Creativity and Efficiency in a Standardized New Product Development process:

An exploratory case study in a global company

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Date: 2016-06-10
Subject: Mechanical Engineering with specialization in Innovation
Level: Master
Course code: 5TS04E
Program: Innovation through Business, Engineering and Design
Acknowledgements

There are some people that I would like to acknowledge for their support of this thesis. First of all, I would like to thank my tutor Krushna Mahapatra at the Linnaeus University for the continuous feedback throughout the process. This would not have been possible without your support!

One crucial component that should not be forgotten is the case company which allowed me into their company and devoted their time into supporting me in my research. It has been a pleasurable and exciting journey. A special thanks to Rumen Mihaylov and Anne JM Norman for their assistance with everything I needed to conduct my research. In addition to this, I would like to devote a huge thank you to the people that participated in the interviews which resulted in my findings.

I would also like to thank all the people connected to the master program “Innovation through Business, Engineering and Design”, especially my fellow students who I have learned a lot from.

Last, but not least, I would like to acknowledge my family and friends who supported and most of all believed in me! I would also like to extend a special thank you to my brother Oscar for proofreading this thesis.

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June, 2016
Abstract

The purpose of this thesis is to explore how the standardization of a New Product Development (NPD) process affects creativity and efficiency. The research was conducted on a case company through several interviews with employees connected to the process with various experience within the company. Standardization and creativity have in the past been considered to be mutually exclusive. However, recent research shows a connection between them and suggests that they could complement each other. This thesis is built upon a framework of six factors affecting creativity in NPD and has further explored how these are connected to efficiency as well. The research concludes that creativity and efficiency in NPD can work in harmony, complementing and supporting each other by focusing on the content rather than the process.

**Keywords:** Creativity, Efficiency, Lean Product and Process Development, New Product Development, Standardization
Abbreviations

KPI - Key Performance Indicator

LI - Lean Innovation

LPPD - Lean Product and Process Development

NPD - New Product Development

TPS - Toyota Production System
Table of Contents

1 Introduction .................................................................................................................. 1
   1.1 Background ........................................................................................................... 1
   1.2 Problem Discussion .............................................................................................. 3
   1.3 Research Question ............................................................................................... 3
   1.4 Purpose .................................................................................................................. 3
   1.5 Limitations ............................................................................................................ 4
   1.6 Delimitations ......................................................................................................... 4

2 Literature review .......................................................................................................... 5
   2.1 New Product Development ................................................................................... 5
   2.2 Lean Product and Process Development ............................................................... 5
   2.3 Standardization .................................................................................................... 7
   2.4 Creativity in New Product Development ............................................................... 8
   2.5 Efficiency in New Product Development .............................................................. 10
   2.6 Theoretical Framework ....................................................................................... 11

3 Methodology ................................................................................................................ 14
   3.1 Research Approach ............................................................................................. 14
   3.2 Research Design ................................................................................................... 14
   3.3 Research Strategies ............................................................................................. 15
   3.4 Collection of Data ............................................................................................... 16
   3.5 Sampling .............................................................................................................. 19
   3.6 Criteria of Research Quality ............................................................................... 21
   3.7 Ethical Issues ....................................................................................................... 24
   3.8 Analyzing the Data ............................................................................................. 25
   3.9 Criticism to chosen method ................................................................................ 26

4 Empirical analysis ......................................................................................................... 27
   4.1 The Case Company ............................................................................................. 27
   4.2 The Old Product Development Process ............................................................... 27
   4.3 Purpose of Creating a New Process .................................................................... 29
   4.4 The New Process ............................................................................................... 30
   4.5 Team Structure ................................................................................................... 31
   4.6 Standardization ................................................................................................... 33
   4.7 Creativity ............................................................................................................. 37
   4.8 Efficiency ............................................................................................................ 46

5 Discussion and Conclusion ......................................................................................... 60
   5.1 Standardization vs Creativity ............................................................................. 60
   5.2 Standardization vs Efficiency ............................................................................ 61
   5.3 Creativity vs Efficiency ....................................................................................... 61
   5.4 Managerial implications ..................................................................................... 64
   5.5 Suggestions for further research ....................................................................... 64

References ...................................................................................................................... 65
Figure 1: Theoretical framework .................................................................................. 13
Figure 2: Old NPD process .......................................................................................... 29
Figure 3: New NPD process .......................................................................................... 31
Figure 4: Team structure .............................................................................................. 33

