. Secondly, at the moment the difficulties are manageable because every department has only an incalculable amount of older co-workers. But this situation will get worse every year when co-workers become older and the group that can refuse doing overtime becomes larger. Supervisors cannot appeal to the options explained above when their amount of elder co-workers doubles. Keeping in mind that twelve years is a long period of time in which elder co-workers can refuse overtime, assuming the pension entitled age will stay 67.

1.2.2 Being an attractive employer

The second situation is that Scania would like to increase their reputation as good employer. This situation has nothing to do with the working conditions, which are proper comparing to competitors in the industry. This situation has more to do with the rigidity and traditional characteristics of the contracts that are offered. Like mentioned before, other ways of working become increasingly popular and the labour market offers all kinds of flexible contracts in order to attract the best employees. Especially younger employees are looking for attractive employment, flexibility and autonomy and are not so much attracted by the traditional approaches implemented at Scania. This is noticeable in the amount of younger co-workers working along the production line and in the average age of the workforce.

At the moment the economic recession and labour shortage put Scania in a luxurious position, what means that there are enough potential co-workers waiting in line to make their hours and receive some salary. These potential employees are currently mainly employed through Randstad, which is an employment agency that provides services for temporary employment. Because of a good relationship with Randstad and the nature of these contracts, agency workers are hired relatively quickly when needed or re-integrated at other firms in times of redundancy. The flipside of these contracts is that these co-workers also have the freedom to leave in short notice when they can get a permanent contract somewhere else. In this case, Scania has invested in training and development of these co-workers, but does not receive the full potential of their benefits. It is important for Scania to become a more attractive employer as soon as the economy attracts and the labour shortage is decreasing, in order to still attract the best co-workers. Currently Scania possesses a high level of experience because of the high tenure rate of co-workers. It would be valuable to transfer this experience as much as possible to the younger generations before the older generation flows out in order to stimulate sustainability.

1.2.3 The ability to facilitate flexibility demands on larger scale

Besides the issues that are expected when the group of elder co-workers becomes larger, like neglecting over-time, Scania is facing more challenges when other requests of co-workers become of reasonable size. Currently the organization is not designed to facilitate flexible facilities like part time employment, re-integration or taking (reservoirs of) leave on larger scale. Problems do not only arise when one of the requests becomes of reasonable

size independently, but because all situations practically rely on the same reservoir, they all add up. This could practically mean that a request for leave is being denied when two colleagues become sick at the last moment.

The social factor for example, is meant for disease, leave and training. When a supervisor has a co-worker in his team that suffers a long time illness (6 weeks or longer), it significantly comes at the cost of the ability to approve days of leave for others or send others on training. The supervisor is able to replace the ill co-worker, and relief the social factor after a period of 6 weeks. Like stated before, this situation sketches only a single case of illness, which hopefully explains the situation of an epidemic or other type of request for leave on larger scale. This sketch also demonstrates the rigidity of the staffing system and gives insight in how supervisors have to deal with all kinds of requests or unexpected situations. A factor that is strengthening the rigidity is the fact that the time of replacement is experienced as long, which results in retaining not-functioning co-workers longer than desired and utilization of flexible facilities for undesired reasons.

1.3 Research purpose

Scania production Zwolle has come up with the request to investigate how they can increase labour flexibility through the use of alternative scheduling in order to facilitate situations like discussed in the research origin. However, during the planning stage of this research it was clear that a different schedule alone was not going to satisfy the needs of Scania. Besides, alternative scheduling includes various types of shift work and Scania agrees with the literature on the notion that two shifts is the best alternative. Finally, compared to some previous designs of the shift work at Scania, the current design is preferred. So a list of alternatives on how to implement two shifts is actually not the purpose of this research. This does not mean that by recognizing this, there is no purpose anymore.

In order to facilitate all elements of the research origin, this paper takes the perspective of “how to increase labour flexibility”. It is clear that labour flexibility is depending on a broad variety of internal as well as external factors and that the way of scheduling is only one. So what interventions are possible besides alternative scheduling and which are relevant for this specific case at Scania? The desired outcome for Scania would be a set of alternatives, each consisting of a configuration of interventions that have an amplifying effect towards labour flexibility (Delery & Doty, 1996; Meyer, Tsui, & Hinings, 1993).

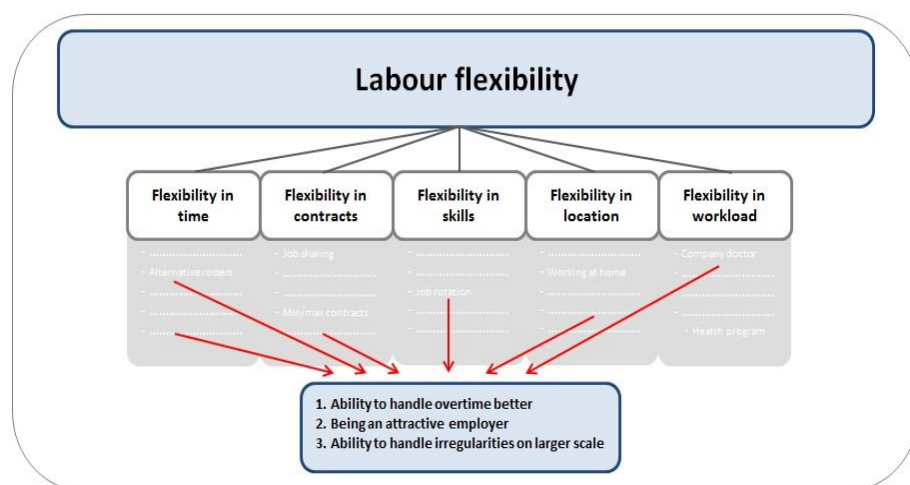


Figure 1: From labour flexibility to research origin

The notion that a customized configuration of labour flexibility will facilitate the research origin is accepted by Scania. Based upon that, this paper will try to realize this by the use of the “Labour flexibility process model”, a model that illustrates the process of this research.

1.3.1 The labour flexibility process model

According to the booklet of de Leede et al. (2002) and additional literature, labour flexibility is segmented in five different types of flexibility. These types of flexibility form the fundamental basis of this research and will be examined in different qualitative ways, both internally as externally. Respectively, the model illustrates three moderating factors; organizational variables, environmental trends and individual demands. These factors are firm specific and essential in finding customized alternatives for enhancing labour flexibility. A synthesis of knowledge on the current and desired situation of labour flexibility including situational moderators will form a proper basis for the final recommendations.

The desired situation of labour flexibility for Scania is based upon the three factors discussed in the research origin. Additionally, the recommendations will take the strategic platform of Scania into account. This includes inter alia; reliability of delivery, volume flexibility, improvement capacity, quality and costs. The ultimate purpose of this research is to suggest a configuration of alternative interventions that would optimally satisfy all desires of Scania. However, there is not an infinite amount of alternative interventions and the moderating factors also affect the possibilities. Eventually, choosing the appropriate configuration of interventions is depending on what is important to Scania.

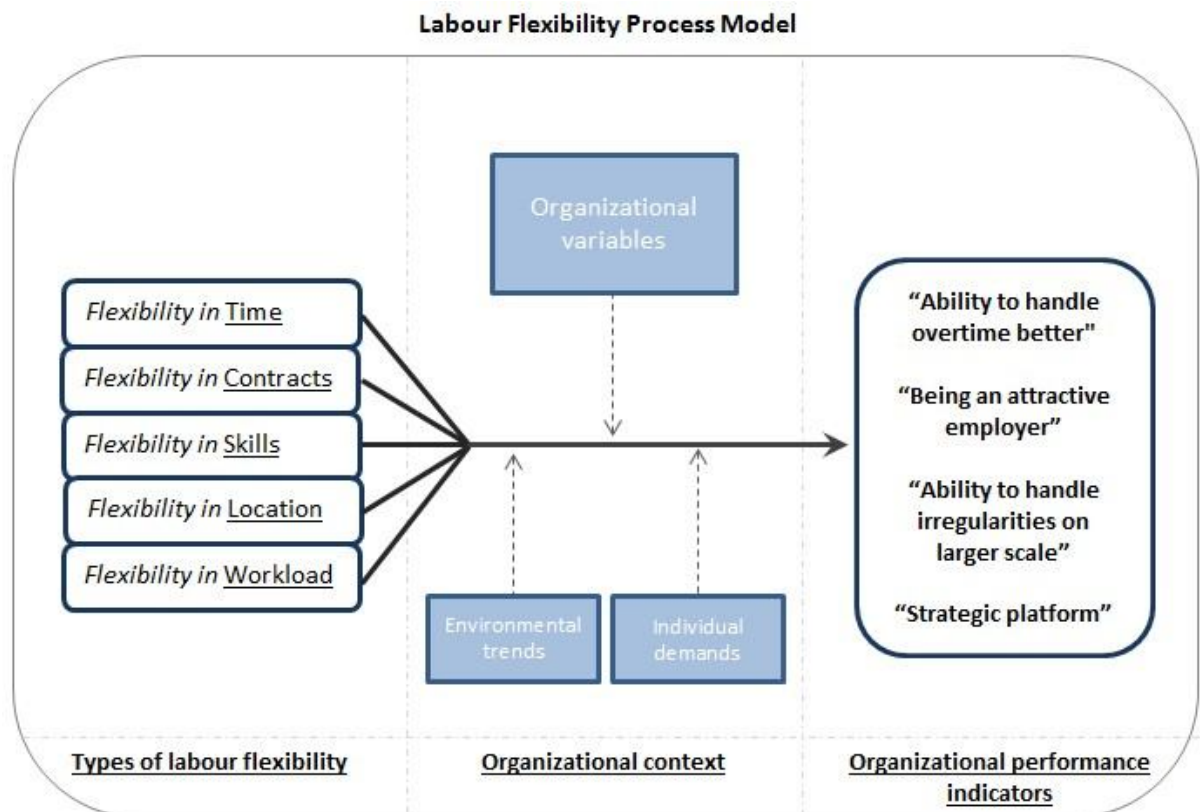


Figure 2: Labour flexibility process model

To illustrate this, imagine that an alternative mainly facilitates flexibility in skills and contracts and by doing so increases Scania's reputation as a good employer and ability to handle irregularities on larger scale. A favorable side effect is that labour costs, improvement capacity and efficiency also increase.

Another alternative that mainly facilitates flexibility in time, contracts and workload may also enhance the attractiveness of Scania as an employer but also increases the ability to handle overtime better. Side effects of this alternative are a decreasing amount of mistakes made, enhanced volume flexibility and improved sustainability of the workforce.

These expectations of every alternative can influence the decision making by Scania's management on what to implement. After implementing the adjustments, a new configuration of labour flexibility arises and the model can be used over and over again (figure 3). Although the primary purpose of this research is to provide a breakthrough solution for all labour flexibility desires, a secondary benefit is that Scania is provided with in-depth knowledge on their position regarding this topic. The perspectives of multiple internal and external shareholders will be taken into account creating a holistic view of experiences, desires, regulations and comparisons which can be considered as a valuable product on its own. The model will help to communicate these insights throughout the entire organization (and other plants in the Netherlands, France, Poland, Russia, Argentina and Brazil) and implement the core insight according to customized adjustments.

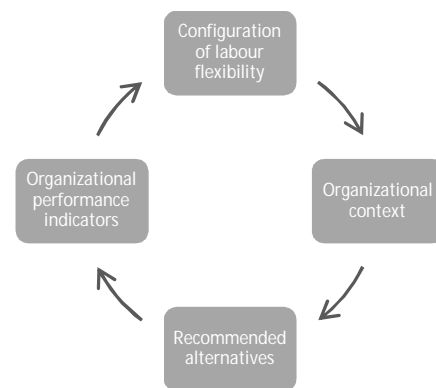


Figure 3: Labour flexibility process model loop

1.4 Research Scope

Many researchers start their introduction with the notion that flexibility is such a buzzword, and that clarification is needed. This provided recent researchers with a great variety of information on all types of flexibility like manufacturing flexibility (Upton, 1994), managerial flexibility (Trigeorgis, 1996), chain flexibility (Karplus & Schulz, 1985), cognitive flexibility (Spiro, 1988) and so on. However, all these types of flexibility are insignificant for this paper which focusses exclusively on labour flexibility. Notice that the original request of Scania was limited mainly towards alternative ways of scheduling production employees, while the model includes labour flexibility in a much broader sense. This paper believes that when talking about scheduling employees, only practical factors are included like "what type of shifts does Scania implement?", "should Scania implement self-scheduling?" and "can we think of some innovative way of rostering?" However, in order to increase labour flexibility for the purpose of tackling some pressing situations, one must understand all potential factors that are included in the term. The best way of understanding a broad and complex concept is to break it down into segments and study them individually. So the scope of this research is labour flexibility which is explained through the use of the five different types of labour flexibility.

Within the framework of this research, a particular group of employees is exclusively included. The desire for increased labour flexibility is originated at the production floor, where co-workers are working along the production line. The necessity of a smooth continuous production flow is the fundamental reason for practically all implementations at the production site. Within Scania's production processes, it is crucial that every work station is occupied and working according to the given time schedules. This also means that every co-worker working along the production line has to attend to a specific work station, doing specific handlings according to the same time schedules. Whenever an individual co-worker fails to meet these requirements, the entire production process is at risk. These characteristics differ significantly from co-workers working in the offices or at logistics, which are not directly bound to the production line. That is why this paper is exclusively aimed towards the co-workers working along the production line, doing the direct assembly work. This excludes the work stations that are doing pre-assembly work, because also these stations are less directly bound to the production line and are naturally arranged less rigid. Another factor that is supporting this notion is that co-workers in pre-assembly, logistics and the offices work in a day shift with regular "office hours" from nine to five while the co-workers working along the production line work in a two-shift system. In order to strengthen the scope and clarify the target group even more, only the co-workers working in the two-shift system are included in this paper.

Agency workers are a particular group of employees that treated differently. On the one hand they work along the production line like every other co-worker and should be treated the same, but on the other hand the nature of their contract and other factors are different which causes the necessity to treat them differently. Besides, the use of agency workers or more involvement of the temporary employment agency can be one of the interventions that is included in one of the alternatives, which includes this group automatically. It is hard to predict in this stage of the research how to cope with agency workers. That is why this group is not necessarily excluded from the scope but will be treated with care. It is expected that handling agency workers this way will not affect the results of the research.

Another characteristic of the framework concerns technical issues and doing overtime. Overtime is caused whenever Scania was not able to produce the appropriate amount of trucks due to technical failures. Scania is quite serious in reaching a 95³ status, which inter alia means a 95% direct run of trucks. Currently an 80% status is reached and much improvement in technical issues is necessary. Doing overtime is closely linked to some of the concepts within this paper and will be considered during some of the qualitative research. Overall line stops within the production process may affect the necessity of doing overtime. So in order to prevent as much overtime as possible, Scania should investigate the causes of line stops and try to minimize these. However, this is not within the scope of this project and is a complex project on its own. So this project does not aim to resolve line stops but facilitates the incubation of new flexibility measures from a HR perspective, given the business and technical requirements of Scania production Zwolle. The final boundaries of the framework are created by collective agreements, legislation, organizational strategy and culture. It is important to work by (and maybe use) the rules of legislating in presenting alternatives for increasing labour flexibility. That is why the collective agreements and the legislation of the Netherlands will be examined.

The final factors setting the scope of this research are legislation and collective labour agreements. The role of laws and regulations is versatile. On the one hand they provide rules and boundaries to which every organization has to commit. On the other hand they provide opportunities for innovative new interventions that are not covered yet (de Leede et al., 2002). During every phase of the research, legislation and collective labour agreements are taken into account. But because of the exploratory character of this paper, no exclusive attention is paid to this in order to stimulate creativity.

1.4.1 Research questions

While taking the origin, purpose and scope of this research into account, the following main question can be formulated. The remaining of this paper will try to answer these questions through the use of a literature review and qualitative research methods. The main goal of this paper is to fully answer the following question:

What interventions can be recommended to Scania production Zwolle in order to enhance labour flexibility for workers along the production line?

The following sub-questions support the process of resolving the problem definition.

1. How can labour flexibility be identified and operationalized?
2. What is the current status of labour flexibility at the production line of Scania?
3. What modifications on labour flexibility contribute to the 55+ case, employership and the absorbing capacity of irregularities at Scania?

The subsequent chapter will provide theory and operationalization of labour flexibility. This operationalization will first segment the container concept into five types of flexibility and try to decompose every type as much as possible into autonomous interventions. Chapter 3 will discuss the methods used in order to gather proper results. These results will contain more insight in the moderating factors and provide additional ideas for potential interventions. The actual results are shown in chapter 4. By then, all information is gathered and proper recommendations should be formed. Chapter 5 will first discuss all interventions separately and make a distinction in interventions that are appropriate and interventions that are not appropriate for Scania. The final chapter will contain conclusions and recommendations towards Scania for handling the elements of the research origin and increasing labour flexibility.

2 | Theory & operationalization

Labour flexibility is derived from the field of Human Resource Management and is designed to suit the purpose of this paper. Labour flexibility gained attention in Europe after the economic crisis in the mid-1970 when the oil prices significantly increased. The performance of European firms was mitigated by the rigidity of their processes and their inability to adapt swiftly towards increasingly turbulent market conditions (Treu, 1992). Since then flexibility is commonly used as the strategy towards internal and environmental changes. The absorbing capacity of a firm is determining how well a firm can cope with continuous changes of all kinds. However, in order to work with the term “labour flexibility”, a well-defined construct must be formed. This construct should suit the theory as well as the needs of Scania and thereby strengthen the purpose and scope of this paper. So *“how can labour flexibility be identified?”* Finding a straightforward definition from a dictionary on flexibility provides the following; the property of being flexible; easily bent or shaped. However, this is still too shallow when linked to the term labour. Besides, it does not give Scania any direction in how to make their work flexible or suit the intention of why they want to make their work flexible in the first place. In order to fulfill these purposes, another term is introduced; employability.

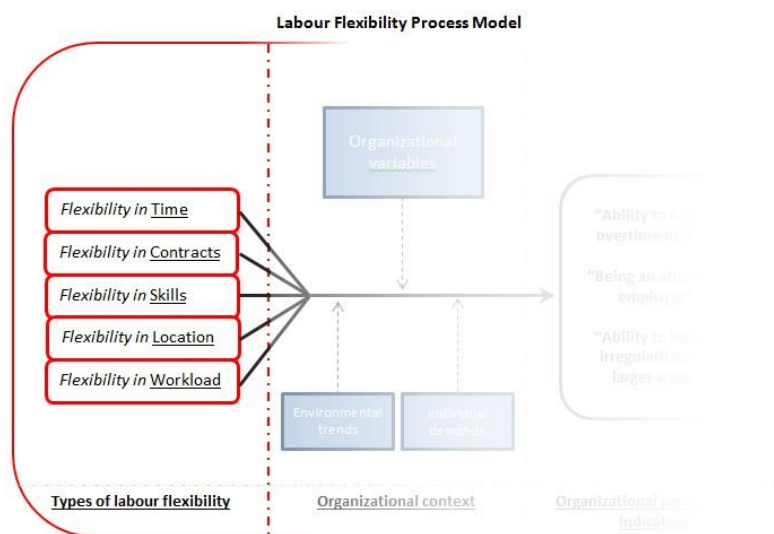


Figure 4: Affected elements by Theory & operationalization

Scientific literature on the term employability will help in developing a suitable working definition on labour flexibility for Scania and sketches a broader perspective on the subject. Employability will be divided into responsibilities for the employee and employer in order to illustrate where this paper is going within this broader perspective. The following section of this chapter will be used to indicate the perspective on labour flexibility for Scania production Zwolle. Finally this chapter will conclude with a segmentation of labour flexibility into five variables which will form the practical fundament of this paper. After understanding the role and relationships of all five variables, the reader is able to work with the process

model and interpret the outcomes that it delivers. The actual qualitative part of the research shall departure from understanding these fundamental types of labour flexibility. Figure 4 indicates which part of the process model is affected by chapter 2.

2.1 Labour Flexibility

In general, the term “flexibility” has a positive connotation: flexible organizations are the better ones. However, the meaning of flexibility as well as its relation to the functioning of an organization is still ambiguous (De Leeuw & Volberda, 1996). There is no doubt that over the last decade there has been noticeably increased interest in organizational flexibility (Iles, Forster, & Tinline, 1996). However, flexibility can be a desired tool in many fields of expertise like; manufacturing flexibility (Upton, 1994), managerial flexibility (Trigeorgis, 1996), chain flexibility (Karplus & Schulz, 1985), cognitive flexibility (Spiro, 1988) and so on. Iles et al. (1996) state that the importance of flexibility is not more than a useful way of classifying a large variety of changes in the organization and employment of labour for the use of describing and justifying the emergence of a new era of work and organization. Even though the term flexibility can be used for a broad variety of organizational factors (Seifert & Tangian, 2007), this paper explicitly aims towards labour flexibility, so discards the overall “changes in organization” stated by Iles et al. (1996).

2.1.1 Synergy between labour flexibility and employability

The theory on a variety of synonyms for labour flexibility within firms recognizes many dimensions. First we can distinguish internal from external flexibility (De Leeuw & Volberda, 1996; Seifert & Tangian, 2007), secondly there are differences between quantitative and qualitative flexibility (Köhler, Junge, Schröder, & Struck, 2006). Furthermore, Iles et al. (1996), Seifert and Tangian (2007), Way, Lepak, Fay, and Thacker (2010) and Kalleberg (2001) make a distinction between numerical, financial, functional and temporal flexibility. All different types of flexibility that organizations can implemented in response to a varying market demand.

Table 1: Four types of labour flexibility (Tros, 2010)

Type of flexibility	Description
<i>External numerical flexibility</i>	To hire and fire, or to use temporary layoff, fixed-term contracts, temp-agency work, casual work or marginal employment
<i>Internal numerical flexibility</i>	In the form of overtime or short-time work, part-time work, marginal employment or time banking
<i>Internal functional flexibility</i>	As provided by multiple skills of the employees, flexible work organization, on-the-job learning, team-work and variable pay
<i>External functional flexibility</i>	Achieved through off-the-job learning, outsourcing, wage flexibility, and also through high-quality temp-agency work

Functional and numerical flexibility can be explained as enhancing employees' ability to perform a variety of jobs, participate in decision making and reduce costs by limiting workers' involvement in the organization respectively (Kalleberg, 2001). Seifert and Tangian (2007) and later on Tros (2010) recognize internal, external, numerical and functional flexibility at first sight, but also include temporal and financial flexibility in their descriptions. Internal flexibility covers all strategies of deploying the firm's labour to competition needs without resorting to the external labour market. External flexibility, in contrast, is based on traditional ways of adjusting the number of employees by recruitments, dismissals, as well as using fixed-term and temporary agency employment (Seifert & Tangian, 2007). Numerical flexibility refers to adjustments which can be expressed in some labour units: recruitments, dismissals, temporary contracts, variability of working time, overtime work, etc. Functional flexibility characterizes this scope to adjust tasks, work organization and so on.

The types of flexibility interact with each other and are simultaneously negotiated in pacts for employment and competitiveness. Alternatively, flexibility forms can substitute one another. For example, internal numerical flexibility can replace external numerical flexibility (Seifert & Tangian, 2007). It is the responsibility of the employer to decide which form of flexibility is most suitable for the organization regarding multiple performance outcomes like; employee satisfaction, (financial or employee) turnover, adaptability, being an attractive employer and so on. The categorization of Tros (2010) in table 1 is comparable to many other authors' perception of forms of flexibility and suitable to use for this paper (Iles et al., 1996; Köhler et al., 2006; Tros, 2010):

These theoretical dimensions help with creating a more in-depth understanding of labour flexibility and form the basis for segmentation. The synergy between labour flexibility and employability will help with understanding how labour flexibility can contribute to the original needs of Scania. A working definition is designed for a specific occasion and may differ from established or authoritative definitions of labour flexibility. This paper sought to find a solution for developing a working definition that aims at improving aspects of employability, which can be a complex process (McQuaid & Lindsay, 2005). The term "flexibility in employability" is considered but has proven to be redundant and confusing. In order to be clear, this paper uses the central topic "labour flexibility" and considers "improving employability" as an important factor in describing the working definition.

2.1.1.1 Employability

The current focus of the literature on employability is mainly on the individual and his or her ability to maintain a job in the internal or external labour market. The psychological contract between the employer and the employee is related to employability and highlights the responsibility that individuals have to take in order maintain a healthy career. However, an employee can expect from its employer to offer the necessary support and facilities to expand his or her employability. For an employer,

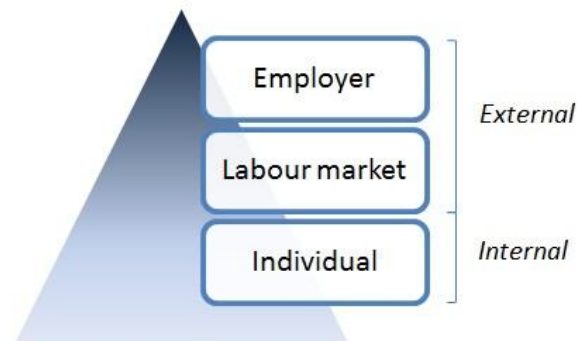


Figure 5: Three layers of employability

employability is an indicator of the possibility of matching labour supply and demand (Forrier & Sels, 2003).

Authors mostly differentiate employability in terms of internal and external or the supply and demand side (Evans, Simmonds, & Nathan, 1999) of employability. Forrier and Sels (2003) define a core definition of employability that is focused on the actual employability of people and personal aptitude to carry out work. Employability is “the individual ability to fulfill a variety of functions in a given labour market”. They are inspired by the definition of Groot and De Brink (2000) that state it as “The number of tasks a worker can be assigned to or the amount of assistance needed in the job”. Another example is provided by De Feyter, Smulders, and De Vroome (2001) who define employability as “the ability of employees to carry out various tasks and functions properly”. It is clear that these definitions of employability come from the internal or supply side of employability in which the employee is responsible. The external or demand side of employability recognizes the employer’s responsibility and other environmental factors that enable individuals to find a proper job.

Forrier and Sels (2003) use the comprehensive definition of Thijssen (2000) that support the three layers of employability like illustrated in figure 5. First, this concerns context related factors which help increase employability, such as training facilities provided by employers. Secondly, it concerns factors that contribute towards determining whether individuals can actually use their employability in the labour market, such as the economic labour market situation or discrimination of certain groups in the labour market. The comprehensive definition describes employability as “all the individual and context-related factors that will influence the future labour market position in a given labour market” (Forrier & Sels, 2003).

Table 2: Employability and external components of employability (McQuaid & Lindsay, 2005)

Internal/supply side	External/demand side
Extent of the individual’s transferable skills	Attitudes of employers towards the unemployed
Level of personal motivation to seek work	Supply and quality of training and education
Extent of the individual’s ‘mobility’ in seeking work	Availability of other assistance for disadvantaged job seekers
Access to information and support networks	Extent to which the tax-benefits system successfully eliminates benefit traps
The extent and nature of other personal barriers to work	The supply of appropriate jobs in the local economy

Notice that the employer is on top of the pyramid in figure 5 and determines a significant part of the process. This figure also indicates that the three layers of employability are connected and that focusing on only the individuals’ responsibility is insufficient. The focus should be on the interaction between the individual and the labour market. One should understand the impact of employers’ behavior towards the labour market and the nature of contracts and conditions, which significantly influences the opportunities of potential job seekers (McQuaid & Lindsay, 2005). Scania recognizes this responsibility and is prepared to invest in this relationship. So even though the employee has to know his or her responsibility to be flexible and be able to move along with organizational changes in order to stimulate

employability, this paper will mainly focus on what Scania can do on their behalf. And this is where for Scania labour flexibility and employability come together.

2.1.1.2 A working definition

A suitable working definition for employability is formulated by McQuaid and Lindsay (2005); *“the development of skills and adaptable workforces in which all those capable of work are encouraged to develop the skills, knowledge, technology and adaptability to enable them to enter and remain in employment throughout their working lives”*. Notice that within this definition, many factors of the categorization of flexibility by Tros (2010) are contained. It even includes the development of adaptable workforces, which incorporates flexibility. Besides it emphasizes the development of skills and knowledge in order to enter and remain employable. This paper recognizes the fact that the development of skills and knowledge influences the flexible capacity on an individual which influences sustainable employability respectively. The working definition of labour flexibility will therefore be highly influenced by the definition of McQuaid and Lindsay (2005) and is formulated like;

“the ability of an organization to apply an appropriate configuration of flexibility measures, in which all employees are encouraged to develop the skills, knowledge, technology and adaptability to enable them to remain employable throughout their tenure”

2.1.2 Labour flexibility, the pros and cons

The relationship between organizational flexibilization and environmental turbulence is currently taken for granted. The possibilities are endless and the positive outcomes seem to go hand in hand. Grawitch and Barber (2010) for example, found that participation in work flexibility had direct associations with work-to-life conflict, work engagement, and life satisfaction, along with indirect associations with life satisfaction and psychological strain. However, it would be naive not to consider some downsides of implementing more flexibility within an organization. Leschke, Schmid, and Griga (2006) state an interesting paradox between the desire of flexibility by employees and the desire for security by the employer, called “flexicurity”. This paradox is stated like; *“workers are more flexible and creative than they otherwise would because they are provided with securities”* (Leschke et al., 2006). The lesson that can be learned from this paradox is not only that the relationship between flexibility and security can be complementary, vicious or a trade-off depending on the circumstances, but also that flexibility can come at the cost of other valuable organizational characteristics that are somehow connected.

2.1.2.1 Flexicurity

The first point of discussion for this paper concerns flexicurity, which is the nexus between flexibility and security. Flexibilization and deregulation of the labour market on the one hand and social security and the concern for the negative consequences of flexible employment on the other created the desire for bridging policies (Seifert & Tangian, 2007). However, the desire for more flexibilization and deregulation does not only exist at the level of the labour market, but also at the employment level within the working organization (Wilthagen, 1998, 2002). Further flexibilization of employment is being advocated in view of the goals of economic performance, competitiveness and growth, whereas the need for security is being

advocated from a perspective emphasizing the importance of preserving social cohesion within the organization. Tros (2010) indicates that implementing more flexibility in employment can affect four different forms of security for the employee:

1. Job security as the certainty of retaining a specific job with a specific employer
2. Employment or employability security as the certainty of remaining in work, not necessarily with the same employer
3. Income security as income protection in case that paid work ceases, for instance, through dismissal or mass unemployment, or through chronic illness, disability or retirement
4. Option security as the certainty of having various employment options, for instance the possibility to combine paid work with unpaid work (for example caring or civic engagement), the entitlement to continuous education or training, or the right for intermediate working time reduction (Tros, 2010)

Flexicurity is introduced in order to cope with these types of circumstances. Expected is that it will improve the employability and mobility of employees, providing stable employment, increased training opportunities, and better career prospects (Seifert & Tangian, 2007). A case study of an industrial firm in the Netherlands sets an example of a flexicurity intervention. They indicate that in order to achieve a proper level of flexicurity, internal training plans are successfully implemented. The focus of the training is on hard skills, such as those needed to function as an operator in continuous process production and corresponds to the minimum requirements for sustainable participation in the labour market (Pruijt & Dérogée, 2010). However, this program targets a specific group of employees, those who are deemed to have the most reason to worry about their employability after flexibility interventions. It is not the intention that everybody who gets a diploma starts looking for a new job. It seems that the aim for flexicurity lies not in changing the way of implementing flexibility, but in accommodating the downsides with supporting initiatives.

2.1.2.2 Commitment

A second point of discussion on implementing more organizational flexibility is that it can come at the cost of commitment (Iles et al., 1996). However, commitment can be divided into personal and organizational commitment and even sub-divided into many aspects of the term like; commitment to work in general, to one's job, one's profession, and one's career regarding the personal aspect. For organizational commitment, an employee can be differently committed to management, one's unit or department, one's work group or one's union. Such commitments can be tension-filled, competing or even contradictory, have different determinants and have different outcomes at both the individual and organizational level (Iles et al., 1996). Employees with high levels of commitment are more likely to be associated with greater personal flexibility. Such a person may react positively to new opportunities or new demands, either out of a sense of duty or out of a positive sense of identification and belonging.

Similar considerations apply to another facet of work commitment, that of job involvement. Job involvement refers to identification and involvement with a particular job as a set of tasks, duties, and responsibilities, rather than with an organization, career or profession (Iles et al., 1996). Although commitment through job involvement is often seen as positive,

depending on the composition of the job, this could have a flipside. If the job is becoming outdated, perhaps job involvement is also becoming outdated and a barrier to personal flexibility. They may resist to organizational attempts at redefinition, such as changes in job design, reskilling or de-skilling, re-deployment, transfer, or moves towards greater team-working. They may also be resistant to taking up any new opportunities offered by organizational change, or opportunities to redefine and re-negotiate roles. Individuals who are committed to their organization out of a sense of identification or loyalty may not, however, experience similar levels of tension in such situations (Iles et al., 1996). So management should take these gestures of resistance into consideration when attempting to implement more flexible interventions, or perhaps offer facilities of flexibility as an option instead of an obligation. This way the commitment to the organization is stimulated and even though employees feel the tension, they are more willingly to move along with organizational change.

2.1.3 Labour flexibility; a necessity, desire or hoax?

A lot of research has been done on the relationship between flexibility and other organizational factors like High Performance Work Systems (HPWS) and organizational performance (Hui, Su-ying, Yan-li, & Jin, 2010; Ketkar & Sett, 2009), innovativeness (Martínez-Sánchez, Vela-Jiménez, Pérez-Pérez, & de-Luis-Carnicer, 2011), commitment (Iles et al., 1996), job security (Leschke et al., 2006; Seifert & Tangian, 2007; Tros, 2010), work/life balance (Hayman, 2009; Jang, 2009), intention to leave (Wickramasinghe, 2012) and so on. Most organizational factors respond rather positive to higher flexibility. But there are factors that can be considered as less positive or even negative like commitment and security for example. Flexibility may also create additional resource allocation choices that can be difficult to manage. Thus, although flexibility can serve as a resource, it may also deplete resources (Allen, Johnson, Kiburz, & Shockley, 2012). Even though some questionable situations can occur when implementing more flexibility, one would like to conclude that it should be a desire for organizations to implement higher levels of flexibility within their organization. De Leeuw and Volberda (1996) argued that on the basis of seventeen organizational effectiveness studies, flexibility was the evaluation criterion mentioned most frequently. Nevertheless, the added value of the construct to the theory and practice of management is in many cases very restricted. We may rightfully ask ourselves if flexibility is used as a magic word or belongs to a new business era. Is flexibility required by every organization as some new 'one best way' (De Leeuw & Volberda, 1996)?

In general, it applies that there is an increased demand for flexibility whenever the fluctuations in sales are bigger (either by volume or mix), the product variations are bigger, the predictability of change is less, the delivery times are shorter, the reliability of delivery is bigger (de Leede et al., 2002) or in other words, when the velocity of the market is higher (Nadkarni & Narayanan, 2007) or when the organizational environment is constantly changing and there is need for a proper fit between the internal organization and its external environment (Anand & Ward, 2004; Wright & Snell, 1998). These increased demands for flexibility also occur whenever organizations cope with a lack of skilled employees, higher qualified employees are required, the quality demands of the work increases, individualization takes place, the role of laws and legislation has a restricting character and when absenteeism and turnover increase. A final situation when the demand for flexibility

increases according to de Leede et al. (2002) is when the focus on throughput times is stronger, the importance of production chains and networks is more significant, an organization works with demand-driven production, the complexity of the task is bigger and when the product assortment is built modularly (de Leede et al., 2002).

Table 3: Factors that influence the demand of flexibility (de Leede et al., 2002)

Demand for flexibility is increasing whenever...		
<i>Organizational factors</i>	<i>Employee factors</i>	<i>Strategic factors</i>
fluctuation in sales increase	lack of skilled employees is present	focus on throughput times is stronger
product variations increase	higher qualified employees are required	the importance of production chains and networks is more significant
predictability of change decrease	the quality demands of the work increase	demand-driven production is applied
delivery times decrease	individualization takes place	complexity of the task is bigger
reliability of delivery increase	the role of laws and legislation has a restricting character	product assortment is built modularly
	absenteeism and turnover increase	

The availability of work also plays an important role in the demand for flexibility. Current employees would like to work more, less or at different moments than they would have ten years ago. They would also prefer more alternation and less workload. An important role of managers is to tune the desired labour capacity to the actual capacity and keep employees satisfied. During this process, not only the quantity of employees is important but also the exact quality of employees (de Leede et al., 2002). In other words, the traditional ways of employing employees will not satisfy the newer generations that are looking for modern alternatives. In order to attract the right quantity as well as proper quality of employees, an organization has to invest continuously in being an attractive employer. In order to do so, an organization should take into account the increasing amount of dual earners which have an impact on a new series of laws and legislation about pregnancy, childbirth and adoption, but also about parental and care leave. These laws and legislation lay an extra burden on the employer in terms of planning and scheduling employees but also in facilitating new working conditions. A way to cope with this is for the employer to facilitate more types of contracts which accommodate employees that prefer to work part-time, share their job or work according to self-rostering. A well-known trend, called the new way of working, implicates an innovative approach in the use of contracts, creating smart working time regulations and clever use of multi-usability of employees, so that both employer and employee can be satisfied in their demands (de Leede et al., 2002).

2.1.4 Case studies

One difficulty of implementing flexibilization is that it is clearly a principle of "one size fits one" instead of "one size fits all". This principle shows in situations discussed earlier in this paper, varying from specific environmental trends to specific internal cons. The points

discussed in the research origin indicate the desire for labour flexibilization for Scania, deriving from the way the organization is designed and managed. This asks for customized solutions that cannot be deduced from some general scientific model or solution applied at another firm. Nevertheless, there is still a lot to be learned from the experience of other firms. A component of the qualitative research is a couple of interviews with managers from firms that cope with a comparable situation as Scania. More information on the way these interviews are conducted and the results will be discussed in chapter 3 and 4. This paragraph will discuss some practical examples derived from the booklet of de Leede et al. (2002), which contains analysis on six different firms that are coping with flexibility issues. It will provide information on the most important results of these analyses varying from experiences of employees within these firms to the effects of the flexibility interventions at management level.

In order to support the notion that the implementation of labour flexibility is a one size fits one principle, every organization investigated in the booklet of de Leede et al. (2002) had a different need for flexibility. The variation of the needs of different firms was relatively high and consisting of cyclical changes, high growth expectations, serving multiple markets, short delivery times, complex services and changing customer demands. Every firm was coping with their own configuration of needs consisting of one or more of the factors described above. Respectively, every firm was also handling their need for labour flexibility on their own way. The configurations of measures that were taken consisted of increasing the ability to move employees around, flexible contracts, flexible working hours, more flexibility in scheduling, a layer model of different contracts, ability to change shifts, time bank and temporary agencies. Again, sometimes used autonomously and sometimes used in combination with other interventions. However, some popular interventions are implemented by more than one firm. The concept of multi-employability, the layer model and shift-work are interventions are mostly implemented supported by interventions like flexible contracts, flexible working times, part-time possibilities and a flex-bank. Every firm that focusses on multi-employability has positive experiences from employees as well as management. For employees this is a proper way of including some variety in the work and being able to develop more skills and higher salaries. Employees also positively evaluate working with different colleagues but argue that not every workplace is suitable. Management is capable to align the supply and demand side of work better and is also able to facilitate ad-hoc changes without profound measures.

The layer model however is not positively evaluated by every firm that implemented it. They agreed on that it can cause extra labour capacity quickly so that the firm can adapt to changing circumstances. They did not appreciate the related costs that come with this model, these are quite high. One firm also argues that the temporary workers are only useful whenever they are incorporated, which causes an extra burden on the incumbent employees. The different types of shift-work are evaluated both positively as moderate, with one-shift most positively and three-shift the worst. The fees that are included in shift-work are evaluated as positive as well as the possibility to be at home in the morning some days. However it could cause complications for the planning of an individuals' private life. Employees also negatively evaluate working night shifts because of problems with their biorhythm. Management argues that most mistakes are being made during the second half

of the night shift because of fatigue. Management also argues that up scaling in shifts costs high investments in extra labour and training costs.

The two interventions that are evaluated most positive are part-time opportunities that ensure that also women can combine work and caring activities simultaneously and the flex-bank. The latter gives management also the possibility to adapt labour according to customer demand and secondly provides possibilities for flexibility in time for employees.

2.2 A segmentation of labour flexibility

In the former sections, some segmentation of flexible employability is already revealed. The authors de Leede et al. (2002) make a clear distinction between flexibility in skills, contracts, time, location and ad-hoc flexibility through different interventions. This type of segmenting is quite in line with the distinction made by Iles et al. (1996), Köhler et al. (2006) and Tros (2010). However, this paper prefers the perspective of de Leede et al. (2002) because it has made the step from theoretical terminology towards a more practical approach. Other authors support the idea of segmenting labour flexibility because it provides us the ability to make the topic more tangible. Allen et al. (2012) performed a study on the influence of both flexibility in time and location on work interference with family and the other way around (family interference with work) and found deviating results on all combinations. This means that different types of labour flexibility have different effects and it would be too simplistic to consider overall labour flexibility as a proper variable for analysis. Grawitch and Barber (2010) also make a distinction in work flexibility by; where employees work, in the number of hours they work, and in when employees work. They state that work flexibility initiatives provide employees more autonomy over when, where, or how they allocate personal resources to the work and non-work domains. The following sections of this chapter will be used to discuss five different types of flexibility that form the basis of labour flexibility for this paper. After theoretically understanding what is meant by the different types, it is easier for the reader to recognize the aspects of labour flexibility within their own organization. Subsequently, the reader can use the research model and start working towards a desired fit between the current and desired configuration of labour flexibility. The types of flexibility are in "Time", "Contracts", "Skills", "Location" and "Workload". Every separate discussion will result in a table consisting of interventions that are in line with that type of flexibility.

2.2.1 Flexibility in Time

Flexibility in time is the flexibility to modify the duration of work relative to non-work. Two common approaches of flexibility in time are that the employee can initiate a reduction of the workload by working less than full-time and secondly, leaves of absence. Work-life flexibility options such as part-time (Kalleberg, 2001) and flextime allow individuals greater influence over the time and timing of work, and have important social and group performance implications related to face-time, coordination, and motivation (Kossekl & Van Dyne, 2011). The aspect of flextime is the flexibility to influence when work is scheduled, which provides variability and temporal freedom in the timing or scheduling of work, while the number of hours worked and workload remain the same. This aspect of flexibility can avoid peak congestion and reduce commuting time, thus enabling more family and leisure time or more time at work (Avery & Zabel, 2001; Kossekl & Van Dyne, 2011).

Flexibility in time has three levels of intensity. Heavy intensity implies that employees have no core hours, are working exclusively during the nights and/or weekends and have few opportunities for co-worker interaction. This allows total flexibility in hours, which means that employees can work unpredictable hours, perhaps to satisfy irregular travel demands and client preferences for staggered or longer service hours. This level of intensity is most suitable for higher management levels with high levels of autonomy. Yet moderate intensity, which implies flextime with core hours, is a more common example of flexibility in time. This allows employees to influence the timing of when they begin, leave, and break as long as they are present at work during a set period of time. This way, employees can meet personal obligations outside of work such as family, medical, or legal appointments. Light intensity timing flexibility occurs when employees work standard schedules such as nine to five or full-time, except for occasional school conferences, sick days or personal time off (Kossekl & Van Dyne, 2011).

Nabe-Nielsen, Garde, Aust, and Diderichsen (2012) conducted a research in the eldercare branch on the effects of flexibility in time. The biggest result was that only computerized self-scheduling changed the working hours and the way they were planned, but also resulted in less regular working hours and an experience of less predictability and less continuity in the care of clients and in the cooperation with colleagues. Another important result of the research was that the flexibility increased when the opportunity to wish to work certain shifts and the opportunity to reject certain shifts is present (Nabe-Nielsen et al., 2012). So without the necessity to directly change anything, giving employees the opportunity to choose significantly influences their perception of flexibility.

Flexibility in time also comes with some drawbacks. The irregularity and unpredictability of the work makes it hard to co-ordinate work tasks with colleagues, plan private appointments or remember the work schedule. So in order to implement more flexibility in time, an organization should accompany this with measures to maintain the regularity of the work and opportunities for exchanging shifts with colleagues. One strategy could be to apply a fixed, rotating scheduling while systematically involving the employees in the scheduling of shifts. However, to actually increase the influence on a fixed, rotating schedule the structural preconditions need to be in place, e.g. the commitment and support of a leader or facilitator and the involvement of all shifts (Nabe-Nielsen et al., 2012).

Flexibility in time has many benefits such as empowering employees to have greater schedule control, and enabling them to select the most personally productive work times to implement work and family more effectively. When these outcomes occur, the company also benefits as there is likely to be improved performance and increased discretionary contributions such as higher suggestions, as well as reduced turnover, absenteeism, and interruptions from work-family conflicts (Kossekl & Van Dyne, 2011).

2.2.1.1 Shiftwork

One of the elements of flexibility in time is shiftwork and is implemented within the organization of Scania. Shift work is associated with negative outcomes related to health and well-being, and therefore the literature on shift work suggests some general recommendations on how to organize shift work to minimize such outcomes. A recent review recommends shorter shifts (e.g. 8 hours) over longer shifts (e.g. 12 hours) and 12

hours of rest between shifts. In addition, it has been suggested to limit the number of consecutive night shifts, to choose forward instead of backward rotating shifts, and to avoid very early morning shifts. The literature also recommends to limit weekend work and night work, and to maximize the regularity and predictability of the working hours. Moreover, the variability (i.e. the employer's control over the work schedule) should be minimized and the flexibility (i.e. the employee's control over the work schedule) should be maximized. In addition, observational studies provide evidence that employee work-time influence potentially buffers the negative effect of shift work, long working hours, and overtime work. Thus, it may be easier for employees to sustain demanding working hours when they have influence on their own working hours (Nabe-Nielsen et al., 2012). Eventually; the literature discusses the following interventions regarding flexibility in time.

Table 4: Interventions of flexibility in time

Type of flexibility	Associating elements
<i>Flexibility in time</i>	<ul style="list-style-type: none"> - Part-time - Flextime - Opportunity to wish or reject shifts - Fixed rotating scheduling - Shiftwork

2.2.2 Flexibility in Contracts

Where flexibility in time includes every intervention that effects the actual time an employee has to attend to work, this type of flexibility includes every intervention that has an effect on the contractual agreement between employer and employee. Even though this distinction looks quite obvious at first sight, there could be some discussion on a certain type of contract, namely part-time contracts. In order to avoid confusion and provide clarity on the matter, part-time contracts will be considered as an intervention of flexibility in time because of the significant impact on the actual time an employee has to attend to work.