Table 1: Interview questions ....................................................................................... 18
Table 2: Observations ................................................................................................. 19
1 Introduction

1.1 Background

Today's dynamic society and rapid development creates a more competitive and diversified global market where customers put higher demands on quality and customization. The never-ending question is “how do we satisfy the customer’s needs”? There are several ways of trying to identify these needs and satisfying them effectively in an organization. Among them is New Product Development (NPD), which has been widely used for decades by many companies all over the world for introducing new products to satisfy customer needs (Tuli and Shankar, 2015)

Or as Liker and Morgan (2006) argues: “In today's hyper-competitive market, excellence in product development is rapidly becoming more of a strategic differentiator than manufacturing capability. In fact, it can be argued that product development will become the dominant industry competence within the next decade.”

Lean, which is the Western World’s interpretation of the Toyota Motor Corporation’s production system that has been implemented and studied since the 1980s, previously almost exclusively focused on the manufacturing process. The focus has since the beginning of the 21th century shifted towards product development and how companies apply the lean approach and principles in their own development process. Since the product development is harder to grasp compared to calculating stock volumes and machine outputs in manufacturing processes, it becomes rather difficult to define what is actually waste and therefore evaluate whether the process is efficient or not (Gudem et al., 2014). This puts pressure on companies to actually know what exactly customer value is and then transform this into an input for evaluating the efficiency of the NPD process. The problem then transitions into performing activities based on incorrect information instead of performing unnecessary activities (Browning, 2003).

The NPD process has a huge impact on the price, not only affected by the outcome as a product design but also by the cost of running the development project. Time-to-market then becomes a crucial measurement of the development process, since decreasing the development time will assure a lower development cost as well as
introducing products to the market while they are still fresh (Tyagi et al., 2015; Millson et al., 2011; Davila and Wouters, 2004).

While there is a need for decreasing the development time, there is simultaneously also an emphasis on knowledge-intensity and project-based work. Temporary forms of collaboration and project-based work are becoming standards rather than exceptions in companies. Together, these aspects create a rather challenging task of utilizing and managing knowledge within an organization (Lindner and Wald, 2011).

An effective way of combining and structuring customer needs, efficiency in NPD and time-to-market is by performing process mapping. This allows the company to analyze the current situation and create a basis for defining a standardized way of working and by doing so increasing the overall performance of the NPD process (Ciarapica et al., 2016). Process mapping is also seen as a tool for increasing the transparency in the organization, sharing how the company is executing the processes and visualizing it for everyone. This transparency then allows the company to work more efficiently, since everyone is on the same page and knows what and when they are expected to deliver and why (Klotz et al., 2008).

The next step after a process mapping is the development and creation of a standardized process. One of the most significant dilemmas is streamlining the process, which is expected to facilitate creativity and innovation (Kondo, 2000). Standardization needs to be done by putting the customer in the center through the utilization of knowledge about customer demands from all involved parties in the NPD process in an efficient way. This is crucial for a company’s survival and competitiveness on the market (Gudem et al., 2014).

Standardization is used to ensure the quality of the outcome of a process. Innovation and standardization are considered to be very important for companies, but they are often seen as they cannot possibly coexist (Kondo, 2000). However, some studies have shown that standardization promotes creativity and innovation (Wang et al., 2016; Leenders et al., 2007; Kondo, 2000).
1.2 Problem Discussion

During the recent two years, a large Swedish-based multinational company has transitioned from a more linear functional NPD to a more cross-functional team approach. The old process was, according to the company, standardized to some extent with a defined process with fixed decision points throughout the year. However, the new process, which they claim is more standardized compared to the old one is designed to account for a more complex world. A reason for the standardization was to move the ownership and the authority to take decisions away from a large management team to a cross-functional team supported by one manager. By introducing a standardized but more flexible process which is steered by the product complexity, rather than the fixed decision points, the company then aimed for a higher efficiency which in the end was supposed to lead to a shorter time-to-market. They had also seen during the recent time that the innovativeness of the company was declining and that the creative part of the process was in some cases lacking. With the new process, the company wanted to allow more time for exploration and being more creative. The company’s vision or mantra for the new process was: “faster, better and happier”.

1.3 Research Question

The case study company has introduced the new cross-functional NPD process to encourage creativity and improve efficiency. Based on this background, the following research question was defined:

How does the standardization of a new product development process affect the efficiency and the creativity in the process?

The objectives are to explore and evaluate how the relevant employees of the company perceived creativity and efficiency to be affected by the newly introduced standardized NPD process.

1.4 Purpose

The purpose of this master thesis is to gain a deeper understanding of the relationship between efficiency and creativity in a standardized NPD process. The results of this study has sustainability implications in that the NPD process
develops products more efficiently and also introduces the perspective of sustainability alongside other aspects at an early stage. A structured NPD process decreases the stress of the employees which enhance the performance of the company in the long-term as well as sustaining the health of the employees.

1.5 Limitations
This case study is based on a specific company and its current situation. There are therefore no guarantees that the results can be generalized even though some similarities might be present.

1.6 Delimitations
This thesis is written in parallel with another student who performed a research on another aspect of the process in the same company. The focus of this thesis is to analyze the effect of the implementation of the new process on efficiency and creativity for those involved in the process, whereas the other research dealt with one part of the process and explored how knowledge management is handled in that part.
2 Literature review

2.1 New Product Development

One prominent critical success factor for companies’ competitiveness and survival is New Product Development (NPD) which through decades has been thoroughly analyzed and accepted in science (Tuli and Shankar, 2015; Akgün and Lynn, 2002; Ernst, 2002; Schilling and Charles, 1998). Even though NPD is considered to be one of the most important factors for a company's survival, the failure rate is very high. Many projects do not even reach the market and 33 to 60 percentages of the ones that do so are not economically beneficial (Schilling and Charles, 1998). According to Shankar et al. (2013) “NPD is an iterative process of gathering, creating and evaluating information for developing new, quality and defect-free products”. Several success factors have been analyzed and identified in research of NPD. These success factors have been divided into two groups: the effectiveness of the process for meeting the customer’s needs and the efficiency of the process itself (Hines et al., 2006).

Research has also shown that 70% of a product's cost is decided in the design phase, which puts even more pressure on companies to make things right from the beginning (Wasim et al., 2013). Researchers have argued that it is not enough to effectively fulfill customer requirements in order to stay competitive, but the companies need to continuously decrease the time-to-market in NPD (Akgün and Lynn, 2002). Martínez-Sánchez et al. (2006) emphasize multifunctional teams for achieving high NPD performance but also argues that the integration of different departments is not needed in all activities. Another layer of this success is the organizational culture that supports innovation and allows failures as learnings and a tool for improvement (Gupta and Wilemon, 1990). A way of decreasing the rate of failure and late stage changes is by widening the collaboration in NPD to outside the company, integrating the suppliers as a part of the development process (Mazzola et al., 2015; Bunduchi, 2013).

2.2 Lean Product and Process Development

During the recent two decades, Lean has become one of the most common approaches for improvements in manufacturing. The word Lean has been widely
recognized from the book *The Machine That Changed The World* (Womack et al., 2007). Lean is the Western World’s interpretation of the principles and ideas that Taichi Ohno developed and described in the Toyota Production System (TPS). Nowadays, research in Lean has shifted towards the development of products and processes, also known as Lean Product and Process Development (LPPD) (Gudem et al., 2014; Khan et al., 2013; Jiunn-Chenn et al., 2011; Liker and Morgan, 2006; Sobek Ii et al., 1999). Wasim et al. (2013) describes it as “Lean product and process development is a systematic approach to the development of products and their associated production processes in a knowledge-based continuous improvement environment, which focuses on the creation of value, and results in the reduction of waste”.

Gudem et al. (2014) argue that companies usually focus too heavily on product attributes and features. They suggest an expansion of LPPD to Lean Innovation (LI), which includes going beyond the utilitarian value and adding emotional value to the product development process. This includes designing a more pleasurable customer experience such as branding, purchasing process, meaning and values, thusly developing radical innovation and creating “blue oceans” rather than competing in “red oceans” where all other competitors are competing with price and product features (Yang and Yang, 2011).