The CPB, Netherlands Bureau for Economic Policy Analysis makes a distinction between three main types of contracts; permanent contracts, temporary contracts and self-employment. And then there is something they mention briefly, called flexible contracts. Permanent employment is correlated with low levels of worker mobility, increasing wages with tenure, low flexibility for firms, difficulties to impede workers and is used as a commitment device in human capital investments. Permanent employment can be considered as a traditional way of employment and is still the most common form among current organizations. Temporary employment correlates with low wages, uncertainty, relatively common among the young, flexibility for firms and particular groups of workers, a screening device for firms (and some workers) and a low level of worker-firm commitment. Temporary employment includes short term contracts that are hired on a finite period and on an as-needed basis.

Organizations can also reduce costs by externalizing administrative control to a temporary help agency or contract workers. These workers are considered to be employees of the temporary agency and not of the client organization (Kalleberg, 2001). Self-employment is correlating with a low level of insurance, relatively common among older workers, flexibility

for firms hiring self-employed, flexibility for workers in case of deliberate choice, a low level of worker-firm commitment, may act as screening device and an increasing popularity and share in the Dutch labour market. Finally, flexible contracts are mainly correlating with recent graduates and are also becoming more popular in the recent economy.

According to Kalleberg (2001), the main reasons for organizations to implement temporary employees are to protect and retain regular core employees, control costs of work-force size adjustments (caused by seasonality, cyclicity, short product cycles or special projects) and pursuing a philosophy of no lay-offs in the core workforce, high training and high technical change. The underlying assumptions for implementing the core periphery model (Kalleberg, 2001) can be to obtain sufficient employees to maximize productivity and minimize labour costs (with or without the protection of a core group of employees) or to make sure to not disrupt production.

Kompier, Ybema, Janssen, and Taris (2009) conducted research on the relationship between different types of employment contracts and the quality of working life, health and well-being, and their causal understanding of these relationships by comparing employees whose contract changes over time. They recognize five different types of contracts namely; permanent contracts, semi-permanent contracts, temporal employees with no prospect, temporary agency contracts and on-call contracts. De Cuyper, Notelaers, and De Witte (2009) but also Wagenaar et al. (2012) and probably many more did research on the effects of different employment contracts on job satisfaction, quality of working life, job insecurity and employability. They mainly distinguished three alternative types of contracts; permanent workers, fixed-term workers and temporary agency workers (Aguirregabiria & Alonso-Borrego, 2009).

Despite the classification of employment contracts, all articles concluded that permanent contracts are correlated with the most "positive work characteristics" and temporary agency contracts correlate with the worst. Results indicate that permanent workers enjoy the highest quality of working life while temporary agency workers and on-call workers have the most "bad work characteristics". A final significant result implies that employees "getting out" of "going into" temporary agency work or on-call work experience a change in supervisory tasks, support from colleagues and work engagement. Whereas it was in any case better to work in a permanent contract instead of a temporary agency contract or on-call contract (Kompier et al., 2009). This manifests itself for example in fixed-term contract workers and temporary agency workers reported higher levels of job insecurity than permanent workers (De Cuyper et al., 2009) and organizations may be less motivated to offer good work circumstances to temporary workers because the latter do not constitute the core of the organization. A disappointing conclusion because they found a decline in the proportion of permanent contracts in favor of temporary contracts all over Europe (Wagenaar et al., 2012).

2.2.2.1 Job sharing

A form of a flexible contract is job sharing. The concept of job sharing has been defined by many authors as a (voluntary) alternative work arrangement where two persons, each working part-time, occupy and share the responsibility of one full-time position (Branine,

2004; Hall, 1993; Harrington & Hall, 2007). The salary, leave and benefits are divided between the two according to the proportion of time each person works (Branine, 2004). According to the Manitoba Civil Service Commission, depending on the tasks, each employee may be responsible for the whole job and all of its tasks, or each employee may be assigned to some of the tasks. However, they are then still held accountable for the majority of the responsibilities. Crampton and Mishra (2005) describe three approaches to responsibility:

1. *Shared responsibility*: Two employees equally share all of the responsibilities of a full-time job. No formally stated division of responsibilities is stated and they are both interchangeable and able to pick up where the other person left off. A high level of communication and coordination is required and it works best in jobs where the work flows continuously (Branine, 2004).

2. *Divided responsibility*: Two employees share the position with a division of responsibilities by project or client group. They perform separate tasks along with providing backup for each other. This works well when the partners may not know each other well since each focuses on his/her own case or project load during work hours (Branine, 2004).

3. *Unrelated responsibility*: The two employees perform different and unrelated tasks but they are grouped together for an employee head count. This arrangement is more like having two part-time jobs in the same department and works best when the two partners have different skills.

In job sharing there are different scheduling choices to be made, depending on the position the employees occupy. Crampton and Mishra (2005) propose some possibilities varying from splitting up the week in consecutive days, non-consecutive days, an uneven proportion of days or even alternate weeks. Depending on the choice made it can have effects on the energy of the employees, continuity of the work or confusion arising at the point of transfer. The advantages of job sharing for the employer can be a tool to attract new employees and retain current employees, increase productivity and reduce labour costs. The disadvantages of job sharing for the employer consist mainly of increased costs and a potential decrease in productivity. Eventually; the literature discusses the following interventions regarding flexibility in contracts.

Table 5: Interventions of flexibility in contracts

Type of flexibility	Associating elements
<i>Flexibility in contracts</i>	<ul style="list-style-type: none"> - Permanent contracts - Semi-permanent contracts - Temporary contracts (with no prospect) - Temporary agency contracts - Fixed term contracts - Self-employment - Flexible contracts - Job sharing - On-call contracts

2.2.3 Flexibility in Skills

At a simplistic level, competency models seek to identify the ideal combination of skills, knowledge, attitudes and experience. The possession of skills enables employees to become high performers who potentially add value to the organization (Garavan & McGuire, 2001). Because of the exploratory characteristics of this paper and the necessity of developing linkages from existing theoretical concepts towards new constructs, the term competence (Garavan & McGuire, 2001) will be used to explain flexibility in skills. In this approach, the scope of competencies is "assessment & certification of employees", the focus is "job/individual characteristics & skill accumulation", the procedure to develop is "produce performance standards for job functions & professions" and the conceptualization implies "the characteristics of the work are the point of departure". Notice that within the focus of competencies, skill accumulation is included in addition to the job/individual characteristics. A multi-dimensional definition of competency explains the way how flexibility in skills will be used in this paper; *"The ability to apply knowledge, understanding, practical and thinking skills to achieve effective performance to the standards required in employment. This includes solving problems and being sufficiently flexible to meet changing demands"* (Garavan & McGuire, 2001).

Garavan and McGuire (2001) make a distinction between three perspectives on competencies whereas they recognize competencies as characteristics of individuals and question if competencies can be learned or are innate. Secondly they recognize competencies as characteristics of organizations where they mainly follow the resource based perspective of competences and question the notion of a competitive advantage through a set of unique employees. Finally they see competency as a mode of discourse between education and the labour market in a way that the educational sector is now expected to be a partner in the creation of knowledge and the development of human resources who are flexible and capable of working within innovative environments. This final perspective is quite in line with the understanding of this paper about employability.

In order to improve flexibility in skills, an organization first needs to visualize the current skills of all employees. According to Garavan and McGuire (2001), it is important to visualize all the required task of all work stations first and then the related skills that are required to perform the work. Whenever this is realized, the organization can focus on flexibilization of the skills. Flexibilization in skills means the larger a worker's range of skills, the more flexible is the worker, either in terms of the variety of goods or services he can produce, or in terms of the range of job assignments. However, this can only be realized through the cost of an external flexible periphery group of employees that function as a buffer (Kalleberg, 2001). The reason for this is that an organization does not want to invest in every employee to be multi-skilled, simply because of the costs and insufficient need. For this reason, Kalleberg (2001) suggests to provide core full-time employees with more skills and enhancing their commitment to the organization while external contract workers perform the remaining work.

Sawhney (2012) believes that acquiring flexibility in skills is not sufficient; its implementation is an important intervening step when companies have to tackle accompanying technical and behavioral side effects. The technical and behavioral trade-offs accompanying the use of multi-skilled workforce, such as the loss of work times, training costs, learning and forgetting

time and efficiency versus quality need to be properly managed. Greater sophistication to control and organize the workers in using their acquired skills will lower the technical and behavioral costs attached with moving these multi-skilled workers. When the acquired flexibility in skills is efficiently implemented, it allows rapid response to temporary imbalances and prevents work stoppages, and it results in improved utilization of resources and work-center capacity, reduced idle time, decreased work-in-process inventory and cost, all translating into improved plant performance (Sawhney, 2012). Eventually; the literature discusses the following interventions regarding flexibility in skills.

Table 6: Interventions of flexibility in skills

Type of flexibility	Associating elements
<i>Flexibility in skills</i>	<ul style="list-style-type: none"> - Assessment & certification of employees - Job and individual characteristics & skill accumulation - Performance standards, job functions & professions - Characteristics, point of departure for flexibility

2.2.4 Flexibility in Location

Flexibility in location is the flexibility to influence where work occurs. It allows employees to work at home or at remote, regional or client sites to reduce commuting and co-worker interruptions (Avery & Zabel, 2001; Blok, Groenesteijn, Schelvis, & Vink, 2012; Hill, Jacob Erickson, Holmes, & Ferris, 2010). Telecommuting occurs when employees work from home and satellite teleworking occurs when employees work at a location that is remote from their main office but closer to home (Kossekl & Van Dyne, 2011). Although some jobs are designed so that the employee has to rely on telecommuting most of the time, occasional flexibility in location is more common. Flexibility in location is a component of the “new way of working” which is not only introduced in order to enhance productivity growth, but also to cope with upcoming societal issues, attracting skilled professionals and dealing with the increase in road traffic (Blok et al., 2012).

Light intensity flexibility in location occurs when employees work at one central work location, except for occasional off-site meetings with suppliers or clients. Moderate intensity involves periodic remote work. For example, an employee who regularly works in the office might telework away from the primary work site during a special project. Teleworking 2 to 3 days a week allows employees to reduce commute time, work closely with clients, and accommodate personal responsibilities. Heavy intensity involves long-term or permanently working away from the primary work location. This occurs when employees choose their primary or permanent place of work outside the office. This classification of intensity is comparable to the classification of Kossekl and Van Dyne (2011) on flexibility in time, discussed earlier. This is not strange, considering the fact that the motivations to work flexible hours and locations derive from the same needs and situations, like remote projects, training or business trips.

Flexibility in Location also comes at the costs of some negative effects. Work activities such as collaboration, personal meetings and knowledge sharing will come under pressure and scheduling appointments will become harder when more colleagues do not attend to the office (Blok et al., 2012). The modern economy is changing from agriculture and industrial

manufacturing to a service and knowledge driven economy. Knowledge is recognized as the driver of productivity and economic growth, and statistics from the OECD studies show that the number of employees working for knowledge-intensive service sector is increasing. Knowledge work is supported by a revolution in new ICT applications and communication networks. These innovations have changed our perceptions on work and made it possible to work at any location at any time (Blok et al., 2012).

These ICT applications however, really add value in sectors that require a lot of knowledge work, like consulting, IT advisory etc. The former and also current industrial manufacturing firms still need to manufacture their products at a given location and require employees to attend to the manufacturing process. Secondly, Blok et al. (2012) argue that especially knowledge workers should be more empowered to work more efficiently and effectively by offering flexible work arrangements.

This means that not every position within every firm is automatically suited for flexibilization in location. Flexibility in location for these positions mainly occurs in the form of distance learning. This does not concern the actual work, but does allow possibilities for extra learning opportunities. Therefore, it could be interesting to evaluate distance learning with respect to student learning, pedagogy, delivery media, logistics, cost (Pahwa, Gruenbacher, Starrett, & Morcos, 2005). Eventually; the literature discusses the following interventions regarding flexibility in location.

Table 7: Interventions of flexibility in location

Type of flexibility	Associating elements
<i>Flexibility in location</i>	<ul style="list-style-type: none"> - Telecommuting - Satellite teleworking - Flexible work arrangements - Distance learning

2.2.5 Flexibility in Workload

Flexibility in workload differs in some ways from the other types of flexibility mentioned in this paper. The first difference is that workload is based upon the perception of “how heavy is the work that I am performing”. This perception is not as tangible as for example “under which contract am I working” or “what are the hours that I have to attend to work”. The perception of workload can be different for every employee attending to the same job, not even considering the differences between young/old or male/female employees. This makes this type of flexibility harder to cope with than the others. A second difference is that the origin of this type of flexibility lies not only in a non-HR related field of study. Regarding the manufacturing industry, the significant part of the workload perception lies in practical manufacturing activities. Most of the time these handlings require a physical effort of the employee, which in time requires a proper amount of rest during the day. Another significant part of the workload lies in psychosocial factors such as demand, control, support, job satisfaction and job appreciation (Ghaffari et al., 2008).

There is a tremendous amount of studies that evaluate the physical and mental effects of manufacturing and shift work. Some of the conclusions that can be drawn are that

exhaustion is positively associated with age, but not with gender, position or working on a wage or salary basis. Besides physical work conditions and workload, absence or presence of social support by co-workers is strongly associated with exhaustion. Modest associations have been found between psychosocial stressors and intensive load, monotonous work and low job control (Schnorpfeil et al., 2002). Considering these possible effects on the employability and sustainability of the employees, it would be advisable for every organization to have insight on the physical and mental workload of every workstation. This way, a better match between the supply and demand sides of work can be realized. Notice that flexibility in skills, where an employer has optimal insight in the competences of an individual employee can support this process. This indicates that even though labour flexibility is segmented in five types of flexibility, the synergizing effects between the types can be significant. It is therefore important to investigate the entire construct of labour flexibility and not only focus on one of the variables (Seifert & Tangian, 2007). Eventually; the literature discusses the following interventions regarding flexibility in workload.

Table 8: Interventions of flexibility in workload

Type of flexibility	Associating elements
<i>Flexibility in workload</i>	- Physical workload - Psychological workload

2.3 Elaborated segmentation

The following table can be developed on the basis of the literature review and the booklet of de Leede et al. (2002). The table displays the five different types of labour flexibility and their associating elements. Note that this table contains some additional interventions that are not mentioned in the previous chapter. These interventions are derived from the booklet of (de Leede et al., 2002) and will be included during the subsequent research.

Table 9: Interventions of labour flexibility

Type of flexibility	Associating elements
<i>Flexibility in time</i>	<ul style="list-style-type: none"> - Part-time - Shiftwork - Flextime (individual rosters, flexible start/end times) - Opportunity to wish or reject shifts - Fixed rotating scheduling - Time bank - Flexible arrangements for leave
<i>Flexibility in contracts</i>	<ul style="list-style-type: none"> - Permanent contracts - Semi-permanent contracts - Temporary contracts (with no prospect) - Temporary agency contracts - Fixed term contracts - Self-employment - Flexible contracts (min/max, job sharing) - On-call contracts - Flexpool
<i>Flexibility in skills</i>	<ul style="list-style-type: none"> - Assessment & certification of employees - Job and individual characteristics & skill accumulation - Performance standards, job functions & professions - Characteristics, point of departure for flexibility - Multi-employability horizontally - Multi-employability vertically - Multi-employability between departments
<i>Flexibility in location</i>	<ul style="list-style-type: none"> - Telecommuting - Satellite teleworking - Flexible work arrangements - Distance learning - Work at different business locations
<i>Flexibility in workload</i>	<ul style="list-style-type: none"> - Physical workload - Psychological workload

3 | Methodology

According to the labour flexibility process model, the quality of the recommendations is depending on in-depth knowledge of labour flexibility and the organizational context. The substantive composition of the recommendation is also depending on the intent of enhancing labour flexibility like described in the research origin. Eventually every organization can use this model in order to support the process of labour flexibility enhancement under the condition that they have understanding of these three factors.

Although labour flexibility is nothing new, this way of operationalizing is. Scania will be the first organization using this model in order to strive for the optimal configuration of labour flexibility. Scania would like to know what interventions there are in order to get there, which makes this research exploratory. The model will be supported by the use of four qualitative research methods that contribute to understanding the current situation at Scania and help formulating the desired situation. This paper will also pitch an idea on how to improve the practical usability and reliability of the model. This chapter will conclude with explaining some essential terms for better understanding of their meaning.

The characteristics of this research correspond with the design oriented research, which regards the development and implementation of solutions:

- The problem and solution must be clear
- Important are the functional, contextual, user and structural requirements
- Design oriented research follows the regulative cycle (Van Strien, 1997)

Considering this cycle, this research includes the phases; problem definition, analysis & diagnosis, plan of action and a presentation on what to implement. This research will not report on the implementation of the project plan and thus will not evaluate on this intervention, these responsibilities rely within the organization of Scania. Chapter 1 of this paper is devoted to the problem definition phase, chapter 2, 3, 4 and 5 are committed to analysis and diagnosis phase and chapter 6 will explain the plan of action. The following paragraphs will discuss every research method in greater detail.

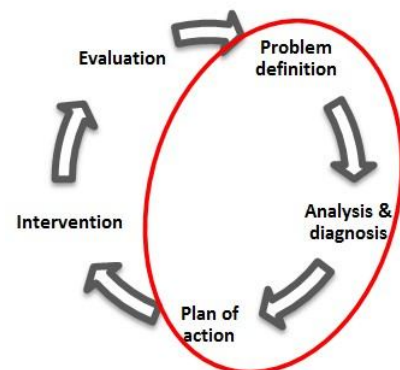


Figure 6: Regulative cycle (Van Strien, 1997)

3.1 Orientation on the production floor

The initiation of this project started at management level because of prospective analysis. Some internal as well as external developments create the need to act towards enhancement of labour flexibility. This paper uses the "BOB approach" in order to strive towards a sustained impression. This approach stands for making a holistic image, get to know the organization properly before you make a judgment or even decide on your actions.

Whenever a preceding step in the process is rushed, it negatively affects the quality of all subsequent outcomes. The orientation on the production floor contributes to the problem definition phase of the regulative cycle of Van Strien (1997).

The fundamental knowledge during the orientation phase was formed during some introductory meetings with Human Resources and discussed in the research origin. However, in order to construct this holistic image of the current situation, “a basic skill training”, some interviews and an “internship” along the production line were recommended. The most important co-workers to talk to are the regular mechanics (MIP), TL’s and SV’s because they have much experience with the production process and can explain the current situation in detail. This orientation phase is essentially designed to substantiate the research origin and understand the perspective of those that would be affected.

In order to gather as much in-depth information on the ideas and interests of the co-workers, and get a reliable impression of how the work is done, a “basic skill training” and an “internship” of a week along the production line are planned. However, to improve reliability of the information that is gathered during this week, the co-workers should not have the perception that management has send a student to inspect what they think of their work. For this reason, a proper introduction should be in place and the business suit should be replaced by regular co-workers clothing. It is important to blend in with the crew and gain the trust of the co-workers in order for them to speak freely about their beliefs. A target group with n=15 should be enough to create a reliable impression on what the co-workers are thinking regarding the topic of flexible employability. The orientation on the production floor mainly affects sub-question 3.

3.1.1 Internal semi-structured interviews

Although the internship and basic-skill training will provide extensive insight in how the co-workers work along the production line, some insight in the surrounding secondary processes is not less important. When conducting a qualitative research, one usually uses interviewing as the main intervention of gathering data. When the scope of the research is clear, one can easily ask pinpoint questions to interviewees in order to get in-depth knowledge on topics of interest. In order to get in-depth knowledge of internal systems and processes, some semi-structured interviews are very useful. These internal systems and processes refer to the organizational variables and individual demands of the process model in figure 7.

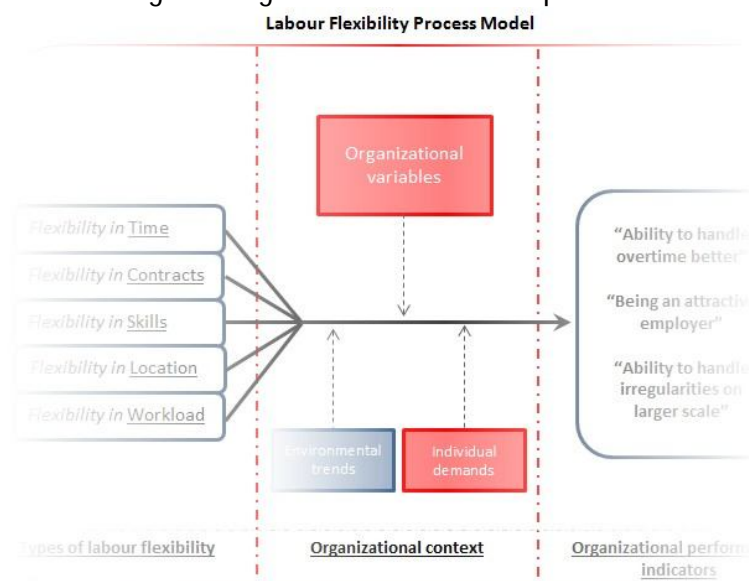


Figure 7: Affected elements by internal interviews

It is perceived that the professionals within Scania are very supportive and willing to participate in this research. For this reason it is expected that the interviewees will provide proper information from themselves without needing much guidance. A clear (and short) introduction of the research and interview goals, followed by some basic guiding questions will provide enough structure and direction to the interview and simultaneously leave room for an open conversation. This type of doing interviews is also called a general interview guide approach (Turner, 2010). It is up to the interviewer to recognize interesting topics, and dig into these subjects that can benefit the research the most. Some professionals that are interesting to interview are those of the HR department, Randstad, ARBO, OR (work council) and MT (management team), but a snowball sampling method (Babbie, 2012) will be used to get in contact to most relevant professionals for this research. Every interview will be recorded and converted to a text that will be e-mailed to the initial interviewee respectively for approval. These interviews will be mainly used to create overall knowledge of the organization and to answer sub-questions 3. However, it is also expected that the interviews will have a small contribution to sub-question 4. The contribution of orientation and the internal interviews towards the process model is highlighted in figure 7.

3.2 External semi-structured interviews

The external interviews are being held through the use of a standardized open-ended interviews method as proposed by Turner (2010). The external participants of this research are all asked identical questions, but the responses to these questions can vary because of the open-ended characteristics. This way of interviewing is more structured in order to foster the possibilities for comparison and coding of the interview data. Nevertheless, the data provided by participants are rich and thick with qualitative data, it can be a consuming process for the researcher to sift through the narrative responses in order to fully and accurately reflect an overall perspective of all interview responses through the coding process (Turner, 2010). A suitable advantage is that this type of doing interviews helps the researcher with reducing its biases within the study.

The standardized open-ended interview is added in appendix 3. The quality of the interview results is highly depending on two factors; the quality and appropriateness of the questions and the ability to reach out to the right professionals within the right organizations. The literature review will support the process of constructing qualitative and appropriate questions that will produce proper results. The results of the external interviews will contribute to the analysis and diagnosis phase of the regulative cycle of Van Strien (1997).

The list of appropriate organizations to interview has to comply with some basic criteria. In order to determine the correct criteria, one basic question is asked. What characteristic(s) of the work at the production line at Scania determine the most important restrictions for flexibility? These characteristics should be defined as fundamental as possible so that generalizability is stimulated. The following characteristics approach the answer:

1. The production, process or service within or offered by a company is highly depending on the presence of random assigned individuals that are located on a specific place at a specific time doing prescribed handlings.

2. The dependence on the individual is important in such a way that if he or she is absent from his duty without being replaced, the process or production stops or the service undergoes severe risk.