Liker and Morgan (2006) argue that LPPD enables companies to grow faster through the emphasis on a knowledge-based continuous improvement environment. They continue elaborating on this advantage and state that “The ability for a company to learn and improve may well be the most sustainable competitive advantage it has in its arsenal”. Several researchers emphasize that the organizational culture act as the true enabler in several aspects (Pakdil and Leonard, 2015; Bortolotti et al., 2015; Khan et al., 2013; Liker and Morgan, 2006). The organizational culture and its values guide the company in all activities in the everyday work as well as in long term strategic decisions, supporting the organization and creating a consensus, striving towards the company's common goals based on its values (Liker and Morgan, 2006). Nevertheless, Gudem et al. (2013) argue that a company cannot solely rely on its culture and values, but the culture and the values needs to be supported and transitioned into more tangible tools and processes.
2.3 Standardization

The definition of standardization used in this thesis is “a voluntary process for developing specification based on the consensus of companies with their stakeholders” (Wang et al., 2016). Standardization can be performed on different levels from the use of common parts, components to platforms in research and development, production and purchasing (Perera et al., 1999). Standardization is utilized in Lean with the purpose of creating stable and flexible processes with reduced variations and predictable outcomes (Liker and Morgan, 2006).

Appropriate tools and systems need to be implemented in order to support the people and the processes, but it is not the tools themselves that solve the problems, but the people operating them (Liker, 2004). In addition to this Liker (2004) also argues that continuous improvement is driven by the people working in the processes, as they know the most about the process and their needs, and should therefore be developing the standards for improved and predictable results. Browning (2003) states that process modeling increases the process understanding and creates a framework that enables process improvements. Gudem et al. (2014) disagree to some extent and argue that only a part of product development activities is process-like. Ciarapica et al. (2016) argue that the process of NPD is a dynamic process where not all steps are predictable and can be planned beforehand. Similarity, uniformity, continuity of behavior and bureaucracy are encouraged in standardization, which will, according to some researchers, hinder the creation of new innovative ideas, therefore making companies stick to existing products and technologies (David and Rothwell, 1996; Thompson, 1965).

However, other researchers have recently argued that standardization allows companies to create a common way of working and communicating. This enables knowledge management, product and process development and the adoption of new technologies, resulting in an enhancement of the innovativeness or creativity of the company (Wang et al., 2016; Funk and Luo, 2015; Wright et al., 2012). Baud-Lavigne et al. (2012) describe standardization as assisting companies to adapt faster and adjust the supply chain according to new product designs connected to changes in customer demands. Lin et al. (2012) further state that standardization allows companies to record past experience and knowledge and thereby create a
framework for assimilating and applying knowledge. Delivery speed is seen as a crucial measurement in NPD and Wang et al. (2016) show evidence that standardization and innovation improve the delivery speed.

2.4 Creativity in New Product Development

Creativity has been discussed and defined in many different ways by various researchers (Amabile, 1998; Amabile, 1997; Basadur, 1995; Mumford and Gustafson, 1988). Waples and Friedrich (2011) have defined creativity as “a complex, cognitive process that involved finding and developing solutions to novel, ill-defined problems that will enhance the organization in the form of its products, services, processes and procedures”. This is the definition of creativity that has been used in this thesis. Moreover the terms innovativeness and creativity are assumed to have same meaning and therefore used interchangeably.

Creativity is, according to Amabile (1998), divided into three parts: expertise, motivation and creative-thinking skills.

- **Expertise:** Expertise refers to the intellectual space that a person uses in order to explore and solve problems. The bigger the space, the better.

- **Motivation:** Motivation can be divided into two different types of motivation, extrinsic and intrinsic. Extrinsic motivation includes external factors that make the employee perform tasks, as for example financial rewards. Intrinsic motivation is the personal interest and satisfaction of performing a task and is the most important type.

- **Creative-thinking skills:** Creative-thinking skills are connected to how individuals approach challenges and create solutions.

One of the major challenges in product development is reducing variation and at the same time supporting creativity in the development process. This dilemma is handled in lean by using standardization and developing flexible systems through standardizing the lower-level activities (Liker and Morgan, 2006). Creative solutions do not often appear out of nowhere, research has shown that clear objectives and directions without restricting how problems are solved positively affect the generation of creative solutions (Thamhain, 2003; Cummings et al.,
1975). However, other research has shown that if the goals are too specific and concrete, they negatively affect the creativity (Amabile, 1997; Shalley, 1991). These researchers argue that goals need to be focused on the intended approach or even simply on creativity in order to achieve a creative outcome. Another approach was taken by Leenders et al. (2007) towards systematic design methods and evaluating their influence on creativity in NPD. That research shows that the creative performance of NPD teams is depending on a systematic balance of four types of principles:

- **Hierarchical Decomposition**: Most products can be decomposed into several semi-independent components which allow teams to assign tasks to team members and identify existing solutions for them.
- **Systematic Variation**: Generating various solutions in a systematic way based on the decomposition of existing products and solutions.
- **Satisficing**: Creating the most optimal solution is often not possible. Teams need to recognize this and instead agree on a satisfactory solution that fulfills the requirements.
- **Discursiveness**: The NPD process need to be formalized, which supports the team members in pursuing the project while allowing thinking and an iterative approach.

In addition to this, the most dominant factor affecting the creativity in NPD teams is, according to Leenders et al. (2007), the frequency of interaction with one another. The optimal frequency was identified to be relatively low and a frequency which was too high resulted in a decreased creative performance.

A common mistake negatively affecting the creativity in NPD teams is the creation of homogenous teams, which Amabile (1998) illustrates as when “everyone comes to the table with a similar mind-set and leaves with the same”. Stetler (2015) shows that creativity in NPD projects could be maintained on a high level while retaining high expectations of delivery precision and tight schedules. However, the researcher also emphasizes the need for enough time to be spent in idea exploration and learning, as insufficient time spent doing this may harm the creativity of the process. Amabile et al. (2002) and Amabile (1998) have a similar understanding that in some cases high pressure on delivery can result in creative solutions, but in order to foster creativity within the organization, the managers must allocate...
resources that allow incubation and exploration. Amabile (1998) also argues it is not enough that managers focus on *eliminating* the causes that obstruct creativity. There needs to be a conscious endeavor and in many cases a cultural change that supports creativity in order to be a truly innovative company (Waples and Friedrich, 2011; Amabile, 1998).

2.5 Efficiency in New Product Development

Efficiency in NPD refers to the delivery of high quality products considering cost and time-to-market objectives (Naveh, 2005; Flynn et al., 1994). Even though companies need to focus on improving efficiency in their NPD process, making room for learning and even failure boosts the innovativeness of a company (Lawson, 2002). An overemphasis on efficiency runs the risk of negatively affecting sales, production and creativity (Amabile et al., 2002; Lawson, 2002).

Time has been identified by several researchers as the most important factor in efficiency with regards to NPD in most cases even though efficiency in NPD includes more resources than time (Tyagi et al., 2015; Millson et al., 2011; Davila and Wouters, 2004). Within Lean, lead-time is the most crucial measurement for efficiency since it is the root cause of other inefficiencies in the process (Liker, 2004). The next layer of improving lead-time is identifying activities adding value and eliminating activities that do not (Ciarapica et al., 2016; Tyagi et al., 2015; Liker and Morgan, 2006). Other researches emphasize that reduced time-to-market leads to a big competitive advantage which allows companies to exploit market opportunities to a greater extent (Millson et al., 2011; Davila and Wouters, 2004).

Browning (2003) argues that waste in product development is most often associated with doing activities with the wrong input rather than doing unnecessary activities. However, if waste is eliminated on a micro-level within a process it might create waste on a system level (ibid.). This, together with other aspects around LPPD, represents a need for refocusing Lean towards creating value rather than minimizing waste which might even result in adding more activities in order to increase the value (ibid.).
2.6 Theoretical Framework

Based on the literature review, the following theoretical framework (figure 1) has been applied in this thesis to analyze how standardization affects creativity and efficiency through six different factors (numbered 4.1 to 4.6 in figure 1).

2.6.1 Standardization

The literature review has shown some evidence of how the standardization of a NPD process affects creativity and efficiency. This study intends explore to which extent the previous process was standardized compared with the new one and how this might have affected the creativity and efficiency. As a point of departure this thesis uses a framework developed by Amabile (1998) primarily to analyze factors affecting creativity in an organization. She has outlined six factors that can affect creativity in organizations. Amabile (1998) argues that managers can target those six factors to influence the three components of creativity that were mentioned in the literature review: expertise, motivation and creative-thinking skills.

However, creativity and efficiency are not mutually exclusive, but both are affected by standardization. Naveh (2005) argues that most research projects are constructed towards identifying trade-offs between efficiency and innovation (i.e. creativity) in NPD. However, his research shows that innovation and efficiency can work together, for example by facilitating innovation through allowing flexibility in early stages and then standardization and structure in the later stages to gain efficiency. This suggests that the factors affecting creativity are likely to affect efficiency also. Therefore, this thesis has chosen to evaluate all the six factors connected to creativity in NPD and how it might affect the efficiency. Below follows a short description of the six factors.