The advantage of asking these fundamental questions is that the potential external target group is not limited to production plants that work with production lines, like Scania does. A greater variety of organizations that work with some sort of shift work can be included in this study, which will stimulate the possibilities for comparison in later phases of the process. Next to production plants, organizations that provide safeguards or hospitals that employ nurses by the use of shifts can also be included. It would be interesting to find if other industries are coping with the same issues and possibly implemented effective solutions that Scania did not think of yet. Of course, the snowball sampling method (Babbie, 2012) also provides opportunities to find relevant organizations, so this technique will also be used. The aim for this study is to include at least 5 organizations that will contribute to the main findings of this exploratory qualitative research. The main sub-question that will be answered according to the external interviews is question 4. The affected element of the process model is mainly the environmental trends like illustrated in figure 8.

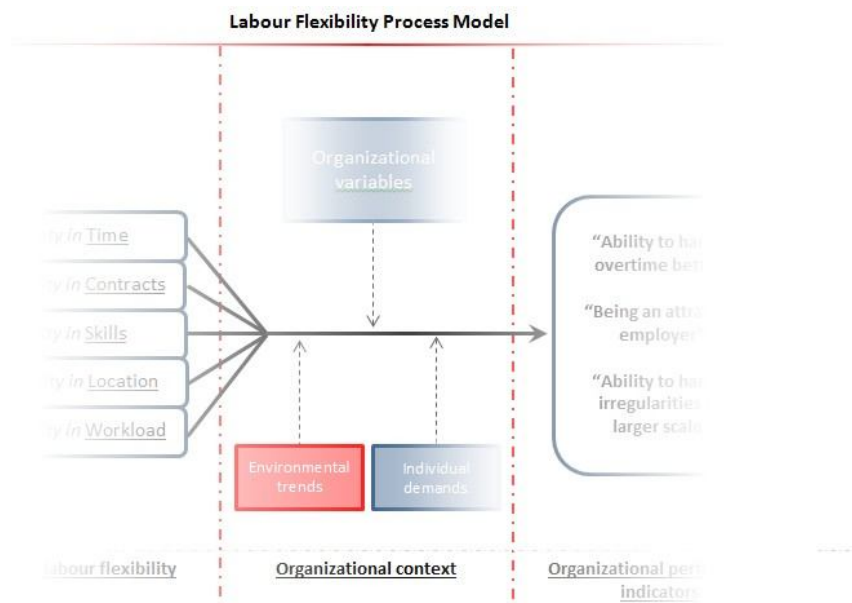


Figure 8: Affected elements by external interviews

3.2.1 Open coding and documentation

During the final phase of conducting interviews, the researcher must make "sense" out of what was just uncovered and compile the data into sections or groups of information, also known as themes or codes (Turner, 2010). The conversion of plain interview results into codes can be called coding (Wolfswinkel, Furtmueller, & Wilderom, 2011). The techniques used for analyzing the raw qualitative data for this paper are in line with open coding and include identifying, labeling, categorizing and describing phenomena you find in the texts. Each line, sentence, paragraph is read in search of the answer to the repeated question "what is this about?" (Wolfswinkel et al., 2011). Because of the low quantity of the interviews and the straight forward character of the questions, this paper will not use an unbiased third person to check the codes (Turner, 2010). However, the raw transcripts of the

interviews as well as the summaries of the kaizen will be put together into a separate document, which can be examined.

3.3 Kaizen

Scania is an example for other organizations in the industry when it comes down to the way they succeeded in implementing LEAN management. One of the factors that contributes to this success is the way they invest in continuous improvement through the use of “Kaizens”, which are internal focus groups consisting of various co-workers of different

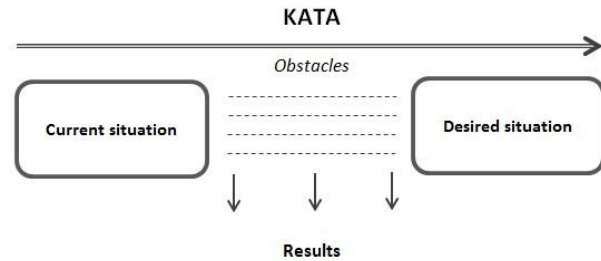


Figure 9: KATA model

departments that are involved in the area of interest. Co-workers are dismissed of their regular daily job in order to focus on the issues that originated the Kaizen for a specific period of time (which can vary from a day to a couple of days). Within a Kaizen, every co-worker is equal and every voice should be heard. Every Kaizen also results in decision making and documentation on what is learned. The use of a Kaizen is not limited to specific topics and can be initiated for every topic worthy of improvement. In order to achieve this improvement, the KATA model will be used (figure 9). This model is an acknowledged tool for Scania during a kaizen and helps with identifying the current and desired situation of labour flexibility. Finally, the kaizen team can discuss on how to handle the obstacles that come along while working towards that desired situation. The results, or rather recommendations from the kaizen group will contribute the analysis and diagnosis phase, as well as the plan of action phase of the regulative cycle of Van Strien (1997).

A multi-stage Kaizen can be used to verify some more elaborated options and check the base of support in the organization. It will give more in-depth knowledge in addition to this exploratory research. Through the use of one or more kaizens, the distance between static academic literature and the dynamic organization is reduced and incubation of potential alternatives is being improved. Figure 10 indicates the similarities between the process model and the KATA model.

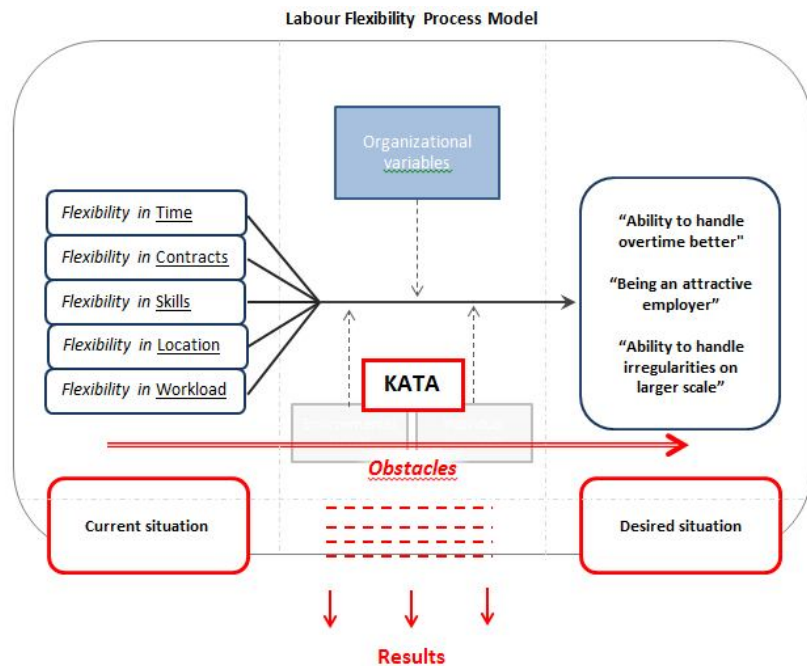


Figure 10: Similarities between labour flexibility model and KATA model

The aim for this paper is to organize a kaizen for a week (see appendix 6). The five types of flexibility within the labour flexibility model will be the central topic of discussion. The kaizen will start with an introduction of every member and their specific roles. A kaizen always knows a "Sensei" who is responsible for the kaizen as a whole, a "Kaizen leader" (KL) who is responsible for the initiation and advancement and a "Kaizen team leader" (KTL) who is supporting the KL with tools and techniques in order to come to the desired outcomes.

The parties involved in labour flexibility are SV's, TL's, HR, Randstad, OR, FNV and the ARBO. The remaining members of the kaizen should be well distributed in order to get to grounded results derived from various perspectives. Every member is formally invited to attend to this kaizen (appendix 4), which is on voluntary basis so that the kaizen attracts co-workers that have incentive to attend. The HR-director is consulted in order to stimulate a workgroup with balanced political intentions. For the members of the kaizen team, see appendix 5. The desired outcomes of this kaizen are three/five applicable recommendations towards management which deserve additional attention. The program for the kaizen will be scheduled like:

Table 10: Schedule kaizen

<i>Monday 26th of august: All</i>	Kick-off presentation Sensei, KL, KTL / presentation research model / collective session "current situation"
<i>Tuesday 27th of august: SV, TL, MIP, Randstad</i>	Evaluation current situation, collective session "desired situation"
<i>Wednesday 28th of august: All</i>	Evaluation desired situation, collective session "overcoming obstacles"
<i>Thursday 29th of august: SV, TL, MIP, Randstad</i>	Evaluation entire KATA model, collective session "recommendations"
<i>Friday 30th of august:</i>	Additional day in case of delays

3.4 Job sharing investigation

Despite the exploratory character of this paper, job sharing is going to be subjected for further investigation. An opportunity presented itself when a group of students, doing a course under the supervision of dr. ir. J. de Leede called "Design of Work Systems and Employment Relations". They had to do an assignment in order to pass that course and the job sharing investigation was designed to function as a proper assignment. The intention of this investigation is to create an initial image of the practical pros and cons at Scania and to see if there is support from the organization. In order to check if and how job sharing could be implemented at Scania, some interviews are going to be held with HR and SV's. Each interview will last for approximately 30-45 minutes. The scripts can be found in the appendices.

3.5 Term & regulation clarification

To explain the content of this study, some terms that are used can be interpreted in different ways. This paragraph will be dedicated to some of these terms so that misinterpretations are being reduced and proper knowledge is shared. Also two regulations at Scania have such a value to this paper that extra clarification is in place.

3.5.1 Essential terms

Co-workers: This term refers correctly to every employee/colleague within Scania, but is also used in this study to explicitly refer to the co-workers working along the production line in the two-shift system (the target group of this study). The context of the term should provide information like; co-workers working along the (production) line.

Elder employees: Can be interpreted as co-workers of 55 years or older. This subject is also referred to as the 55+ case which concerns all circumstances surrounding the fact that elder employees can refuse doing overtime.

Flex-workers: These are the co-workers that are potentially working in the flexpool.

Department: This paper refers to the term department in a broad sense. The term department should practically be read as a TL team, SV area or even operational unit. This term is mostly used when discussing multi-employability and refers to the intervention that some ambitious co-workers should be stimulated to perform more standards, regardless of which department those standards are located.

3.5.2 Important regulations

Three regulations at Scania have the potential to be affected significantly by this paper. It is important for the reader to understand every separate regulation in order to correctly interpret the information of this paper. The regulations are; Flex regulation (Flexregeling) and the regulation overtime and additional work (overwork en meerwerk).

Flex regulation: With fluctuations in demand which are expected to be temporary will be flex worked. "Flexing" is therefore market related. There may be plus and minus flexing. Plus flexing will be performed when the market demand is temporarily higher than the current tact. There is then a work period, subsequent to the late shift up to 1.5 hours to meet the demand. Preference is given sequentially from the Tuesday, Wednesday, Monday and Thursday, with a maximum of 5 hours per week. These hours will not be paid, but stashed on a "time bank".

Minus flexing will be performed when the market demand is temporarily lower than the current tact. Normally, there will be no or less working hours than a regular working day, for a period of a couple of days. The non-worked hours will not be reduced with the salary but compensated with the balance on the time bank. The range of the balance is from -50 to +50 hours and is a 100% time for time instrument.

Some important starting points are; flexing is a collective measure in which every employee participates regardless of age. In some situations, management can deviate from this

starting point. Whenever is decided to start flexing, the employees of the involved departments are obliged to participate. Every working team can plus flex for a consecutive period of 40 hours, unless discussed with the working council. Some situations are exceptions to the regulation; however these are not important for understanding the basic intentions of the regulation.

Notification: Like stated, this flex regulation is outside the scope of this paper. However, it is easily misunderstood as “flexibility in time” or even the “flexpool” or “flex-workers”.

Regulation overtime and additional work: Overtime and additional work can only be the case whenever the flex regulation is not applicable. The flex regulation should always be consulted first. There is overtime if the duration for that day counting working schedule is exceeded or when work on Saturdays, Sundays or holidays is performed.

A form of overtime is additional work and is only applicable when employees are working part-time. Additional work is in fact the case if the personal roster that day is exceeded and the roster on that day has a shorter working time than has generally applicable roster. There is no overtime fee on additional work. However, when the generally applicable roster is being exceeded, there will be an overtime fee.

4 | Results

The qualitative research methods made it clear that all measures towards enhancing labour flexibility are interconnected. All external organizations indicated that their current configuration of labour flexibility is based upon organizational strategy, values and context variables, which also influences their desired configuration. The labour flexibility model helps organizations with indicating potential points of improvement by segmenting labour flexibility into five different types. Every type can be sub-divided into practical measures which are recognizable and tangible. This way a somewhat comprehensive and vague subject is made practicable and accessible for structural discussion. A result that really suits the purpose of finding complex interconnected solutions that consist of multiple interventions. This final statement is substantiated by the kaizen that was held within the organization of Scania. However, before we dig into the final recommendations for Scania, this paper first discusses the results according to the five types of labour flexibility. These results are derived from an orientation week including an “internship” along the production line and internal interviews, five external interviews and a kaizen. Also the main results from the job sharing investigation are included. The following matrix provides more insight in the structure of the results.

Table 11: Matrix on what results to find where

Contribution	Research methods			
	Orientation	External interviews	Kaizen	Job sharing investigation
<i>Creating knowledge on labour flexibility</i>	X	X	X	
<i>Developing insight in environmental trends</i>		X		
<i>Developing insight in organizational variables</i>	X		X	X
<i>Developing insight in individual demands</i>	X		X	
<i>Finding interventions that could enhance labour flexibility</i>	X	X	X	X
<i>Supporting the choices for recommendation</i>		X	X	

4.1 Orientation

It turns out that the three points discussed in the research origin do have support among the co-workers along the production line. But there is also more to learn about the current situation of labour flexibility at Scania.

4.1.1 Practical issues

Scania has implemented a various amount of alternative types of shift work in the past and is currently handling two shifts. Compared to 3, 4 or 5 shifts, the current type is considered to be the best alternative regarding two factors; the amount of human labour at the production line and the workload. Because Scania is maintaining production processes that require extensive human labour, the ARBO is handling many physical issues. Re-integration programs are expensive because the co-worker is planned in addition to the net-occupation. Also the amount of time a new co-worker has learned the necessary skills to perform the work is perceived as long which causes problems in qualitative occupation as well as a barrier to replacement of ill-performing co-workers.

The amount of co-workers reporting sick is significantly different between various departments. But illness or requests for leave on big scale, which are both facilitated by the social factor, cause problems for the planning. This situation is especially the case with TL's, because of their technical specialism and limited possibilities for replacement. A curious event occurs at Scania considering the fact that agency workers significantly report less sick than Scania workers. This is perhaps caused by the fact that agency workers do not get paid when reported sick, while Scania workers do. Another factor can be the lower average age of agency workers and lower tenure at assembly plants.

4.1.2 Elder employees

The biggest concern of the co-workers deals with performing overtime for a long period of time and the collective agreement that says that co-workers of 55 years and older can refuse overtime. The biggest argument for this concern is that regulations changed over the years and people in the Netherlands have to work until their 67th currently. During the time that this collective agreement was concluded, the age of retirement was significantly lower and organizations had to cope with a few less years of which co-workers can refuse doing overtime. Besides the population also gets older on average, which makes this concern more significant today than a decennia ago, and will become even more important in the future.

Another curious fact is that elder agency workers are not allowed to refuse overtime because of their contract, but they do not complain about it. One could conclude that an agency worker is satisfied with the fact that he has a job, regardless of the conditions, while a Scania employee feels privileged with rights that became standard. It is normal human behavior to show resistance to changes that possibly have a negative effect on an individuals obtained position. Another factor that can contribute to this concern is the current flex regulation, which is designed to cope with cyclical changes like explained earlier. Elder co-workers are not allowed to refuse flextime which possibly has a negative effect on the goodwill of the elder co-worker.

4.1.3 The social factor

The social factor (sf) is designed to align the quantity of production and the amount of co-workers working along the line. This social factor offers 10% occupation in addition to the net-occupation in order to cope with illness, leave and training. It functions like a buffer in case of irregularities. This 10% however, is always rounded to full FTE's (occupation of 19 FTE is sf of 1, 9 = 2 FTE) which causes almost structurally over/under capacity. The magnitude of the social factor is brought down by management from 15% to 10% because of the experienced low rates of illness and leave. Underlying calculations for the social factor were not found. However, if every co-worker should attend to all training opportunities that are recommended, they would easily exceed the given 10%.

Sometimes the social factor is even used for occasions it is not designed for, which causes additional limitations. However, when the social factor is insufficient in providing occupation for unexpected events, a SV is appointed to situational leadership which includes shifting a TL or appeal to the goodwill of the employee. These solutions are also not desired because they come at the cost of quality and affect the perception of being a good employer. So perhaps the social factor can be considered as a doubtful framework which does not meet the requirements or desires of individual SV's. There is a request for a customized social factor that considers specific demands of every department.

4.1.4 Part-timers

The process of working along the production line is currently not designed to facilitate part-time requests at larger scale. Some SV's argue that this is a structural filling of the social factor while other SV's argue that part-time request are not included in the leave section of the social factor. However, in any case, the adoption of a part-time request on larger scale causes difficulties in planning when working with an expected labour force of 98% full-timers (based upon expectations of SV. The main argument of SV's for this is the difficulty or inability to round the occupation to full FTE's.

Finally, there are also some suggestions for improvement to be noted during the orientation phase. Although requests for working part-time are currently causes problems with planning, they could also provide more flexibility, opportunities for decreasing the amount of overcapacity and attracting new groups of employees. A flexpool of skilled employees can support the implementation of more part-time employees and increase the level of labour flexibility even more. A combination of both would have potential to discard the social factor and function as a customized facility for every department. A digitalized system should increase the efficiency of submitting all types of requests from SV to Randstad and offers opportunities for aligning the offer and demand of co-workers during the flexpool scenario. In this scenario there will be no overcapacity which has significant financial potential.

4.2 Job sharing investigation

Regarding the advantages and disadvantages of job sharing, it can be concluded from all three interviews that implementing job sharing would probably reduce the amount of refused overtime. Currently the co-workers generally do not mind doing overtime, as long as it is only once or twice a week (although some co-workers always refuse overtime), so refused overtime is currently not a major problem at Scania. However, this paper also

discussed why this can be a problem in the future. Job sharing would then reduce the amount of refused overtime because a job sharer would need to do less overtime in a row. However, the HR advisor mentioned that there will always be some co-workers that will refuse doing overtime because it is part of company culture that co-workers believe that they have earned the right to refuse doing overtime after so many years of working.

Another benefit of job sharing mentioned by one of the supervisors is that the amount of line stops (and thus overtime) could decrease because job sharing gives the co-workers more resting hours. They would thus be more refreshed at work, which causes them to make fewer mistakes that can cause overtime. However, this benefit will not only result from job sharing but also from regular part-time contracts. Job sharing would also not mean significantly extra work for the HR advisor and the supervisors.

A disadvantage of job sharing mentioned by one of the supervisors is that more part-time co-workers would increase the amount of information and knowledge sharing, thus increasing the chance of something going wrong in the process. Also, the HR advisor recommended not to cut shifts in two in case of job sharing (i.e. the first job sharer works the first part of a shift and the second job sharer works the other part of that same shift) because this will lead to a decrease in quality, like a former test at Scania had proven.

The interviewees expect that most co-workers that are currently employed by Scania cannot financially afford to share a job. The HR advisor therefore sees job sharing more as an interesting possibility to attract new groups of co-workers, like women. Confronting one of the supervisors with this, it was mentioned that hiring relatively more female co-workers would not be beneficial for Scania. This is because the work tasks rely on the physical condition of the co-worker, something female co-workers usually possess to a smaller extent. This would mean that the female co-workers would need to be stationed on the less demanding work tasks, but this would cause problems with the task rotation at the line, and result in ergonomically worse work for the other co-workers. There is however, a difference in opinion between some SV's and HR on the potential of female co-workers in production.

One supervisor argued that job sharing might be interesting for some co-workers near retirement as a way to gradually decrease working. However, the other supervisor was convinced that co-workers near retirement would rather work full-time, save free days and use these days to retire earlier. A final possible goal of job sharing is, that is, to re-integrate co-workers at Scania is not needed according to the HR advisor, as Scania already has STER-workplaces designed especially for that. A list of all pros and cons of job sharing is included in appendix 2.

4.3 External interviews

The main purpose of conducting external interviews is to explore alternative interventions that other organizations implemented in order to cope with the same problems that Scania is coping with. In the end, these interviews served a much broader purpose. Besides providing inspiration for alternative measures, it also created some benchmarking (Palepu, Healy, & Peek, 2010) and strengthened the impression of labour flexibility in the industry. In the coming sections, this paper will discuss some of the insights obtained regarding Scania's

labour flexibility in contrast to the other firms and secondly provide information on the most appealing interventions that came to light during the interviews.

4.3.1 Insights from other firms

Scania identified a couple of factors that originate the desire for more labour flexibility. These are pressing new forms of leave, being an attractive employer in the future and finding solutions for coping with the agreement regarding elder employees. Besides those factors, Scania also identified some moderating factors that limit the possibilities for action. The biggest limitations for Scania regard working in a flow which includes a high level of interdependency of every production department and no possibility to appeal to inventories. It appears that none of the organizations within the sample meets these limiting circumstances. They do however all recognize most of the factors that Scania desires regarding labour flexibility and are all searching for appropriate solutions.

It seems that other organizations also recognize that we live in a new world and that traditional ways of organizing no longer meet current circumstances. Every organization recognizes that in order to stay an attractive employer, they have to enhance their conception of employment towards more flexibility. Finally, some organizations hold severe negotiations with work councils about the current regulations for elder employees, which state that they do not have to do overtime.

The following sections dig deeper into the results gained from the interviews, divided per type of flexibility. However, in order to interpret the information better, all organizations will be shortly introduced anonymously.

Table 12: Descriptions of organizations interviewed

Organization	Description
Case 1	A multinational tire manufacturer from India. This organization develops, manufactures and sells tires all over the world and employs 1800 employees. Spoken to a production manager.
Case 2	One of the biggest food companies in the world. Operational in 200 countries and employing 45.000 employees. Producing various sauces, beans and other products under its original name and a large variety of other products through other brands. Spoken to the HR manager.
Case 3	The biggest autonomous bed manufacturer of the Netherlands. Producer of mesh base beds, box springs, mattresses, bed linen, cabinets and accessories. Employing 350 employees in the Netherlands and with multiple locations in Europe and distribution over a large part of the world. Spoken to the HR manager.
Case 4	A business in plastic pipe systems and part of a multinational with more than 100 offices in dozens of countries. Employing 500 employees in the Netherlands. Spoken to the HR manager.
Case 5	Large hospital with two locations in the Netherlands employing over 200 specialists and more than 3.200 employees. Yearly 572.400 patients visit the clinics. Spoken to the HR manager physician assistants.

4.3.1.1 Flexibility in time

Every interviewee recognized increased planning complexity when hiring part-time employees. Only case 3 are actually hiring part-timers on scale because of the nature of the work in one department, which is a sewing atelier. Apparently this line of work attracts mostly women, which rather desire to work part-time in order to combine work with caring responsibilities.

All cases implemented shifts, varying from three to five shifts, sometimes combined with a day shift or two shifts simultaneously. None of the cases allowed employees to wish or reject certain shifts on regular basis. Also none of the cases has implemented individual rosters or flexible begin or end times. The HR manager of case 2 has experience with self-rostering and could indicate that there are some important benefits but also drawbacks to this approach.