2.6.1.1 Challenge

It is important that every individual gets assigned the right assignments. Tasks need to be assigned based on the expertise and creative-thinking skills connected to the intrinsic motivation of the individual. When all these components are combined in a task, the task itself then needs to be challenging to a certain degree for the employee so the task is neither overwhelming nor boring (Amabile, 1998).
2.6.1.2 Freedom

If employees are given autonomy regarding the process or how to reach a specific goal it increases the creativity. When employees are given freedom on how they approach a task it more effectively utilizes their expertise and creative-skills as well as ignites intrinsic motivation with a sense of ownership. Specific goals have shown to often increase the creativity. However, it is important that goals maintain stable, thus being meaningful and not something that is defined just because it has to be (Amabile, 1998).

2.6.1.3 Supervisory Encouragement

Intrinsic motivation is indeed crucial for the creativity. In order to maintain this passion, employees need to feel that their work matters to the organization. Even though financial reward is a way of showing appreciation, they are not the most suitable way for maintaining intrinsic motivation. Managers often dampen creativity by either not acknowledging creative efforts or facing them with skepticism. It is impossible to know beforehand which ideas that will evolve to innovative solutions, which is why managers need to encourage teams to keep working on their ideas. Another important role as a manager is being a role model, digging into tough challenges and encouraging collaboration and communication (Amabile, 1998).

2.6.1.4 Resources

Time and money are the two resources that mostly affect creativity. As mentioned earlier, short timeframes can enlighten creativity and in order to do so, a project often incorporates another aspect that pushes the creativity even further together with the time limit. An example of this could be crisis-prevention of any sort which then in many cases forces the team to be creative. However, most often limited resources such as fake or unreasonable deadlines and unspecified or limited founding kill creativity. Teams need to know what resources the company actually can afford to put into the project (Amabile, 1998).

2.6.1.5 Organizational Support

Not only managers need to show their encouragement to the teams. The entire organization needs to support and foster creativity. Organizational enablers that
foster creativity are information sharing, collaboration, minimizing governance and creating a positive environment where the people around you are excited about their jobs (Amabile, 1998).

2.6.1.6 Work-Group Features

The design of a team is significantly affecting the creativity. Groups need to consist of supportive individuals with diversity in types of background, perspective, expertise and creative-thinking skills. The team members need to share excitement in the task, have a willingness to support the group and have a good ability of recognizing the individual’s unique contribution to the team (Amabile, 1998).

Figure 1: Theoretical framework
3 Methodology

3.1 Research Approach

When doing research, there generally are two different fields of research approaches which determine the view upon the research and the connection to theory. Deduction is the approach wherein the researcher studies the theory and the already performed research within a certain area and uses this as basis for deducing a hypothesis. The hypothesis describes a phenomenon that the researcher wants to explore and prove its validity through collection of empirical data. The other alternative is to perform an inductive research, where the researcher collects empirical data and then creates a new theory based on the findings (Bryman and Bell, 2015).

Many case-studies employ an abductive research approach, which has elements from both the inductive and deductive approaches. The purpose of abductive research is taking theory into a real life context and trying to explore and understand the phenomena (Ong, 2012). Through experiments and social interactions, abductive research tries to refine and understand the phenomena on a deeper lever. This type of research may contradict or find shortcomings of already existing findings and research and thereby contributing to developing existing theories or creating new theories (Alvesson and Sköldberg, 2009).

Since this thesis was based on a case-study, the abductive research approach was the most suitable one, as it allows for an exploration of the meanings and the interpretation of actions of individuals in a social context. As a part of an abductive research approach, existing theories were used in this case-study to create a greater depth of understanding. In addition, direct observations that were a part of the research are also considered to be of an abductive nature.

3.2 Research Design

Research design is the framework of how the research is going to be executed. There are five overall types of research design. These are: experimental design, cross-sectional design, longitudinal design, case study design and comparative design. There are then a variety of different subsections within each design
developed to fit the particular research. For further explanation of the different types of research design see Bryman and Bell (2015).

Intrinsic case studies have the primary interest of understanding one specific case, both on a holistic level as well as the details of how it operates. An exploratory research approach is often used in intrinsic case studies since the researcher wants to explore a little-known phenomenon, focusing on the depth of understanding using a single case. The weakness of this type of research is that it is often not possible to generalize the results (Johnson and Christensen, 2012).

The main focus of this research was to in depth explore and describe a phenomenon using a specific case and the intrinsic exploratory case study is a suitable way of doing so. The meaning of events was explored as phenomena of human behavior rather than generalized assumptions based on statistics. Another layer adding to the breadth of the understanding of the social context is that this thesis is written in parallel with another thesis studying the same process.

3.3 Research Strategies

There are two main types of research strategies and collection of data: qualitative and quantitative. A mixture of the two types of data is in some cases used but the research strategy is either in a qualitative or quantitative manner. Quantitative research focus more on hypothesis and theory testing through statistical analysis whereas in qualitative research there is a search for meaning and gaining a deeper understanding by studying the totality of a phenomenon (Johnson and Christensen, 2012).

“Qualitative research is used to describe what is seen locally and sometimes come up with or generate new hypotheses and theories (Johnson and Christensen, 2012, p. 33).” When little is known about an area, qualitative research is applied to discover and extend the knowledge around the chosen topic. It is also commonly used to further explore the experiences and perspectives of those working in the context of the researched area. When using the approach of qualitative research, it allows the researcher to further elaborate into arising topics and explore them in depth. Qualitative researchers view human behavior as something that is
continuously changing and therefore they are usually not interested in generalizing beyond the particular humans studied (Johnson and Christensen, 2012).

This research is concentrated on understanding the underlying meaning behind the individual's actions and interpretations of the studied phenomena. When doing so, there is a need for digging deeper into certain areas and following up on the reasoning behind opinions and decisions. Therefore, a qualitative research strategy was used in this paper. Interviews and observations were a big part of the collection of data in this thesis in order to create a holistic view of the research area. This research focuses on one company and its current situation and culture and therefore will not create any generalizable results, which is often the case with qualitative research. In qualitative research there is also room for exploring new approaches to an area during the journey, which was the case in this research.

3.4 Collection of Data

When collecting data one needs to differentiate between primary and secondary data. Primary data is new data which the researcher has collected by various methods. Secondary data is data that is gathered from other sources that already has been documented and compiled. Examples of secondary data could be other researchers’ findings or statistical databases (Krishnaswamy and Satyaprasad, 2010). Collecting data can be done using several techniques, such as interviews, surveys, questionnaires, experiments, observations, focus groups and so on. For further explanation of techniques for collecting data see Bryman and Bell (Bryman and Bell, 2015). Below follows a short explanation of the chosen techniques and the reasoning behind the decision of the chosen ones.

3.4.1 Interviews

An interview can be defined as “a two-way systematic conversation between an investigator and an informant, initiated for obtaining information relevant to a specific study (Krishnaswamy and Satyaprasad, 2010, p. 99).” Interviews can be sorted into five different categories: structured or directive interviews, unstructured or non-directive interviews, focused interviews, clinical interviews and depth interviews.
3.4.2 Observations

Observation means being present to see and hear what is happening. Observations can be differentiated between participant observation, non-participant observation, direct observation, indirect observation, controlled observation and uncontrolled observation.

3.4.3 Organizational Documents

In all organizations there can be an enormous amount of information, which may be documented into different files and archives. Some organizational information is public such as annual reports, mission statements, press releases and so on. Others, such as policies, process charts, memos, business newsletters and so forth are only limited to within the company (Bryman and Bell, 2015).

3.4.4 This study’s Collection of Data

OneSearch, EBSCO, Business Source Premier and Emerald online databases were used for collecting secondary data within the research area. Keywords such as “new product development (NPD)”, “lean: innovation, product development, process development”, “process mapping”, “standardization”, “efficiency” and “creativity” were used during Boolean database searches. Using this technique resulted in the finding of several well matched articles. After reading the abstracts, the amount of relevant articles could be decreased to a reasonable amount. When going deeper into the reference list of the particular articles, even more relevant articles could be identified, and the iterative process continued.

In-depth focused interviews, also known as semi-structured interviews, were used as a format for the interviews performed during the research. The reason behind this was enhancing the understanding and creating a depth in interpretation of the reasoning and attitudes of the respondents towards the research topic. The researcher was well aware of the nature of interviews, wherein the interviewer and respondents always influence each other to some extent. Through this constant awareness of the interaction between the people involved in interviews, its impact on the data could be reduced. All interviewees were sent the interview questions before the interviews so they could prepare themselves. Table 1 below shows the
interview questions that were used during the research and the connection to the theoretical framework (figure 1) that the researcher wants to explore in the case company. The numbers in the right hand column in table 1 represents the numbers in the figure 1.