Case 3 has implemented a time bank of 80 hours, positive and negative, which they use to cover for cyclical changes. They are negotiating for a time bank of 120 hours because of a new production strategy that includes more short term orders. The options for dealing with unexpected leave are very diverse and varying from a percentage of occupation on top of the net-occupation, inventory management, overtime, agency workers or simply by colleagues who cover the occupation.

4.3.1.2 Flexibility in contracts

The bigger firms in the sample (case 1, 2, and 3) all have an inhouse construction with one of the agencies in the Netherlands. This means that these cases all have a periphery group of temporary (agency) contracts with prospects for permanent employment. In line with what is explained in the former section, almost every organization preferably employs full-timers because of the simplicity of planning, enhancement of continuity and efficiency.

Flexible contracts like on-call contracts, min/max contracts, job sharing or self-employment are not common in production organizations. Also a flexpool of agency workers was not implemented in any of the cases. Case 3 claimed to have established some sort of flexpool because of the amount of part-timers and close collaboration with the agency. Although, case 1, 2 and 5 are also interested in such an establishment, they did not fully implement one. The biggest concerns regarding a flexpool are the costs of implementation, the conservation of qualitative skills of the employees and the fear of not being able to attract that one employee that a supervisor is looking for in the pool.

4.3.1.3 Flexibility in skills

Case 2, 3, 4 and 5 have established skill-matrixes, but every organization that has some degree of matrix recognizes that there is room for improvement in using these. Case 2 is currently at the beginning of implementing a digitalized system for seamlessly aligning the offer and demand of competences through the use of skill-matrixes. Case 3 and 4 have recognized the potential that lies in horizontal multi-employment and case 5 distinguishes in having a culture where employees are continuously seeking opportunities to develop their competencies. Some other options for stimulating multi-employability are short term

traineeships, fees or making positions easier to perform so automatically more employees can execute them.

4.3.1.4 Flexibility in location

None of the organizations has implemented a function like telecommuting, teleworking or has flexible work arrangements in production. Case 2 is trying to promote working at different plants but experiences issues with the travel distances. Case 5 would like to enhance employee exchange between merged firms but experiences severe difficulties in solidarity because of differentiating cultures. In the end, case 1, 2, 3 and 4 conclude that flexibility in location is not suitable for production firms simply because employees cannot bring home the tangibles they are working with.

4.3.1.5 Flexibility in workload

Case 1, 2, 3 and 4 agree on that you cannot start soon enough with monitoring the health of your employees and started with a sustainability program. Working in shifts is recognized on average as heavy, especially the 3 and 5 shifts. They also argue that it even gets harder when an employee reaches an age of 50 or above. Although this recognition, job-rotation is not frequently mentioned as a probable solution towards physical or psychological workload issues. STER-workplaces are not recommended because an organization is too late with finding a proper solution and also marks the employees with a “disabled” stamp.

4.3.2 Appealing interventions

The HR manager of case 3 translated his dream regarding the ideal way of employability. This dream includes a well-tuned relationship between full-timers, part-timers and flexpool in order to always realize an efficient net-occupation. The key of this reasoning lies in a profound relationship with the agency that is well integrated in the process of the organization and takes all planning responsibilities on its behalf. So not only the agency workers but also the core workers are closely monitored, developed and employed according to organizational demands. The expertise of these practices is high within the agency, so why would Scania not transfer all planning responsibilities towards one party?

A fundamental implementation for this intervention is a proper system that incubates all necessary tools for performing a seamlessly alignment of offer and demand in competences, in quantity as well as quality. This system should include a constantly up-to-date insight in the competences of the workforce, an up-to-date framework of the skills that are required to carry out all production processes and an efficient channel so that supervisors can easily communicate their co-worker requests. Secondly this system should include a facility which incubates all training options, individual achievements and other registrations so that these handlings are all automated. This idea for this intervention is originated from case 2.

When talking about an optimum in labour flexibility, one should suggest self-rostering. This implies the ability to transfer most planning responsibilities towards the employees, so that every co-worker is able to influence his or her ideal working hours in compliance with each other. This intervention has great potential when it is perfectly implemented but includes many organizational changes and is quite complex. Not only tangible production processes

or practical rosters and shifts should undergo changes but the working culture has to make a significant shift. This makes this intervention one with high potential paired with many risks.

A final factor worth mentioning is not really an intervention but has everything to do with culture. A remarkable situation was discovered when conducting the fifth interview. Eventually, it seems that the organization with the most rigid processes and the least possibilities for labour flexibility has also the least desires for improvement. It seems that the nature of the work, individual passion for the profession and positive working ethics are golden ingredients for individual flexibility. Like described in the section “employability”, this paper mainly focused on what the organization can do for its employees in order to make the work more pleasant and sustainable. The counter side of employability is the responsibility of the employee to maintain flexible and guarantee its sustainable employability during its lifetime. This fifth organization was an extraordinary example where employees feel this responsibility and do not have to rely so much on the organization. It seems that the level of labour flexibility is depending on the flexibility needs and capacity of the organization, and that the organizational culture is influencing the flexibility needs.

Even though the external interviews are only a part of the results of this paper, they had some significant input. The interviews demonstrated that labour flexibility is a hot topic and that more organizations are struggling on how to cope with it. On the other side, some organizations outside the target group, have implemented interesting interventions in order to cope with labour flexibility like flexible tact-times, flexible rostering or exceptional flexible employability. These are only a few examples of interesting interventions that the cases came up with during the interviews held for this paper. Because of time constraints it was not possible to include these organizations in this research. Nevertheless it shows that there is a lot to be learned from other organizations.

4.4 Kaizen

Former sections of the paper all had their share in walking through the labour flexibility process model. The literature review mainly supported with getting theoretical knowledge on the five types of labour flexibility. The internal interviews supported this paper in understanding the organizational circumstances and individual demands, whereas the external interviews supported understanding of environmental trends. All interviews functioned as an additional idea generator for finding potential interventions which have not come up during the literature review. Finally, the kaizen is designed to dig deeper into the entire process through the use of the KATA method. What configuration of labour flexibility does Scania currently have, what configuration do they desire and what obstacles are there to overcome. The obstacles in the kaizen can be compared to the moderating factors of the labour flexibility model. The main difference between both models is that during the kaizen, the desired situation is hypothetical while the alternative configurations of labour flexibility are the actual recommendations towards the organization. Practice shows that these will not vary much from each other. The results will be discussed in the following sections.

The following results are documentations of conversations held by the kaizen groups. Because of the exploratory characteristics of this paper, feasibility has not been taken into account during the documentation in the coming section.

4.4.1 Flexibility in time

During the first day of the kaizen, two sub-groups of participants discussed the topic and came up with what Scania currently implemented and why. They also came up with asking why some interventions are not implemented yet (which is actually a step ahead), which actors are involved and an exception to the standard procedure. The following days both groups added their desired situation to the list and picked four of the interventions that were subject to further investigation. The leading question asked during further investigation was; what is holding us back or what needs to be done in order to realize these desired situations?

4.4.1.1 Current situation

Currently Scania has implemented two shifts, from 06:00 AM till 02:00 PM and from 02:00 PM till 10:30 PM. Subsequently they implemented a day shift. These are implemented to confine the labour costs and to guarantee output. The regulations for part-time employment are at least three days a week for any regular co-worker and four days for SV's. This is set in order to maintain continuity, keep the routine and so that SV's stay bonded with their team. A flexpool is currently implemented at logistics and KD, which is a separate establishment that sells "IKEA-like Knocked-Down packages" of trucks all over the world. Scania knows partial retirement regulations but recognizes that it would be hard to facilitate on larger scale. The law on working time provides enough room for Scania to act on without having any difficulties. Important restrictions in time are co-workers with a WAO, which is an allowance for incapacitated that work at Scania with customized agreements. Another restriction by collective agreements is that a co-worker can only be hired for a minimum of three hours. The only exceptions to default procedures are medical conditions of co-workers. Besides, Scania is not able to hire a co-worker from 09:00 AM till 06:00 PM at the production line to support a department on overdue work. These options are covered with the social factor, which delivers severe "headaches" sometimes.

4.4.1.2 Desired situation

The kaizen groups would like to divide the two shifts into blocks of approximately four hours, like from 06:00 AM till 10:00 AM, from 10:00 AM till 02:30 PM (half an hour break), 02:30 PM till 06:30 PM and from 06:30 PM till 10:30 PM. This way the planning for part-timers, co-workers with WAO and the day shift will be a lot easier. Regarding flextime and overtime, the participants would like to see an occupation until the end of duty by Randstad, shifting elder and WAO employees or alternative solutions. The minimum amount of days should be changed into a minimum amount of eight hours for regular co-workers and twenty hours for SV's. A flexpool for the entire organization is desired in order to replace the social factor. Scania should be able to achieve an efficient occupation through the use of a flexpool in combination with more part-time facilities. A necessary requirement is that the flexpool should consist of co-workers that are skilled enough and able to maintain their skills through enough working hours. This flexpool could consist of core workers that are more horizontally employable (internal flexpool), agency workers that will be specifically hired and trained for the pool (external flexpool) or a specific target group of current co-workers that will be additionally trained to be able to cover all standards. Another desired measure is to reschedule the overtime at the end of the morning shift.

4.4.1.3 Obstacles

Not every possible intervention will be subject to further investigation because of the time constraints of the kaizen, which forced the kaizen groups to make priorities. The most potentially interventions are part-timers, flexpool, flexible working hours and a flex-tact. Part-time employment is considered to be of this time and Scania should be able to facilitate this at larger scale. But in order to do so, it would be an improvement if the current shifts are divided into four blocks like mentioned before. Also the minimum amount of hours should be maintained to guarantee quality. Part-time employment should be promoted by Randstad and different target groups should be attracted like women or students that are specifically looking for part-time employment. It is questionable if these part-timers will bind to the organization like full-timers do. The planning will become more complex, even with the idea of dividing the two shifts in two, so some resistance of the SV's can be expected. A supporting measure should be to aim for as many full FTE's as possible to minimize "loose ends". Whenever this does happen, the flexpool can cover it.

By implementing the flexpool, Scania should decide on the target group and composition. Should there be a flexpool for the entire production, per department or cluster of departments? Should the flexpool only cover standards that are easily learned and expanded from that point on? Besides, the "flex-workers" should rotate regularly in order to make an internal flexpool work. The external flex-workers should not live too far away in order to be present quickly. Finally, an essential requirement for a properly functioning flexpool is that the organization has accurate and up-to-date insight in the competences of the organization and flex-workers. This includes that the progress should be closely monitored.

In order to facilitate flexible working hours, a clear framework should be in place. This framework does not specifically have to be four blocks of four hours, but can also consist of other alternatives. In any case, Scania should consider the possibility of deterioration through increasing transfers.

The flex-tact refers to the possibility to adjust the tact-time according to the occupation along the production line. The tact-time is an important determinant for the amount of trucks produced, the amount of co-workers employed, the composition of the standards and the layout of the production plant according to LEAN standards. This means that whenever the tact-time changes, all these factors have to adjust along with it. A higher tact-time means that Scania produces more trucks daily, more co-workers are employed along the line doing less handlings per co-worker so that the workload remains the same.

This process can also be approached from the perspective of the co-workers. Whenever less co-workers are employed; the tact-time goes down, less trucks are being produced and every co-worker has to perform more handlings per standard. The biggest challenge for Scania would be to shift efficiently from one scenario to another, whereas the size of the change is correlating with the size of the challenge.

The biggest concern regarding a flex-tact is the possibility to pull it off according to current processes. Besides, does this really solve the fact that elder employees can refuse doing overtime or does it only strengthen their position? Nevertheless, a desired prospect is that Scania has a couple of "scenarios of alternative tact-times" in their shelves which are easily

implemented. This way Scania reduces the costs that are paired with re-organizing the production floor whenever a tact-time change is in place.

4.4.2 Flexibility in contracts

The exact same approach as for flexibility in time is used when discussing flexibility in contracts. At first, the two groups discussed on what is currently implemented, why and why some not, which actors are involved and which exceptions are in place. Subsequently, the desired situations are added and four of the most important interventions were subject to further investigation.

4.4.2.1 Current situation

Scania is currently offering an expected amount of 98% fulltime contracts in production. New co-workers are mostly hired through Randstad and offered an agency contract with prospects for permanent employment. Like mentioned before, Scania offers partial retirement possibilities and has implemented flex contracts at logistics and KD. Experience with this flexpool at KD is that the image of being a good employer has increased. However, HR expects that the biggest gain from a flexpool will be the reduction of labour costs paired with the social factor. Part-time and WAO are currently only approved in case of medical circumstances.

4.4.2.2 Desired situation

The kaizen group would like to have a ratio of 70/30 regarding part-timers, instead of the expected 98% that is currently in place. The same ratio is also desired for core/flex co-workers. The part-time ratio within production should be well balanced, bound to the tact-time and determined per department or cluster of departments. It is also desired to investigate the potential of min/max contracts in facilitating flexibility. Something that the kaizen group would like to realize is to get rid of the rigid contracts in days and implement contracts in hours. This would suit all potential ideas of flexibility in time better. The proportions of the different functions like allround mechanic or advanced mechanic should be taken into consideration. A major issue regarding these proportions is that a valuable ambitious mechanic cannot develop himself because the "desired" proportions are reached. What happens is that this mechanic performs the work of a higher function, but does not receive the associated salary. The group believes that these situations should not be depending on a predetermined proportion but on the actual offer and demand that SV's can judge in agreement with HR. Perhaps co-workers should be assigned wages according to their competencies instead of their functions. Scania should be able to develop even when the proportions are reached in order to keep everyone bound and motivated.

4.4.2.3 Obstacles

For flexibility in contracts, priority is given to min/max contracts, reconsideration of the core/flex ratio, a reconsideration of the proportions of the functions and job sharing. Like mentioned before, it is not sure what the potential and possibilities of min/max contracts are. This should firstly be discussed with the work council. Is the target group of Scania appropriate for these contracts? In case Scania would like to implement min/max contracts,

they should break open all current contracts; consider the influence on working conditions and commitment of the co-workers.

The core/flex ratio should be reconsidered and bound to the tact-time. The kaizen group expects that this would have a positive influence on the reputation as a good employer. However, an associated measure should be a gradual inflow of new agency workers in order to ease the load of training needs. Hiring policies should be focusing on quality and growth opportunities should be enhanced.

A reconsideration of the proportions of functions should critically assess if the current proportion is relevant and meeting organizational desires. At the moment Scania is maintaining a proportion of 30% regular mechanics, 40% allround mechanics and 30% advanced mechanics. However, in order to start reconsidering the proportions, Scania should invest in reassessing job descriptions. In the end, if Scania would like to realize these points of improvement, they should reassess everything concerning skill matrixes, job descriptions, proportions and salary frameworks.

Job sharing was one of the interventions that came up during the kaizen. However, it was recognized that the kaizen group did not know much about this, so further research was advised to see if there is enthusiasm and potential. Like mentioned before, a group of students already did some research on this and it turned out that SV's and HR are not that enthusiastic. There is doubt if job sharing really changes anything in the organization.

4.4.3 Flexibility in skills

Again, a default procedure is held where the current situation, desired situation and obstacles were subject to discussion. In flexibility in skills only three interventions were picked for further investigation.

4.4.3.1 Current situation

Scania does not have regular mechanics currently; these are being provided by Randstad. Scania only knows allround mechanics and advanced mechanics. The current difference between the allround mechanics and advanced mechanics are unclear. The skill-matrixes show the abilities of every co-worker, nothing less, nothing more (appendix 7). These matrixes provide a clear overview for when an internal vacancy appears. PEP'ers are co-workers who are performing well and would like to do something else within Scania. These co-workers can go to a different department within Scania with the restriction that they have to return within a year. These co-workers would have a competitive advantage when a permanent vacancy appears. The current three to one philosophy means that every mechanic should be able to perform three standards and every standard should have three mechanics that can perform it. Spontaneous exchange does not work currently because of the time to learn new standards. Exchange should be organized structurally in order to maintain continuity and quality. Besides, not every position requires the same amount of training in order to master. The co-workers with medical limitations have a FUPO record which indicates the standards they still can perform. These co-workers mostly occupy the so called STER-workplaces at preassembly sites.

4.4.3.2 Desired situation

The kaizen group would like to restructure the structure of Scania's functions. Some co-workers are doing more than they are assigned for and some are doing less. The "5+1" philosophy restricts the ambitious co-workers that are willing to learn more. Eventually these co-workers will start working automatically which will lead to more mistakes.

The "5+1" organization method describes how to organize work in small teams to build deep competence in the process with regards to complexity, quality, training and support. The TL's work together to help each other whereas the SV's support and train team leaders and are responsible for the areas results. The team size is depending on the complexity of the process, the number of positions a TL is able to support in a normal situation and is deviating from four to six co-workers. In the past, the team size is brought down from about ten to five in order to provide closer support to individual co-workers and guarantee quality.

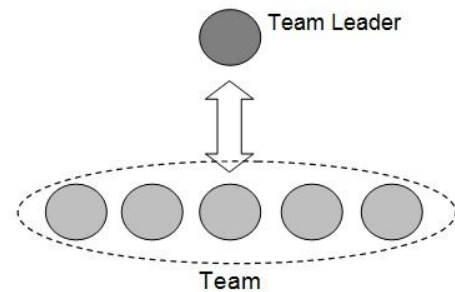


Figure 11: 5+1 organization

It is important for TL's to have a team of five mechanics who master the standards. So job-rotation is desired within this line of reasoning. This way Scania can keep willing co-workers motivated and horizontal learning and understanding between departments is stimulated. Development based on POP, personal development plan, will illustrate individual ambitions so that Scania invests in the proper co-workers. The kaizen group also recognizes that you should not try to stimulate co-workers to work somewhere else when they preferably stay at their current position, which means that job-rotation is not suitable for everyone. A desired situation is that the entire planning is based upon individual competences and ambitions instead on functions. Function profiles offer a basis for a wage structure but limit the flexibility in planning. Co-workers are trained according to predetermined functions instead of the actual needs of an organization. Even though both elements are connected, it offers room for more efficiency and customization. Restructuring offers possibilities for more customized training and rewarding based upon an alignment of individual and organizational needs. SV's should be trained in order to adapt the role of a coach that is more concerned with the future prospects of his team. At this point, both can also discuss working at a different department in the future. Eventually, every co-worker is a Scania co-worker and not a "specific standard co-worker". Whenever a big transition for a co-worker is hard to realize, there are always options for not-critical positions that have less switching obstacles.

4.4.3.3 Obstacles

For flexibility in skills, priority is given to a reassessment of the function structure, sustainable development based upon competences and job-rotation. The reassessment of the function structure has the highest priority and should be on top of the agenda, even though it knows a long time to implement. The five to one philosophy has led to new competences and Scania should investigate if this has led to new functions. Whenever Scania would like to carry out any changes, they have to go through some prolonged procedures. The proposed changes are subject to external assessment, ISF commission and appeals committee whenever some stakeholders disagree with the changes. Whenever

these steps are correctly followed, a new structure is ready for implementation and should be reconsidered every year in order to keep things up-to-date and avoid small changes piling up. Whenever this new structure is in place, all subsequent steps can be followed.

In order to stimulate sustainable development, first Scania has to aware SV's to take part in a coaching role and start dialogues with co-workers about what they aspire in about five to ten years. It would give structure in conversations if every co-worker maintains a POP document which forms the basis for sustainable development. By proper documentation, alignment with organizational prospects is easier to be made. The fitness and workability indexes of Scania play a big role. Besides, Scania should assess if all FUPRO profiles are up-to-date or if they better suit other functions within the organization. A part of sustainability is that Scania continuously monitors progression.

Structural job-rotation means that SV's rotate once every three years and TL's rotate once every four to five years. Particular willing mechanics rotate structurally by at least once a week. SV's can exchange those mechanics on a one for one basis. Practical issues that can occur concern the image of some departments which make it hard to exchange on a one for one basis. In order to tackle this barrier, Scania could facilitate in "taster placements" for SV's and TL's. Fees can be a great motivation for mechanics to master additional standards across departments. The exchanges should be easily accessible and organization culture should undergo a slight change. The current guarantee to return to the original department within a predetermined time is necessary to satisfy the co-worker but should not be implemented anymore. Experience with this showed that it is hard to replace a co-worker because of logistic reasons and a changing organization. Scania has to look forward. However, the kaizen group has not decided what to do with changing working conditions between departments or establishments, which can be a great determinant for the desire to return to the old department.

4.4.4 Flexibility in location

The procedure of digging into flexibility in location did not differ from the other types of flexibility. However, because of the limited possibilities in this type of flexibility, one group has approached the topic by asking; what are we able to re-locate within the plant that would make a difference? The other group took a different approach by asking themselves; how can we re-locate co-workers? Eventually one major intervention was subject to further investigation.

4.4.4.1 Current situation

The least potential in labour flexibility for Scania lies in location. The effect of this was that both groups became broad-minded and still tried to find an appropriate answer to the case. Eventually, there are three things that can be relocated within Scania that would make a difference; monuments, preassembly and co-workers. Monuments are physical parts of production that became redundant but hard to remove. By removing these monuments, some standards would be easier to perform. However, it does not really enhance labour flexibility which makes it insignificant to discuss in this paper. Another factor is preassembly, which are currently located throughout the production plant. The kaizen group does not have proper insight in if these preassembly sites are located in the most efficient way. Co-

workers cannot be relocated while performing the same standards because these standards are strictly bound to a specific location along the production line. Nevertheless, they can be relocated while performing other standards, like already mentioned when discussing flexibility in skills.

4.4.4.2 Desired situation

In discussing the topic of relocating preassembly sites, two main questions appear; “what about the costs-benefits analysis?” and “if there is potential to locate it more efficient, does this enhance labour flexibility?”. A direct answer would not satisfy this paper, but it does offer possibilities in an indirect way. Assuming that locating preassembly has potential for improvement, why not locate all preassembly work at a different site and design the site in such a way that it suits appropriate working conditions for elder employees? Some adjustments could be a higher tact-time, sleeping facilities, better ergonomically circumstances etcetera. BMW is already far ahead in implementing such a plant for sustainability, so that is why this paper refers to this idea as “the sustainability plant”.

Co-workers can be easily relocated to non-critical standards. It offers a lot of flexibility if departments can exchange some of their co-workers in case of disease, leave or training obligations. Secondly it shows good employership when Scania allows ambitious co-workers to develop more and learn more standards. This measure can be seen as an internal flexpool. Other types of flexpool are:

- An external flexpool of agency workers that are specifically hired to occupy the pool
- A pool of co-workers that are harder to schedule like WAO, part-time or elder co-workers but have the experience to occupy most of the standards

An external flexpool could be initiated through the help of the social factor or overcapacity. These co-workers are transferred to Randstad and form the basis of the flexpool. The kaizen group is convinced that there is enough flexibility in skills in the current workforce to create a base for a flexpool. Open ends can be supplemented by Randstad.

4.4.4.3 Obstacles

In order to initiate a customized sustainability plant for Scania, many factors should be considered. Because it concerns preassembly work, it should be closely located to the production plant. Is preassembly most suitable or is there potential for production as well? Which standards are suitable? Are two shifts or a dayshift more appropriate? Co-workers should not have the feeling that they are tucked away in some sort of inferior workplace. Are there possibilities for reintegration and/or subsidies? Is the core periphery model suitable? Replacement towards the sustainability plant should not be an obligation but a choice for the concerning co-workers in order to maintain a positive image. This image can only be strengthened when negotiations with the work council are successful and elder employees are enforced to do overtime. In this case Scania has an alternative and cooperates in sustainable employment.

Eventually Scania has to investigate how this project can serve two desires; finding a sustainable solution for the 55⁺ case and making profit. The newspapers in Germany indicated that BMW has invested 20 million euro in their project, but no information is released on their business model. Another important question one could ask is; what

significant advantages could a group of very experienced co-workers add to the entire organization? Scania is currently planning the purchase of a building close to the production plant which offers great potential for this project. However, the objectives for this new purchase are currently insecure. The biggest liability for this recommendation is that it is not known if a project like this fits the future prospects of Scania.

To prevent recurrence, this paper refers to flexibility in skills for further investigation on flexpool management.

4.4.5 Flexibility in workload

The default procedure is held in uncovering flexibility in workload, where the current situation, desired situation and obstacles were subject to discussion. Eventually one major intervention, which can be seen as one project, is subject to further investigation. However, a couple underlying interventions together support this project and are separately identified.

4.4.5.1 Current situation

There are a couple of factors that influence the physical and psychological workload of co-workers along the production line. These are:

- Standards; can have a double-sided effect because they can provide structure and rest whenever a co-worker knows how much time he has left and plans his activities. On the other side they can provide stress whenever a co-worker constantly lacks in time and is rushing in order to get everything done.
- SES; provides insight in repeating activities, heavy activities and ergonomics. The weight of workplaces is indicated by SES through colors that vary from green (lightest) to double red (heaviest) and Scania dealt with almost every double red workplace.
- Production mix; means in which sequence the heavy and lighter trucks follow each other across the production line in order to balance the workload.
- STER-workplaces; in order to provide co-workers with physical liabilities a better job. These workplaces are mostly not directly bound to the production line, in dayshift and have better ergonomically circumstances. This way Scania aims to keep these co-workers on board instead of discarding them into re-integration programs. The kaizen group recognizes however that there is much room for improvement in identifying, constructing and allocating these workplaces.
- Overtime/flexitime; the majority of complaints arise when co-workers have to do overtime for a long period of time, mostly because of the increasing workload that is correlated with this procedure. Other complaints involve the private situation of co-workers which is harder to maintain while structurally doing overtime. Scania does not request doing overtime or flexitime on Fridays, which is perceived as a major relief. The fact that Scania produces trucks on the basis of customer demand, request a flexible attitude of the workforce towards tact-time changes, training new co-workers, changing customer demands and therefore occasional flexitime or overtime.

- 5+1 organization; is designed to stimulate more repetitive handling and better reliability of delivery. However a co-worker can experience less challenge in the work which can cause various negative side effects. There is room for improvement in the way TL's and SV's are coaching their colleagues.
- Market demand; a volatile market demands will result in more variation in production which subsequently influences the amount of overtime/flextime that has to be performed.

Other interventions Scania is executing are risk assessment and evaluation, periodic occupational health research, BRAVO (Dutch for Exercise, Smoking, Alcohol, Food and Relaxation) and an employee satisfaction survey. These interventions combined should give insight in the workload and health/satisfaction of co-workers and stimulate them to life/work healthier.

4.4.5.2 Desired situation

The structure of SES is currently good, which means that Scania is handling proper procedures to gain insight in the workload of the production processes. Eventually, Scania would like to aim for optimal ergonomically work processes though monitoring and escalation. The 5+1 organization provides a stable fundament, but Scania would like to stimulate more job-rotation between different TL areas in order to divide the workload among co-workers and to utilize the potential of talented co-workers. Other interventions that are desired to divide the workload evenly are to align the production mix and co-workers better and to reallocate elder employees. The kaizen group would also like to reassess the STER-workplaces.

An alternative to reassessing the STER-workplaces is a separate BV where Scania does all the preassembly work with elder and WAO employees. For further information on this intervention, this paper refers to the previous section; flexibility in location, the sustainability plant.

4.4.5.3 Obstacles

Eventually, all interventions are subject to one holistic project; a better balanced workload. Within this project, quality and flexibility are negatively correlated on the short term. Job-rotation will enhance flexibility like discussed earlier, but may have a negative effect on the quality of the work. In the long run, these co-workers will be able to increase quality on more standards because of their working attitude and the negative effects will become smaller. Besides, job-rotation should be a matter of choice for the co-worker, a possibility and not an obligation. Some co-workers are satisfied by the simplicity and repetition of the work and do not seek constant challenge. These co-workers should not be obliged with more job-rotation because this will have a negative effect on their commitment, flexibility and quality. In order to guarantee quality as well as flexibility, the selected co-workers who decide to do more job-rotation should be monitored closely. When this type of extensive job-rotation is well executed, it offers improvement for flexibility as well as individual

commitment, individual and organizational development, quality, workload reduction, line-stop reduction and individual satisfaction.

By introducing extensive job-rotation across TL areas, Scania exceeds the scope of the 5+1 philosophy which is in conflict with organizational strategy. The kaizen group would also approach the current job classification differently, which will give confusion. However, when combined appropriately with the reassessment of the function structure like discussed in flexibility in skills, these opportunities for improvement are feasible.

4.4.6 Elder employees (55+)

During the kaizen, the group noticed that the situation surrounding elder employees of 55 years or older was regularly subject to heavy discussion, regardless the type of flexibility. It was clear that this topic was aching for a long time and something had to be done. In order to optimize the results from the discussions on this topic, "55+" was identified as a separate topic next to the five types of flexibility. Eventually the group came up with eight potential interventions that could improve the situation.

4.4.6.1 Current situation

Collective labour agreements provide the opportunity for elder employees to refuse doing overtime. This creates occupancy problems for SV's who have to appeal to all kinds of situational leadership like discussed earlier in the paper. The amount of elder employees is not evenly divided among various departments, so some departments experience bigger challenges than others. Secondly, the kaizen group expects that the magnitude of this problem will grow in the coming five to ten years and a structural solution to cope with this problem at larger scale is missing. Scania is trying to solve the problem by increasing the age of 55 but negotiations with work councils go slow and rigid. Whenever Scania succeeds in changing this privilege from 55 years old to 60 years old, the major part of the problem is solved. However, this paper cannot wait and assume that this is going to happen and comes with an alternative approach.

4.4.6.2 Desired situation

The ultimate objective for all interventions is to have a full occupation until the end of duty. In order to reach this, Scania should have comprehensive insight in the problem. How many elder employees are distributed in which departments and are not willing to do overtime? Whenever this is achieved, Scania can try to absorb the problem with other co-workers that are working in the dayshift and willing to assist. A so-called buddy system could be created in which every elder employee is bundled to someone who is willing to do his overtime. However, it is not likely that this measure will succeed in the long term. Scania can also reallocate elder employees so that the burden of every department is even. This would be a relief at short term but still insufficient in the long term. Another solution is to move overtime to the end of the morning shift, from 02:00 PM until 03:30 PM, or even at the beginning of the day from 05:00 AM to 06:00 AM. A flexpool could also be initialized to back up the elder employees in doing overtime. Perhaps a group of students is willing to learn the skills and work a few hours in the evening for a good pay. Another possibility is to introduce a varying tact-time that takes the leaving co-workers into account. A 10% decrease in co-

workers would mean a 10% adjustment to the tact-time for example. Eventually, the biggest intervention possible that would take care of the entire situation surrounding elder employees is to implement the sustainability plant. Although this intervention is already discussed at flexibility in location, it includes most potential for elder and hard-to-staff co-workers. Besides, the image of Scania as being a good employer will get a major boost.

4.4.6.3 Obstacles

A drawback of reallocating elder employees is that it has a compulsory character. This makes this intervention not directly popular but perhaps it is inevitable. In the short term this intervention will have a relatively big impact. The biggest drawback of moving the overtime to the beginning or end of the morning shift is that it only appeals to the goodwill of the elder employee but does not solve the problem. Elder employees still have the opportunity to reject. Besides, co-workers have planned their private lives according to current working times and Scania is forcing them to rearrange this because of this intervention. It is not sure if the benefits outweigh the disadvantages. The biggest drawback for appealing to a flexpool is that the overtime is only scheduled for one and a half hour a day and collective labour agreements note that a co-worker should at least be hired for three hours a day. However, HR states that through the use of clear agreements, Scania is able to avoid this regulation. Scania can think of a construction to make this work, but it will bring additional costs which decreases the popularity of this intervention. Besides, it is questionable if Scania can find an appropriate target group who is willing to work these hours on a structural basis and for a longer period of time. The biggest drawback of a varying tact-time is that by adjusting the tact-time, fewer trucks are being build, which means that Scania needs to do more overtime. Again, it is not clear if the benefits outweigh the disadvantages. Eventually, the biggest drawback for implementing the sustainability plant is the size of the project, the size of the investment and all uncertainties that come along.

4.4.7 Recommendations

Through the use of the KATA model, an extensive amount of interventions were brought up and discussed. All interventions varied eventually in character, size, complexity and priority and funneling was necessary in order to separate the wheat from the chaff. It was expected that by this method, eventually a handful of interventions could be recommended to the management board. Some well thought out practical interventions that could be implemented easily without too much side effects or discussion. In retrospect, this was naive and the final results/recommendations of the kaizen would differ slightly. It seems that many interventions are interconnected, have a synergistic effect on each other as well as on labour flexibility (Delery & Doty, 1996; Seifert & Tangian, 2007). So instead of recommending a set of autonomous interventions, a configuration of interventions will be advised. In order to provide clarity on the prioritization of the interventions, a distinction is made between those that can be implemented directly, in medium long term and in the long term.

4.4.7.1 Possibility to implement directly (< 6 months)

At the end of the funneling process, four interventions are recommended to implement directly and four interventions should be directly investigated. Scania can directly check the ratio of core/flex employees in production. Scania currently strives to reach a 70/30 ratio

which it achieved organization wide. However, this ratio is including the office jobs, while Scania's intention is to enhance flexibility in production. So after checking the actual ratio for production, Scania should strive to reach a 70/30 ratio in production.

Job-rotation can be promoted directly in order to expand the 5+1 organization. Co-workers that have the ambition to develop should not be limited by frameworks. The ultimate goal for this is to provide as much customization as possible in order to enhance the alignment of organizational and individual desires. The relationship between flexibility and quality should be closely monitored.

A flex tact that is able to quickly adapt to changing occupation should be implemented. However, the kaizen group recognizes that some additional research is necessary in order to prepare for some predictable scenarios. An example of such a scenario could be the case in which all elder employees reject to perform overtime and 90% of the occupation is left. The appropriate standards based upon a higher tact time and fewer co-workers should be on the spot. Major rearrangements in the layout of the plant in order to minimize walking distances and optimize efficiency are not expected.

The case in which elder employees can refuse doing overtime is of considerable size and includes suggestions from all three phases. However, in order to start with any possible implementation, the actual problem has to be clear first. How many elder employees does Scania know currently, in five to ten years and how are they distributed among the different departments. Subsequently, Scania can absorb a significant part of the problem with the incumbent co-workers through reallocation of the elder employees or by introducing the buddy system. Both interventions can be implemented at short notice but also have a short life cycle because the average age of the workforce will increase structurally. Eventually there will be too many elder employees in every department and the buffer of buddies will not be able to back this up. Nevertheless, these interventions will provide some additional time for Scania to come up with a structural solution in handling the 55+ case.

Additionally, some research can be initiated directly in order to find out if some interventions are feasible. First, two types of flexpools; one for structurally replacing the social factor and other buffers on top of the net occupation and one specifically for absorbing the gaps after 10:30 PM. Whenever research indicates that either flexpool is sufficient, these interventions will have a middle long character to implement. Secondly, research should indicate if it is feasible to adjust the moment of doing overtime to the afternoon or early morning. In the past, a survey indicated that the current way of working is the most desired. A consecutive survey can indicate if co-workers still agree on the terms based upon their experiences or if an adjustment to the moment of doing overtime is desired. In case an adjustment is desired, it will take Scania a middle long term to implement this intervention. Finally, research can be initiated to figure out if the sustainability plant is feasible for Scania considering all stakeholders. It is crucial to estimate the costs and benefits of this intervention, which will have a long term character after it is initiated.

4.4.7.2 Implementations for the medium long term (< 5 years)

The current functions of production and logistics are outdated and should be reassessed. This reassessment is the fundament of a series of interventions that would jointly contribute to being an attractive employer, coping with alternative types of leave, offering more part-time contracts and supporting the 55+ case. Eventually Scania should focus on sustainable development based upon competences that are relevant today and in the coming five to ten years.

Subsequently, Scania should reassess the current proportions of functions according to recent organizational needs. However, this intervention is highly depending on the reassessment of the function structure because it is currently insecure how this new structure will be designed.

Also Scania should stimulate flexible working hours in order to facilitate individual needs and to incubate part-timers. However, because of strategic considerations, flexible working hours should not come at the cost of quality or continuity. So in order to find equilibrium between flexibility and quality, a customized adjustment is suggested. The current shifts should be divided into two blocks of approximately four hours (adjusted for lunch-breaks). This way, nothing has to change for those co-workers that do not seek change, but opportunities arise for part-time contracts, day-shifts in production and requesting flexpool workers.

The final recommendation on middle long term concerns min/max contracts. After reassessing the function structure and replacing the social factor by a flexpool, insight should be gained if min/max contracts are feasible and contributing towards more labour flexibility. An important stakeholder in this process is the work council, who has a decisive judgment in this. The first step should be to consult the work council.

4.4.7.3 Implementation for the long term (> 5 years)

When discussing the priority of the different areas of interest in labour flexibility, one stands out in particular. Something has to be done to structurally cope with the 55+ case and BMW showed a comprehensive way to deal with it once and for all. A separate BV which is close to the production plant should be designed to incubate elder and WAO employees. Not only will this offer considerable improvement in handling elder employees, it will also contribute to being a good employer, sustainable employability, efficiency and the overall image of Scania. A multi-skilled project team of carefully selected employees should be assigned to plan this intervention.

Table 12: Recommendations kaizengroup

	Recommendations
<i>Directly</i> (<i>< 6 months</i>)	<u>Execute:</u> core/flex ratio Job-rotation Flex-tact 55+ case (clarity, reallocation, buddy system) <u>Research:</u> Flexpool Flexpool for overtime Moving the moment of doing overtime Sustainability plant
<i>Middle long term</i> (<i>< 5 years</i>)	Reassessing function structure Sustainable development based upon competences Reassessment proportions of functions Flexible working times (four blocks of four hours) Introducing part-timers Min/max contracts
<i>Long term</i> (<i>> 5 years</i>)	Executing the sustainability plant

Now that all results are formulated and every possible intervention is revealed, the funneling towards recommendations is in place. In order to do so, the following chapter will discuss every intervention separately and judge on feasibility. At the end of chapter 5, many interventions are omitted from the attention of this paper. The rest of the interventions are all suitable for implementation and should receive attention from Scania. However, only a few interventions will be recommended directly by this paper in chapter 6.

5

Feasibility analysis

All qualitative research has been executed, the data has been gathered, processed and a large list of potential interventions is the result. However, not every intervention is equally suited for Scania because of some decision criteria regarding the research origin or the strategic platform. The following chapter will discuss what interventions have potential for Scania and what interventions have not. In order to prevent reoccurrence as much as possible, this chapter strives to underpin the choices shortly. For more information, this paper refers to chapter 4, results. Eventually, chapter 6 includes the recommendations that consist of bundled interventions that have a synergistic effect towards the labour flexibility needs of Scania.

5.1 Interventions with no potential for Scania

First this paper will discuss some interventions that will not be recommended to Scania. The aim for this section is to provide a comprehensive view of every decision made. It could be equally interesting to discuss why some interventions are not selected than why some are. The interventions are ordered according to the type of flexibility and no prioritization has been applied.

5.1.1 Flexibility in time

The beginning of this paper discussed the transition from examining alternative ways of scheduling towards labour flexibility. This was because of an insufficient relationship between alternative ways of scheduling and all three elements of the research origin. A former survey pointed out that the current way of scheduling fits most co-worker's private situation so modifications on this would be obsolete. In the end, co-workers also adjust their private lives towards their work and stability is mostly preferred. As will be made clear in paragraph 5.2.1, an alternative roster is conditionally suitable for Scania, but needs additional interventions in order to satisfy all three elements of the research origin.

The same factors are concerning shiftwork. The orientation phase indicated that two shifts are preferred over three, four or five shifts for various reasons. TNO, a large research firm in the Netherlands indicated during a workshop that three, four and five shifts accompany even more difficulties in planning compared to two shifts. So this paper does not recommend changing the amount of shifts.

Scania has implemented a flex-bank of 50 hours (positive and negative hours) which is highly affecting the level of labour flexibility. Because Scania is on top of this intervention, it is unnecessary to dedicate a section of this paper to it. The purpose of this paper is to find structural solutions in addition to the flex-regulation. Eventually, the flex-regulation was out of the scope this research.

Self-scheduling is considered to be the ultimate intervention of flexibility in time but comes with great complexity and uncertainties. Scania is unsecure in the potential benefits of this intervention and recognizes major implementation costs. The hypothetical costs/benefits analysis during the kaizen caused that self-scheduling will not be recommended.

5.1.2 Flexibility in contracts

Scania is looking for labour flexibility and simultaneously increasing quality. Some factors that play a crucial role in these objectives are continuity and commitment. Two types of contracts that do not enhance these factors are semi-permanent contracts and temporary contracts with no prospects. Regardless of what types of contracts are offered currently, this paper will not recommend these two. Other alternatives offer more potential and are discussed in section 5.2.

The investigation on job sharing indicated that the expected benefits are insufficient and that this intervention is not worthy of recommending. Most benefits of job sharing could also be acquired through regular part-timers. The reduced labour costs are doubtful because most potential is irrelevant for Scania (i.e. decreased turnover rates) while some labour costs have to be paid twice. Appendix 2 shows a detailed list of the pros and cons of job sharing for more information.

5.1.3 Flexibility in skills

Scania is performing well in flexibility in skills which is the basis for why this paper is not recommending some related interventions. The assessment and certification of employees, job and individual characteristics & skill accumulation and performance standards, job functions & professions are all comprehensively implemented. This does not mean that development is obsolete, but points of improvement are discussed in section 5.2.

5.1.4 Flexibility in location

The comprehensive process model includes flexibility in location, which could offer possibilities for enhancing labour flexibility for many firms. However, production firms are not designed to implement much flexibility in location because of the actual production processes. Interventions like telecommuting, satellite teleworking, flexible work arrangements, distance learning and working at different business locations are all not suitable for recommendation. These types of interventions mainly suit office jobs which require computer-work; digital networks or jobs that include extensive phone calls. One of the biggest restrictions of working in production at Scania is that you have to attend to work at a specific location, which cannot be deviated from.

5.1.5 Flexibility in workload

For both physical as psychological workload applies the same as for flexibility in skills. Scania is performing well on flexibility in workload, so no adjustments to the current course of business are recommended. Again, this does not mean that development is obsolete, but points of improvement are discussed in section 5.2.

5.2 Interventions suited for Scania

The following section discusses the interventions that do have potential for Scania. The interventions originated from various research methods, internally as well as externally. The order of the different interventions is according to the different types of flexibility and no prioritization is made yet.

5.2.1 Flexibility in time

In contrast to what is said in the last section about job sharing, this paper would like to recommend a greater use of part-timers. Many of the benefits gained from job sharing can also be covered by hiring part-timers. Scania will be able to attract new target groups of potential employees like students or women and suggest an alternative for co-workers that cannot handle working fulltime and are able to manage financially with fewer hours. It significantly lowers the physical and psychological workload which has some additional effects. On the other side, hiring more part-timers increases the complexity of planning.

The implementation of part-timers is really paying off at larger scale, when a sufficient group can support each other in case of absence. The additional flexibility lies in the fact that more individuals are hired which means more support in cases of irregularities. Finally, SV's will have more flexibility and possibilities to achieve a net occupation and minimize overcapacity.

However, in order to realize a sufficient group of part-timers, Scania needs a proper framework. Dividing the current shifts into two blocks of four hours like illustrated in table 13 will offer the support needed for this intervention.

Table 13: Alternative roster, four blocks of four hours

Part 1	Part 2	Part 3	Part 4
6:00-10:00	10:00-14:30	14:30-18:30	18:30-22:30

There are a couple of benefits that could be achieved by dividing the shifts in this order. First it offers the opportunity for co-workers to work half a day, which automatically offers co-workers the opportunity to work 20 hours (8+8+4) for example. Secondly, it offers possibilities to implement dayshifts in production for exceptional cases (i.e. re-integration). Finally it could offer co-workers the possibility to wish or reject shifts to some extent. Research has showed significant positive results from organizations that offered this intervention, even with minor or no usage.

An ongoing investigation at Scania has developed a couple of alternatives for rewarding irregular working hours. This report shows some beneficial scenarios regarding labour costs. At the moment, most of the co-workers receive a fee for working in shifts or at inconvenient hours. The advantage lies in the co-workers who decide to work in the dayshift or in structurally deviating blocks which ensures that no fee for shiftwork has to be paid. This report also shows the possibilities to work with a varying occupation during the day. With the suggested rosters, Scania can adjust the occupation per block through the use of part-timers or co-workers working the dayshift.

However, an important side note to this intervention is that it should be an option, not an obligation. The underlying idea is that this intervention should not affect any co-worker that does not want to be affected but promotes the opportunity for the organization to be more flexible in planning. Eventually, this intervention will support in coping with the increasing amount of types of leave. It could even help with the considerable large reservoirs of overtime hours that many co-workers have saved during their employment. This intervention will also support the image of Scania as a good employer because their variety of employment options. Finally, it also offers potential in coping with elder employees who refuse to do overtime through the opportunity to wish or reject certain shifts. If elder employees only work in part 1, 2 or 3, they do not have to perform overtime. Part-timers could be specifically hired to fill most of the open places in part 4.

Another intervention that Scania could execute is to move the moment of doing overtime. Possibilities for movement are towards the beginning of the morning shift from 05:00 to 06:00 AM, or from 02:30 to 03:30 PM or even after every part in case the shifts are being divided. The purpose of this adjustment is to create more goodwill among elder employees to perform overtime. However this intervention will not change the fact that elder employees can still refuse overtime. A benefit of moving the overtime to the end of every part would be a more balanced workload for everyone. Drawbacks of moving the moment of doing overtime is that Scania cannot perform overtime for one and a half hour contiguously without additional fees.

5.2.2 Flexibility in contracts

A fundamental intervention that offers opportunities for many modifications recommended by this paper is the reassessment of the function structure. Scania indicated that they have left a turbulent period of organizational change and that prospects of more stable periods are ahead. This means that major modifications in the function structure will last for a more sustained period of time and that from that point on, small yearly adjustments are sufficient. This prevents inefficient attempts to change regulations in a volatile environment. The turbulent organizational circumstances caused nonalignment between documented functions, job descriptions and proportions and the actual or desired way of working.

Scania indicated that the procedure of changing job descriptions can be time-consuming because many actors are involved and can cause delays. So in order to enhance efficiency, Scania should not only align the current function structure to the current way of working, but should include the desired way of working. Factors like; a modified core/flex ratio for production, contracts based upon hours instead of days, a decreased amount of minimum hours, functions and wages based upon competences/standards, min/max contracts, flexpool contracts and/or modified proportions of the functions can all be included in the proposal.

Currently Scania applies a core/flex ratio of 70/30 for the organization as a whole. However, Scania wants to enhance flexibility in their primary processes, so the 70/30 ratio should be associated with only production as well. In fact, this ratio should be linked to the tact-time and set independently for every operational unit. In other words, Scania should reset the core periphery model for protection of their core co-workers in production.

In order to implement min/max contracts, Scania has to start the debate on this with the work council. In theory, this would be a fluent way of planning a weekly occupation but the opinion of the work council is currently unknown and decisive.

Finally, a flexpool for production is highly recommended in order to replace the social factor and work towards an efficient net occupation which is customized to the needs of every operational unit. A flexpool enables co-workers to align their work and private life better and enables the organization to cope with the increasing amount of types of leave. Because of these factors, Scania also positively influences their reputation as a good employer. During the kaizen, Scania even thought of a way to handle the 55+ case with a flexpool, but it turns out that this will not be an efficient measure.

The advantage of implementing a flexpool instead of the social factor is that the flexpool has potential to realize a net occupation based upon the needs instead of a fixed 10%. This way, SV's are less restricted to an absolute maximum of illness, leave and training and are able to judge and handle requests for leave more appropriately. It also offers potential to decrease labour costs whenever a SV realized a net occupation with less than 10% "flexpool capacity".

A necessary requirement is that the flexpool consists of co-workers that are skilled enough and able to maintain their skills through enough working hours. The internal flexpool could also be seen as multi-employability (horizontally) and will be discussed in section 5.2.3 flexibility in skills. The external flexpool is mainly recommended and consists of co-workers that are trained to cover every standard along the production line.

The biggest drawback for implementing a flexpool is the investment in training and development. In order to tackle this, Scania could initiate the flexpool for non-critical standards first and slowly develop the competences of the flex-workers in order to cover the entire production line. A second possibility is to transfer the amount of co-workers that are planned for the social factor to the flexpool. Scania believes that there is enough flexibility in the current workforce to cover every standard with a flexpool created from the social factor. Nevertheless, SV's should select the co-workers accurately in order to minimize the outflow resulting from disappointment and dissatisfaction.

5.2.3 Flexibility in skills

Some of the interventions relating to flexibility in skills have much support from flexibility in contracts. During the kaizen, horizontal job rotation was discussed like an internal flexpool which indicates the perception of professionals on both matters. The external flexpool is discussed above and this paper will refer to the internal flexpool as (horizontal) job rotation or multi-employability. Besides horizontal job rotation, this paper also recognizes vertical job rotation and interdepartmental job rotation. Vertical job rotation means that co-workers perform different function under different circumstances. For Scania this could mean that an agency worker performs the function of TL in prosperous times, but is scaled back to mechanic in lesser times. This is an opportunity for an agency worker to assure his employment in times with redundancies. Interdepartmental job rotation means that co-workers are able to perform the work in different departments.

Vertical job rotation could be an alternative for ambitious agency workers that have reached the function of TL. However, why would Scania not offer such a competent co-worker a permanent contract? With the current regulations on the proportions of functions, this situation is only possible in practice and not “on paper”. This intervention would have a different meaning when the function structure will be reassessed like discussed in section 5.2.2. For this reason, this paper will not put too much emphasis on this intervention.

Horizontal job rotation practically means the stimulation of the organization towards co-workers to perform more standards than is currently obliged. Scania knows a three on one philosophy where one co-worker masters at least three standards and one standard can be occupied by at least three co-workers. This is closely linked to the 5+1 organization where one TL manages five co-workers. Even though the 5+1 organization offers more support and quality, it also simplifies the daily work of every co-worker. Job rotation horizontally as well as interdepartmental would bring back the challenge in work for ambitious co-workers and simultaneously offers flexibility in planning. Supported by the notion that individual characteristics or standards should be the point of departure for flexibility, the appropriate

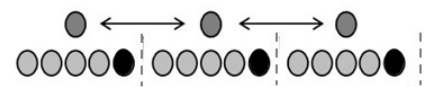


Figure 12: 5+1 organization suggested

illustration of the 5+1 organization would include striped lines between the teams to indicate the ability to transfer one or two co-workers from one department to another (figure 12). The only difference between horizontal job rotation or interdepartmental is the distance of transfer, within or outside a SV area.

5.2.4 Flexibility in location

During every research intervention, the involved actors concluded that there is practically no potential for flexibility in location. However, with a broader perspective, the members of the kaizen found two interventions that will contribute to the 55⁺ case and one intervention that would greatly affect Scania’s reputation as being a good employer.

A short term intervention to divide the load of elder employees refusing to perform overtime is to reallocate elder employees equally. Scania has to investigate where all elder employees are located in order to judge what modifications are required to optimally divide them. Given their age and tenure at Scania, the preference is given to transfers that do not include additional training. Given their average experience and knowledge, Scania expects that this would not be an issue. However, these transfers have an obligatory character and could be perceived as a negative charge late in their tenure. SV’s should critically examine which co-workers are the best eligible for transfer in order to minimize the negative side effects. After the allocation is complete, Scania should still look for long term solutions in handling the 55⁺ case.

One ultimate intervention is initiating a separate B.V. like BMW has done in Dingolfing in 2004. This plant is ultimately designed to host employees of 50 years or older in order to enhance sustainable employment. Because the collective agreements note that employees of 55 years or older may refuse doing overtime, this would be the appropriate target group for Scania. The ultimate goal is to provide elder employees the opportunity to work at Scania until their retirement on a sustainable basis. Whenever working along the so called Castor-

line becomes unfeasible, Scania can offer a workplace that is ultimately designed to fit every need. A couple of features would be implemented in this production plant:

1. A lower tact-time ensures more time to perform the handlings
2. Ergonomically designed furniture that offers physical support
3. Sleeping accommodations that provide opportunities to rest
4. Improved facilities that support co-workers with sight or hearing difficulties
5. No overtime
6. A dayshift or two shifts without the obligation to perform overtime

5.2.5 Flexibility in workload

The workload of co-workers is based upon a variety of factors like described earlier in this paper. The SES indicates the workload of every position along the line and shows almost no double red positions. Eventually, Scania can still enhance sustainable development based upon competences in order to enhance their reputation as a good employer. This includes keeping the FUPRO profiles up to date and increase the coaching role in the function of TL and SV. The use of the workability index and POP are recommended. In order to enhance sustainability, it is important to have proper insight in the desired development of every individual. This development could be based upon ambitions, commitment and promotions or could be based upon FUPRO results and health characteristics. Either way, Scania will enhance sustainable development of the workforce whenever they handle individual cases proactively.

5.2.6 The 55⁺ case

Whenever the management of Scania succeeds in increasing the age of entitlement to refuse overtime, every recommended intervention can be ignored. However, like stated before, this paper cannot fully rely on this scenario, so attention is paid to find alternatives.

During the kaizen, one subject received voluntary attention over and over again, the 55⁺ case. It is argued that Scania is facing this problem for thirteen years now and something has to be done now. Eventually, the kaizen group agreed on the sensitivity of the subject, the priority and also the size of a potential project and chose to discuss separately on this case. Even though the two biggest interventions are already discussed in section 5.2.4 flexibility in location, some other interventions complete the opportunities for Scania to tackle this problem.

It is important to know the problem; how the elder employees are distributed within production, which elder employees are structurally neglecting overtime and how the problem is developing. This information is present within the systems of Randstad and is a couple of mouse clicks away. Because of the negative side effects of reallocating elder employees, Scania would do well if they keep the reallocations to a minimum. That is why future prospects on the development of the distribution are so important to include.

The final intervention that has potential for Scania in coping with the 55⁺ case is implementing a flex-tact. The ultimate goal for Scania would be the ability to pull one of the scenarios out of the shells and implement it without any large modifications. The co-workers along the line should be able to see which scenario is being performed at the moment

(through the use of the screens throughout the factory) so they know which standard to follow. The shift from one scenario to another should not interrupt the production process. However, in order to reach this state of flexibility, extensive protocols have to be developed and trained. SV's and TL's should be responsible for monitoring and some layout adjustments so that the mechanics are not interrupted.

Some drawbacks to a flex-tact could be that only small deviations from the original tact-time are feasible because of the size of the impact a tact-change has. Besides, currently the gaps in occupation during overtime are filled with a TL or any other form of situational leadership, so there is little insight in which elder employees are actually leaving after 10:30 PM. In order to efficiently shifting towards an alternative scenario (with the correct tact-time), Scania should know the pinpoint number of co-workers still present along the line. An alternative solution to this situation is to work with predetermined scenarios of structurally 20% fewer trucks for example. This would increase the predictability but would decrease efficiency when the present occupation exceeds the needed occupation for the adjusted tact-time.

5.3 Decision criteria

All individual interventions will be judged by the use of decision criteria. These criteria are derived from the research origin and the strategic platform of Scania. The different criteria are operationalized like:

1. **Employership:** Being a good employer like described in the research origin. The rigidity and traditional contracts as well as other ways of working are becoming more popular.
2. **55+ case:** Coping with elder employees like described in the research origin. Employees of 55 years or older have the right to refuse overtime which causes gaps in occupation.
3. **Leave:** Coping with the increasing amount of types of leave like described in the research origin. Every request for leave relies on the same reservoir, the social factor. The variety of requests is expected to grow and the time of replacement is experienced as long.
4. **Reliability:** Reliability of delivery refers to the possibility to perform overtime on short notice in order to minimize delivery delays.
5. **Volume:** Volume flexibility refers to the ability to move along with the market demand with a minimum of delay. The ability to quickly reduce to the amount of co-workers to staffing needs in times of downturn and increase in times of increasing market demand, so that every potential order can be handled in time.
6. **Improvement:** Improvement capacity refers to the ability to achieve short and long term improvements.
7. **Quality:** Originated from the strategic platform and refers to the quality of every truck assembled, shown in direct run percentage and the amount of errors per truck.
8. **Costs:** Originated from the strategic platform and refers to the costs per truck.

The following table shows the expected contribution of every intervention to the decision criteria.

	Employership	55+ case	Leave	Reliability	Volume	Improvement	Quality	Costs
3, 4, 5 shifts	-	+/-	X	X	X	X	-	-
Self-scheduling	++	+	++	X	X	X	+	-
Part-timers	+	+	+/-	X	+	-	+	+
Roster: four blocks of four hours	++	+	X	+	X	X	+	+
Move the moment of doing overtime	-	+/-	X	-	X	X	+/-	-
Flex-tact	+	++	X	-	+	X	+	-
Temporary contracts with no prospects	-	X	X	X	X	-	-	+
Job-sharing	+	+	++	X	X	+	+/-	-
Reassessment of the function structure	+	X	X	X	X	+	+	+
Core/flex ratio of 70/30	+/-	+	+	+	+	-	+/-	+
Min/max contracts	-	X	X	+	+	X	X	+
Flexpool for production	+	+	++	++	+	-	-	+
Horizontal job rotation	++	+	+	+	X	+	+/-	+/-
Vertical job rotation	+/-	X	X	X	+	+	+	+
Perspective of individual characteristics or standards	+	X	X	X	+	++	+	+
Telecommuting	X	X	X	X	X	X	X	X
Satellite teleworking	X	X	X	X	X	X	X	X
Flexible work arrangements	X	X	X	X	X	X	X	X
Working at different business locations	+/-	+	X	X	+	+	+	+
Reallocate all elder employees	-	++	X	+	X	+	-	X
BMW case	++	++	+/-	+	X	+	+	+/-
Sustainable development based upon competences	+	+/-	X	+/-	X	+	+	-

++ = very positive +/- = uncertain -- = very negative
 + = positive - = negative X = no significant relationship

Table 15: Expected contribution of every interventions to the decision criteria

6

Conclusions & recommendations

The main question that this research strived to answer is; “what interventions can be recommended to Scania production Zwolle in order to enhance labour flexibility for workers along the production line?” In order to answer this, a couple of sub questions were investigated first. Chapter 2 is devoted to answer the question; how can labour flexibility be identified and operationalized? This is done through the use of the labour flexibility process model and the segmentation of labour flexibility in five types of flexibility. The result of the operationalization is a list of interventions grouped in one of the types. The research methods during the orientation phase and the kaizen are devoted to answer; what is the current status of labour flexibility at the production line of Scania? This current status is mainly described in chapter 4, results. After this, an extensive feasibility analysis in chapter 5 showed what modifications on labour flexibility contribute to the 55⁺ case, employership and the absorbing capacity of irregularities at Scania. Eventually, these chapters combined should lead to answering the main question in this chapter.

The recommendations will consist of two configurations and supporting interventions. The ultimatum would consist of interventions that form an organization with no cadres in functions or departments, seamless alignment between offer and demand of competences and instant adaptability towards changing circumstances. However, that step is not made at once, so intermediate steps are currently appropriate. The recommended interventions are based upon the decision criteria mentioned in the feasibility analysis and the synergistic effect of interventions upon others.

6.1 Configuration 1

This configuration consists of dividing the current roster in blocks, stimulate and start hiring part-timers and a flexpool for production. All three interventions should be implemented in this order because of the interdependencies between them. It would be wise to wait with hiring part-timers on large scale until the current roster is divided into blocks. The suggested roster will help with incubating the part-timers because Scania will know which parts in the roster require most part-timers that work four hours. Besides supporting the incubation of part-timers, the suggested roster will support the possibility for working four hours a day, work in a dayshift or wish/reject shifts to some extent. It also supports in coping with the increasing amount of types of leave and with reducing the reservoirs of overtime hours co-workers have saved. Finally it offers the opportunity to handle elder employees in a sustainable way without too many adjustments, increase Scania’s reputation as a good employer, decrease labour costs and simultaneously have more flexibility in occupation per block.

Table 15 shows that implementing the suggested roster contributes positively to employership, the 55⁺ case, reliability, quality and costs. It is expected that the 55⁺ case,

quality and costs are the most important criteria. Eventually, this intervention has the potential to completely solve the 55⁺ case, but perhaps at the costs of an obligatory shift towards the dayshift with fewer fees. Perhaps this intervention strengthens the position of Scania during the negotiations because they can show that they are willing to offer an alternative. The quality can be enhanced because Scania has the option to adjust the occupation every block. Therefore it is cheaper to increase the occupation in order to enhance quality control on specific moments during the day. Also, research has shown that part-timers are more fit for duty than full-timers and commit fewer errors during work. The labour costs will be reduced because of a more customized occupation that is not equal throughout the day. Besides, fewer fees are being paid to co-workers that are working during the dayshift or in blocks that are structurally deviating from the current two shifts.

A final advantage of this implementation is the fact that no consult with the work council is required because it concerns working in regular dayshifts or part-time. However, the negotiations with the work council regarding the policy for elder employees can still benefit Scania tremendously. Nevertheless, if negotiations go well for Scania, and the age of 55 goes up, this intervention still has plenty of benefits which make it worthwhile.

Eventually, Scania should hire a customized amount of part-timers in order to meet flexibility demands. The implementation of part-timers will enhance flexibility in planning and the possibility to achieve a net occupation. Besides, Scania will be able to attract other target groups of potential employees or support re-integration better. Like said before, working part-time significantly lowers the physical and psychological workload which has some additional effects like a better work/life balance and better performance at work. The biggest drawback is the increased complexity of planning which is partly reduced by implementing the suggested roster.

Whenever a part-timer works only one block of four hours a day, Scania can ask this co-worker if he or she wants to work a connecting block. That would mean that this part-timer works eight hours that particular day instead of four. It is less desirable to ask a full-timer the same question because that would mean that this co-worker will work twelve hours on a particular day, which is considered to be very heavy in a 40 hour workweek. Flexibility lies in the possibility to take over four hours instead of eight which can be convenient in cases of short term private appointments.

Table 15 shows that hiring part-timers contributes positively to employership, the 55⁺ case, volume flexibility, quality and labour costs. The contributions are closely related to those discussed earlier, except that Scania has the opportunity to hire part-timers specifically for block 1 or 4. This would stimulate the demand for dayshift workers and lower labour costs. Besides, it would enhance the quality at periods of long term overtime and facilitate the 55⁺ case.

Finally, a flexpool for production completes the configuration and functions as a replacement for the social factor, has potential to realize a net occupation, enables co-workers to align their work and private life better and enables the organization to cope with the increasing amount of types of leave. Because of these factors, Scania also positively influences their reputation as a good employer. The biggest drawbacks for the flexpool are

the concern for quality and training costs. However, the former chapter discussed some possible actions that could tackle these drawbacks. Table 15 shows a positive contribution of employership, the 55+ case, leave, reliability, volume flexibility and costs. Eventually, the flexpool scores the best regarding the decision criteria with eight plusses and two minuses.

The expected contribution of this configuration is very positive on every decision criteria instead of improvement capacity. However, the structure of organizing kaizens known at Scania does not have to suffer from this recommendation. All three interventions are complementary in the order presented here. One intervention is most to be right if the previous measure was taken. In the end, by implementing this configuration, the request of Scania formulated in the research origin will be satisfied and the criteria in the strategic platform will be enhanced.

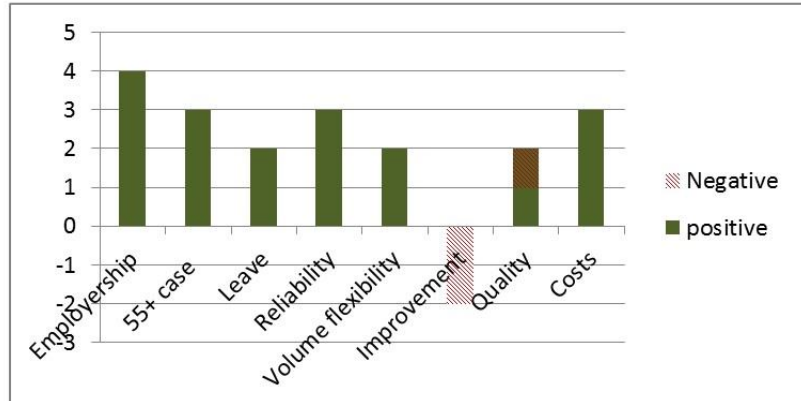


Figure 13: Expected contribution configuration 1

One intervention is most to be right if the previous measure was taken. In the end, by implementing this configuration, the request of Scania formulated in the research origin will be satisfied and the criteria in the strategic platform will be enhanced.

The following table illustrates the advised occupation according to four generalized groups of employees. The green blocks stand for a regular positive advice where the red block stands for discouragement. The orange blocks stand for a suboptimal situation where Scania should not advise this but can also not discourage an employee to work. The occupation in the orange blocks is depending on the actual occupation at the moment. The potential of the flexpool is not so much illustrated by this table because that is mainly based upon ad hoc needs for occupation which can be in every block.

Table 16: Advised roster and occupation

Type of employee	Block 1 6:00-10:00	Block 2 10:00-14:30	Block 3 14:30-18:30	Block 4 18:30-22:30
Regular employee	Green	Green	Green	Green
Part-timer	Green	Orange	Orange	Green
Elder employee	Orange	Green	Green	Red
Flexpool employee	Green	Orange	Orange	Green

Dayshift

This paper expects some resistance in implementing a flexpool because of associated uncertainties. The advantage of this recommended configuration is that Scania is also able to implement the suggested roster and hire part-timers without (directly) implementing a flexpool. One can see this intervention as an addition to the configuration in order to strive towards an efficient planning. Some extensive research on the feasibility of the flexpool could perhaps be the decisive factor.

6.2 Configuration 2

This configuration consists of job-rotation, flex-tact, reallocation of elder employees and the sustainability plant. Although the synergistic effects of these interventions are less than in configuration 1, most decision criteria are also satisfied to some extent.

In order to stimulate the commitment of ambitious co-workers and provide opportunities to learn more from other departments in the long term, job-rotation should be implemented more. Besides, job-rotation enhances Scania's reputation as a good employer, supports the 55+ case, leave, reliability and possibilities for improvement. More job-rotation will stimulate Scania to move towards the ultimatum where co-workers are not bound to a specific department but more organization wide.

More job-rotation is only one step towards the ultimatum. More adaptability towards all types of changing circumstances in production is complementary. A flex-tact that is designed to swiftly adapt towards a changing customer demand or changing occupation will help Scania to produce more efficiently. Besides, a flex-tact will enhance employership, stimulate volume flexibility, quality and cope with the 55+ case at the cost of less production. Scania should develop a couple of scenarios that include minor adjustments to the current standards which do not require physical adjustments to the factory. It would not take a co-worker much time to change the standard he is working, but it would take more time to rearrange the physical elements in the factory. Even though this intervention is merely related to HRM, this paper recognizes its potential to enhance flexibility.

During the kaizen, the group recognizes the 55+ case as the most important subject. Job-rotation and a flex-tact do contribute to this case, but not at a low cost. In order to support this, Scania could reallocate elder employees so that the burden while doing overtime is equal in every department. Besides the 55+ case, it is expected that this intervention will enhance reliability and the opportunity for improvement.

Unfortunately, reallocating elder employees is only a short term intervention because the average age of co-workers will increase structurally. Whenever Scania has the means to its disposal, they can introduce a customized sustainability plant. Even though the investment costs are considered to be high, Scania will cope with all problems concerning elder employees in a sustainable manner and meet every other request for sustainability. Eventually, this intervention will give a large boost toward employership and the 55+ case but will also positively contribute to reliability, improvement capacity and quality.

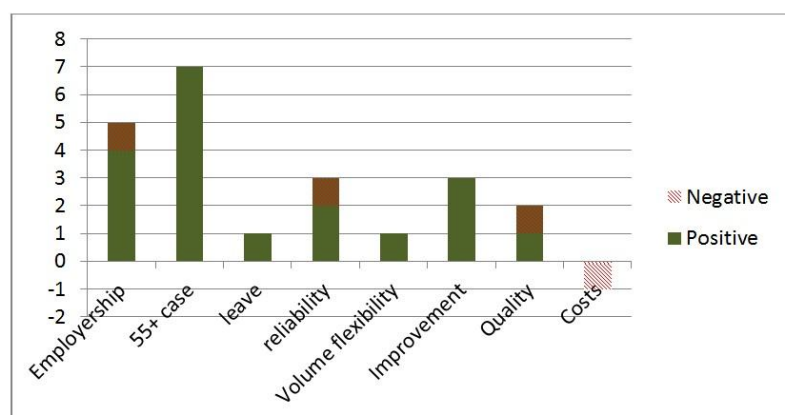


Figure 14: Expected contribution of configuration 2

Both graphs, illustrated in figure 13 and 14, show the expected contribution towards the decision criteria. The green bars illustrate the positive contribution of all interventions combined. The red striped areas show the negative contribution of one of the interventions to the total package. Configuration 1 includes three interventions, where configuration 2 includes four interventions. This means that both graphs should be analyzed and adjusted to the amount of interventions. Configuration 1 contributes rather equally to every criterion except for improvement capacity, whereas configuration 2 mainly contributes to employership and the 55⁺ case. Considering the contribution towards all decision criteria and the expected effort that both configurations require in order to implement, configuration 1 is recommended. Note that it is highly recommended to implement the alternative roster and part-timers, whereas a flexpool is recommended in a subsequent stage.

6.3 Supporting interventions

Two interventions have the potential to enhance the expected positive effects of both configurations namely; reassessment of the function structure and using more E-HRM.

A turbulent period of organizational changes is left behind and prospects of more stable periods are ahead. This is an appropriate time to reassess the function structure of Scania. The rate of change is depending on what Scania wants in the nearby future, ranging from regular annual change with the preparation of flexpool contracts to a reconsideration of all existing functions in production. The expected duration of this intervention is about a year, based upon one staff advisor. Waiting any longer may have the potential to delay implementations in the primary configuration. In order to illustrate this, Scania should have made decisions regarding the rewarding structure for the suggested block roster before they are able to fully implement this. This rewarding structure is included in the function structure.

The implementation of part-timers, the alternative roster and the flexpool comes at the cost of additional administrative efforts. The transition to using more E-HRM will relieve the complexity and intensity of these processes through digitalized payment, digitalized alignment of the offer and demand of competences and sustainable development. A combination of the appealing interventions from case 2 and 3 will suit Scania the best. Case 2 is mainly focused on the sustainable development of core and flex-employees and case 3 is mainly focused on achieving an efficient and qualitative planning. For Scania, all trainings are registered in AFAS, so that match is easily made. The digitalized payment methods however are still missing, which will significantly reduce waste, errors and (labour) costs.

The following figure illustrates the labour flexibility process model including the recommendations. The organizational performance section illustrates the expected contribution of every recommendation. Depending on the actions that Scania is going to take after receiving the recommendations, their situation of labour flexibility is going to change. The final advice of this paper is that Scania should consider following the steps of the model in a couple of years to check if their current and desired situation of labour flexibility are aligned.

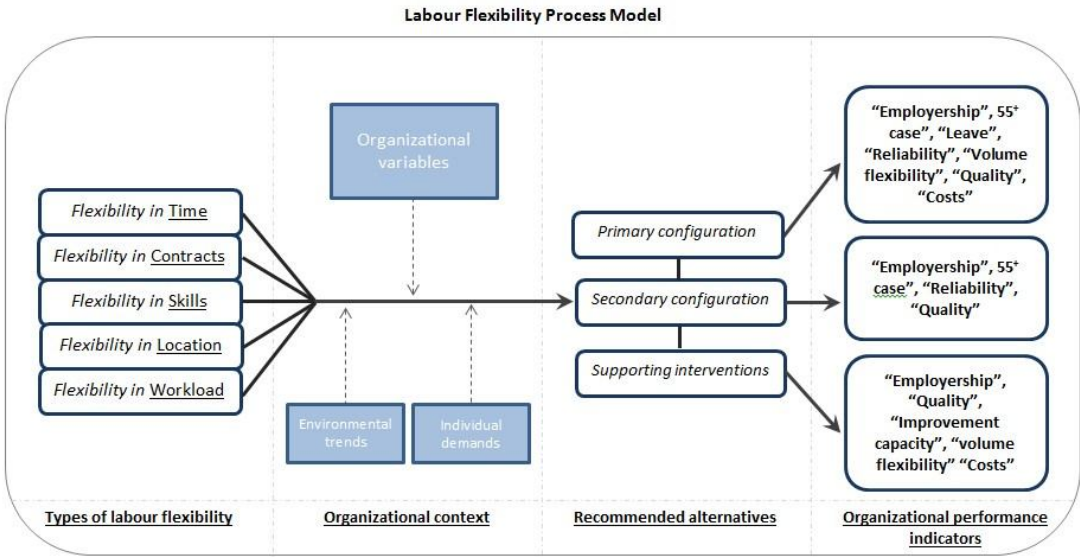


Figure 15: Completed labour flexibility process model

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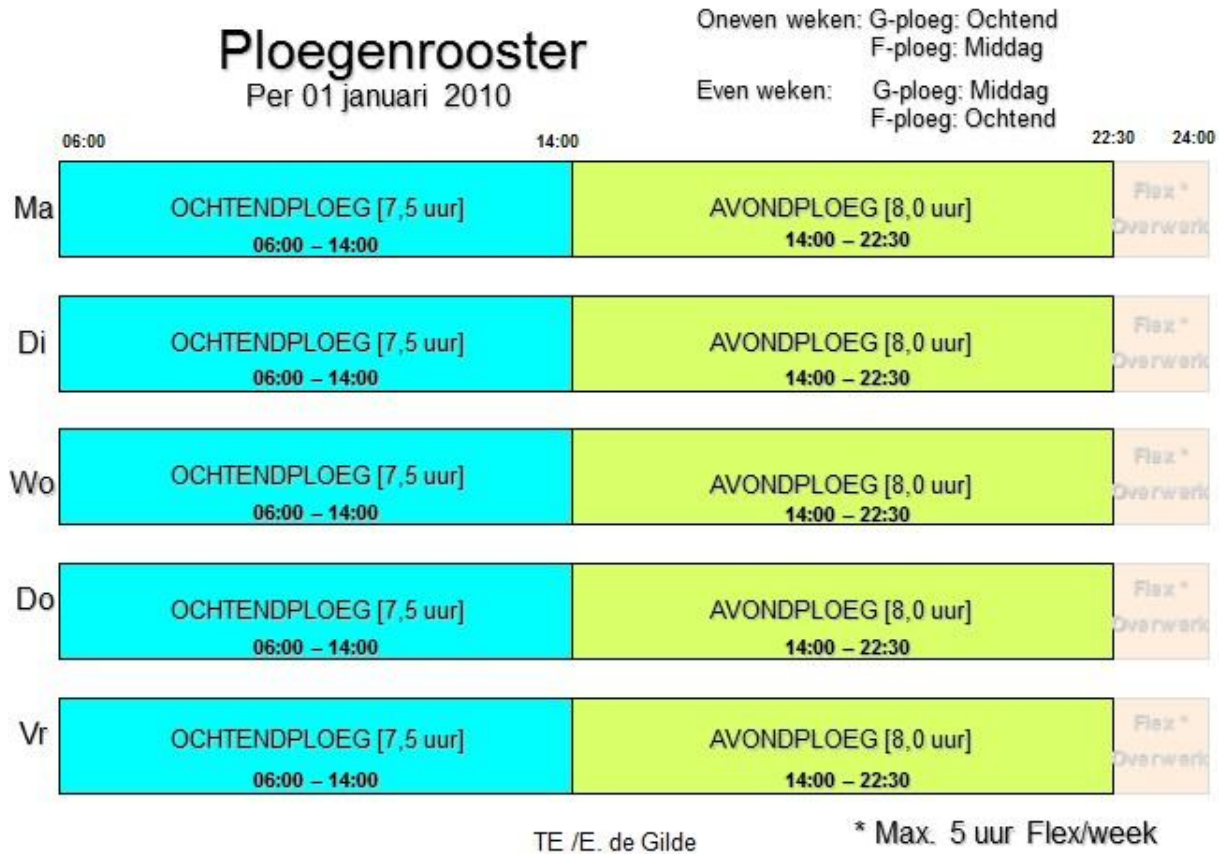
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Appendices

Appendix 1: Current shifts (ploegenrooster)



Appendix 2: Pros and cons of job sharing for the employer and employee

Recruiting & retaining employees

- Job sharing can attract skillful and professional employees who want to work part-time in order to pursue their careers while also having other commitments (Branine, 2004; Crampton & Mishra, 2005; Hall, 1993)
- Job sharing appeals to students, parents of young children and employees near retirement (Hirschman, 2005)
- Job sharing can help retaining experienced, skilled, motivated and vital workers who otherwise would have left (Branine, 2004; Hirschman, 2005), it also increases employee loyalty (Hirschman, 2005)
- Job sharing gives the possibility to contact former employees who retired (e.g. because of age or partial unfit to work) or left for family reasons to offer them a shared job, so that their experience and tacit knowledge returns to the firm

Increased productivity

- Job sharing can boost morale and productivity Branine (2004) stated that 20% of managers felt that job sharers worked harder than their full-time counterparts) (Crampton & Mishra, 2005; Freeman & Coll, 2009; Hirschman, 2005)
- Job sharing workers are more refreshed and have more energy by working less hours, job sharing also reduces tardiness (Crampton & Mishra, 2005)
- Job sharing gives employees a better work-life balance (Freeman & Coll, 2009) (which increases job satisfaction (an important antecedent of productivity))
- Two people sharing a job benefit from each other's skills and knowledge, hence increasing productivity (Branine, 2004; Freeman & Coll, 2009)
- Job sharing increases labor coverage (one partner covering for another) during holidays and other leaves, and also during sick days of one of the partners
- Job sharing gives flexibility of operations (labor availability can be better matched to labor demand) (Branine, 2004)
- Job sharing helps attract and retain high quality and experienced employees that drive productivity (Branine, 2004; Hirschman, 2005)

Decreased labour costs

- Job sharing is easy to implement logistically as less coordination is required from management (the responsibility lies with the job sharing employees) (Branine, 2004)
- Job sharing reduces employee turnover and absenteeism, therefore reducing costs of recruiting and training of new employees (Branine, 2004; Crampton & Mishra, 2005; Hirschman, 2005)

The disadvantages of job sharing for the employer can be divided in two areas: there are increased costs, and the productivity can decrease. Both areas are described below.

Increased costs

- Job sharing can cause a need for additional oversight (conducting administrative tasks and performance reviews for two people instead of one) (Branine, 2004; Freeman & Coll, 2009; Hirschman, 2005)
- Job sharing causes higher costs because some benefits and travel costs have to be paid twice and because two employees have to be trained instead of just one (Branine, 2004; Freeman & Coll, 2009)
- There might be extra costs because job sharing can cause scheduling difficulties (Crampton & Mishra, 2005)
- There are costs to implement job sharing (Crampton & Mishra, 2005)

- Job sharing might be unsuccessful because some managers do not believe in the benefits of job sharing or believe that job sharing violates unwritten rules of corporate culture, hence increasing the chance of unsuccessful implementation and extra costs (Crampton & Mishra, 2005)
- Job sharing might be unsuccessful because it eventually turns out that the job sharing employees cannot cope with each other (Branine, 2004)
- More part-timers or job sharers means more employees working at Scania. This included more basic costs like clothes, closets, performance interviews etcetera

Decreased productivity

- Having to communicate and being accountable for each other can create a whole extra set of extra pressure with job sharing (Simms, 2006), which can lead to stress and lower productivity
- Managers can have problems with decreased control when 'their' employees are job sharing, which might lead to stress and a decreased performance for these managers (Crampton & Mishra, 2005)
- Job sharing complicates the performance evaluation processes (Crampton & Mishra, 2005)
- Job sharing can cause a discontinuity of service (Branine, 2004)
- Full-time employees can have complaints about job sharing workers, which can lead to a lower productivity of these full-time employees (Branine, 2004)
- Job sharing employees can feel less valued than their full time counterparts, which can lead to a lower job motivation and productivity

The advantages of job sharing for employees are as follows:

- Job sharing gives the opportunity to work part-time for whoever wants it (e.g. because of family reasons, age, partial unfit to work or education) (Branine, 2004; Freeman & Coll, 2009; Hall, 1993)
- Job sharing allows continuing working while for example also bringing up children, and thus avoiding a career break (Branine, 2004; Freeman & Coll, 2009)
- Job sharing keeps the employees' skills current, and it develops team skills
- Job sharing employees have more flexibility in time (Freeman & Coll, 2009; Hall, 1993; Hirschman, 2005), hence improving the work-life balance of these employees (Freeman & Coll, 2009)
- Job sharing makes a subsequent transition to full-time work (if desired) easier
- According to Crampton and Mishra (2005) (also mentioned by Branine (2004)), more than 70% of job sharing employees say that they have improved understanding of their work because they can learn from each other (increased training on the job), hence increasing job motivation, experience and career development
- Job sharing workers are more refreshed and have more energy by working less hours, hence increasing job satisfaction

The disadvantages of job for employees are the following:

- Resistance from managers, a difficult implementation and scheduling difficulties (Crampton & Mishra, 2005) can cause stress for job sharing employees, reducing the quality of work life
- Some job sharing might be unsuccessful because it eventually turns out that the job sharing employees cannot cope with each other, thus increasing the amount of stress and reducing job satisfaction for these employees (Crampton & Mishra, 2005; Freeman & Coll, 2009; Hirschman, 2005)
- Having to communicate and being accountable for each other creates a whole extra set of pressure on job sharing (Crampton & Mishra, 2005), which can harm the quality of work life
- Senior managers often view request for job sharing as a "career death" (Crampton & Mishra, 2005)
- Unfairness might be a problem for job sharing employees as some managers think that job sharing employees should not have the same chances for promotion as full-time employees (Branine, 2004)
- Job sharing employees are not able to claim full benefits (Branine, 2004)
- Job sharing employees can feel less valued than their full-time counterparts, which can decrease job satisfaction (Freeman & Coll, 2009)
- Not all employees can afford job sharing (the employee's income decreases) (Crampton & Mishra, 2005; Freeman & Coll, 2009)

- Job sharing impacts future pension benefits
 - For trio jobs: although workload decreases to 67%, it is usual to decrease the wage to only 85% by using some extra 'income possibilities':
 - Make use of free days of older employees ("ouderendagen"): 2-5%
 - Working full time during holidays: 7-8%
 - Taking some of the pension earlier
 - The firm capitalizes the money otherwise used for a reduction scheme

Appendix 3: External interview protocol (Dutch)

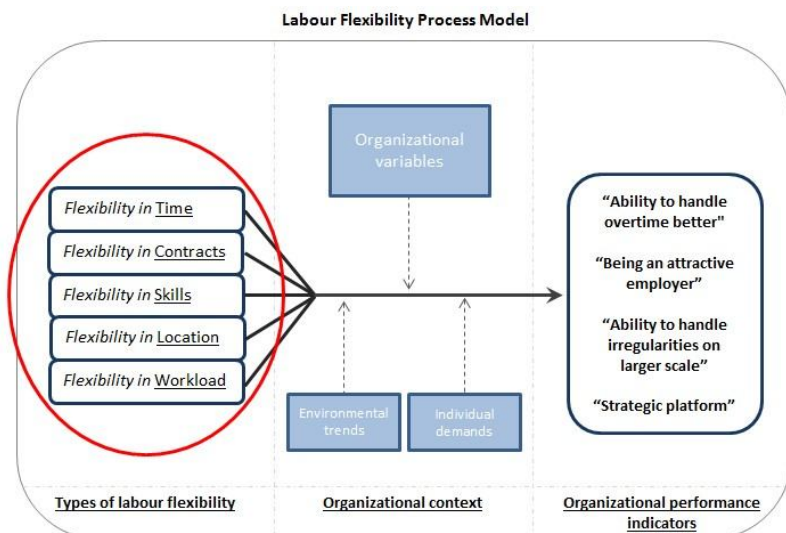
Het traditionele en rigide karakter van werken met een productielijn wordt door vele productiebedrijven erkend. Ploegendiensten en voltijd dienstverbanden stimuleren de effectiviteit van productie, maar bieden tegelijkertijd weinig ruimte voor flexibiliteit. Daarnaast is de arbeidsmarkt onderhevig aan modernisering door middel van een toename van het aantal soorten verloop, parttime werken, het nieuwe werken en alternatieve arbeidscontracten. Een trend die voor productiebedrijven moeilijk is te volgen.

Scania Production Zwolle is in samenwerking met de Universiteit Twente gestart met een onderzoek met als kernvraag: *Welke alternatieve contractvormen en manieren van het inzetten en inplannen van productiemedewerkers kunnen geïmplementeerd worden om de toenemende vraag naar flexibiliteit te kunnen faciliteren?* Het onderzoek wordt ondersteund door een holistisch model. De basis van het model is de huidige en gewenste status van flexibiliteit op vijf verschillende vlakken. Vanuit die basis wordt door middel van creativiteit en specifiek inzicht in organisatie-, medewerkers en contextfactoren toegewerkt naar alternatieve planningsystemen.

In het kader van dit onderzoek oriënteer ik mij ook op deze problematiek bij andere organisaties. Een sample van minimaal 5 kwalitatieve interviews geeft een goed beeld van de problematiek en de manier hoe hier mee omgegaan wordt. Graag zou ik dan ook de onderstaande vragen aan u of een collega van u voorleggen tijdens een interview van maximaal 1 uur. De verwachting is dat een combinatie van HR met een productiehoofd het beste draagvlak creëert. De resultaten van het interview worden overzichtelijk aan u teruggekoppeld zodat u een actueel beeld heeft van de flexibiliteitspositie van uw organisatie. Een leuke eyeopener en tevens goede benchmark voor toekomstige verbeteringen.

Hieronder vindt u het model. De dikgedrukte rode cirkel geeft het aandachtsgebied van het interview aan. Onderstaande vragen dienen als leidraad, zodat u alvast een indruk heeft van de richting van het gesprek.

Alvast bedankt voor uw tijd en moeite.



Interview: flexibiliteit in het plannen van productiemedewerkers

1. Bij Scania Production Zwolle willen we de flexibiliteit van het planningsysteem voor de productie medewerkers vergroten. De grootste beperking waar Scania mee te maken heeft is dat iedere productie medewerker (langs de productielijn) gedurende zijn werktijd aanwezig moet zijn op een specifieke plek en specifieke handelingen moet verrichten. Indien een werkplek niet adequaat bezet is, 'loopt' het proces niet. Bestaat er een vergelijkbare situatie onder de zelfde omstandigheden binnen uw organisatie?
2. Kunt u in een aantal zinnen uw huidige planning systeem omschrijven? Denk hierbij aan het aantal shifts die dagelijks gedraaid worden, de manier hoe de werkplekken gevuld worden, de verschillende typen contracten die u aanbiedt, de verhouding vaste/tijdelijke contracten enzovoort.
3. Op wat voor een manier vangt uw organisatie de afwezigheid van medewerkers door ziekte, verlof, training en dergelijke op?
4. Wat zijn de belangrijkste uitgangspunten voor het kiezen van uw huidige planningsysteem? In andere woorden; waarom werkt u zoals u werkt?
5. Aan wat voor een type flexibiliteit heeft u behoefte? Denk hierbij aan bijvoorbeeld flexibiliteit in tijd, contracten, skills, locatie en/of (fysieke) werkbelasting.
6. Welke acties heeft uw organisatie tot op heden ondernomen om deze flexibiliteit te vergroten, en wat zijn de belangrijkste resultaten van deze veranderingen?
7. Hoe ziet volgens u het ideaalbeeld er uit? Met andere woorden; hoe zou u graag uw huidige personeelsplanning willen zien als u de omschakelingskosten en beperkingen zou negeren?

Appendix 4: Invitation kaizen “flexibiliteit in inzetbaarheid”

Beste Collegae,

Gedurende de afgelopen weken zijn de meesten van jullie door mij benaderd voor het deelnemen aan de kaizen over flexibiliteit in inzetbaarheid. Helaas is deze kaizen, die gepland stond in week 27, geannuleerd wegens de takt-tijd wisseling en de benodigde mankracht aan de lijn. In overleg met Betsie Grube willen wij het daarom verplaatsen naar week 35 (26 t/m 30 augustus), zodat de kwaliteit van de productie kan worden behouden. Bent u bereid om tijdens de hieronder aangegeven dagen deel te nemen aan de Kaizen over flexibiliteit in de inzetbaarheid van onze collega's in de productie?

Maandag 26 augustus: Allen

Aftrap presentaties Sensei, Tom Snuverink, Bas v Sloten / uitleg onderzoeksmodel / Gezamenlijke sessie "huidige situatie"

Dinsdag 27 augustus: SV, TL, MIP, Randstad

Evaluatie huidige situatie, gezamenlijke sessie "gewenste situatie"

Woensdag 28 augustus: Allen

Evaluatie gewenste situatie, gezamenlijke sessie "overwinnen van de obstakels"

Donderdag 29 augustus: SV, TL, MIP, Randstad

Evaluatie gehele KATA model, gezamenlijke sessie "aanbevelingen"

Vrijdag 30 augustus:

Uitloopdag

De aanvangstijd van de Kaizen is iedere dag: **09:30 uur** en zal de gehele dag in beslag nemen (tenzij de situatie zich voordoet dat we eerder klaar zijn). De locatie van de Kaizen is iedere dag: **Sassenpoort**.

Ter informatie:

Scania is onder leiding van Betsie Grube en Henk Compaijen begonnen met een onderzoek naar het verhogen van de flexibiliteit in de huidige planning van de productiemedewerkers. Een mooie gelegenheid voor mij om mee af te kunnen studeren voor de opleiding Business Administration (spec. HRM) in Enschede.

Voor dit onderzoek heb ik een model ontwikkeld dat o.a. de huidige en gewenste status van flexibiliteit in inzetbaarheid in kaart brengt. Dit wordt vervolgens getoetst aan organisatie, omgeving en individuele factoren en omgezet naar alternatieve planningssystemen (zie de bijlage voor het model).

Echter voor het in kaart brengen van de huidige en gewenste situatie wil ik een Kaizen organiseren in samenwerking met Martin Greveling, Bas van Sloten, Randstad, PZ en Productie. Mijn vraag aan u; bent u in week 35 (26 t/m 30 augustus) bereid om deel te nemen aan deze Kaizen?

Appendix 5: Members kaizen



Sensel:
Wilko Dozeman



KL:
Tom Snuverink



KTL:
Bas v. Sloten



RS:
Dorien Assink



PZ:
Joost Doef



TL:
Don Londo



SV:
Bert Ekkel



SV:
Gerrit Paarhuls



SV:
Jan Jongschaap



SV:
Martin Grevelling



Arbo:
John Otten



Arbo:
John Buis



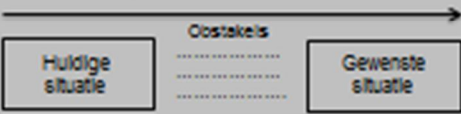
Arbo:
Cecile van de Velde


KAIZEN TEAM

Appendix 6: AD form Kaizen


2

Invulinstructie: A3 sheet algemeen

titel			
Wat Het vergroten van de flexibiliteit in de inzetbaarheid van de productie medewerkers langs de lijn.	Wie Seneel Wilko Doezeman KL: Tom Snuverink KTU: Bas v. Sloen R&D: Dorien Jaank P2: Joost Doef SIV: Bert Dikhal SIV: Martin Greveling (or lid) SIV: Jan Jongechaag (P/V) SIV: Gerrit Paanhuis (nales leer) TL: Don Londo Orbe: Casille van de Velde, John Oean, John Buis	Wanneer Week 35, 26 t/m 30 aug.	Waarom <ul style="list-style-type: none"> - vraag naar verschillende vormen van verlof en parttime werken - aantrekkelijk werkgeverschap in veranderende arbeidsmarkt - Vergrijpende populatie (gem leeftijd 45 jaar) - Gezonde doorstroom medewerkers bevorderen
Hoe Door middel van het KATA model: Vijf typen flexibiliteit staan centraal in de discussie van deze Kaizen, <i>Flexibiliteit in contracten, tijd, skills, locatie en werkbelasting.</i> <div style="text-align: center; margin-top: 10px;">  <p style="text-align: center;">Obstakels</p> </div>			Resultaten Een set van max. vijf aanbevelingen voor het bevorderen van de flexibiliteit in inzetbaarheid van de productie medewerkers langs de lijn. Tevens de basis voor vervolg onderzoek door KL betreffende het onderwerp.



Info: Class Internal DepartmentName/Subject
 Your data here



Appendix 7: Example workabilitymatrix

		Example workabilitymatrix																			
		Jan Janssen	Coco Derkink	Bert Visser	David Leijstra	Bas Westerveen	Gert van Veen	Mohamed Bulut	Ashrat Ramjan	Jeroen Meuleman	Thom Reichart	Tom Dijkstra	Bernard Heupink	Lieke Muller	Jan Pieters	Robin Wesselink	Koen Roerink	Robert Zwart	Annemijn Leferink	Martijn Matena	Murat Duman
Andon 1	Accubak																				
	Station vullen																				
	Tanksteun montage																				
	Tanksteun verzamelen																				
	Reservewiel/tanksteun																				
Andon 2	Elektr. Test/bordes																				
	VM brandstoftanks																				
	Airco & tank mont.																				

	Tank aansluiten																			
	VM brandstoftanks																			
Andon 3	Programmeren										X									
	FA 5.6 links										X									
	FA 5.6 rechts										X									
	Variante 3										X									
	FA 5.7 links										X									
	FA 5.7 rechts										X									
Andon 4	FA variant rechts																			
	FA 5.8 links																			
	FA 5.7 variant links																			
	FA 5.8 rechts																			
	Verzamelen																			
100%		X	Inleren																	