<table>
<thead>
<tr>
<th>Interview question</th>
<th>Connection to theoretical framework</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Would you please describe you and your assignment in the company?</td>
<td>1</td>
</tr>
<tr>
<td>2. Can you describe the current product development process in the company?</td>
<td>1</td>
</tr>
<tr>
<td>3. For how long has the process been in operation?</td>
<td>1</td>
</tr>
<tr>
<td>4. What is your role and experience in the new process?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>5. What is good/bad about this process? Are you satisfied with it?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>6. For you, what is creativity in a new product development process? Does the existing process support creativity? How and to what degree?</td>
<td>2, 4.1-6</td>
</tr>
<tr>
<td>7. For you, what is efficiency in a new product development process? Does the existing process support efficiency? How and to what degree?</td>
<td>3, 4.1-6</td>
</tr>
<tr>
<td>8. How did the old process look like?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>9. Did you participate in the old process? What was your experience?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>10. What was bad/good with the old one? Were you satisfied?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>11. Did the old process support creativity? How and to what degree?</td>
<td>2, 4.1-6</td>
</tr>
<tr>
<td>12. Did the old process support efficiency? How and to what degree?</td>
<td>3, 4.1-6</td>
</tr>
<tr>
<td>13. Why was the old process changed to the current one? (in case the above question did not show the answer)</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>14. How much is the current process standardized i.e. defined roles, procedures, tasks and deliverables?</td>
<td>1</td>
</tr>
<tr>
<td>15. Is the current process going to be improved in near future?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>16. How do you think the improved process will look like or how would you like it to look like?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>17. Who is responsible of continuously improve the process in the future?</td>
<td>1</td>
</tr>
<tr>
<td>18. What do you think will be the important success factors in the improved process?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>19. What types of challenges do you see with the improved process compared to the old one?</td>
<td>1, 2, 3, 4.1-6</td>
</tr>
<tr>
<td>20. How and to what degree do you think the improved process affects creativity?</td>
<td>2, 4.1-6</td>
</tr>
<tr>
<td>21. How and to what degree do you think the improved process affects efficiency?</td>
<td>3, 4.1-6</td>
</tr>
<tr>
<td>22. Do you have anything else you want to add to our discussion?</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Interview questions
During a period of more or less three months, March-May in 2016, the researcher was situated in the company and attended to different types of meetings. This is considered as a combination of direct and participant observation. This research was performed in parallel with another researcher which resulted in that some data was collected collaboratively such as observations and data explaining the social context of the phenomenon studied. Although we participated in the same meetings and were situated side by side in the company, we took notes and wrote individually in our papers regarding all findings. Table 2 below shows the number of meetings and their durations.

<table>
<thead>
<tr>
<th>Classification of meeting</th>
<th>Number of meetings</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Functional department meeting</td>
<td>11</td>
<td>45 minutes</td>
</tr>
<tr>
<td>Process mapping meeting</td>
<td>1</td>
<td>180 minutes</td>
</tr>
</tbody>
</table>

Table 2: Observations

One big benefit of performing the research in an organization and doing a case study is the access to organizational documents. The researcher got access to the company’s internal communication portal with documents published for all employees to access and use.

3.5 Sampling

A sample should be a representative part of a bigger population. Research is often done using samples, as by studying a specific phenomenon and smaller amount of samples a generalization of the bigger population and its reaction in a certain context is generated. Generation of a representative average of a population is done in two different ways, either with probability sampling or with non-probability sampling. Probability sampling is done using random samples, by doing so enabling statistical analysis and generalization of the findings. Non-probability sampling is done by selecting the appropriate samples for the intended research which then means that some units in the population are more likely to be chosen considering the scope of the research and its intended purpose (Bryman and Bell, 2015).
3.5.1 Purposive Sampling

Purposive sampling is a type of non-probability sampling. It is a strategic way of sampling cases/participants which are relevant for the research. The sampling is done in a way so that there are differences in key characteristics of the samples considering the context of the research. There is always a certain goal in mind when performing purposive sampling. The samples are chosen considering their relevance to the topic and the researcher’s understanding of the phenomenon (Bryman and Bell, 2015).

3.5.2 Snowball Sampling

A type of purposive sampling is snowball sampling. As the name implies, snowball sampling is an approach within which the chosen samples lead to other samples. For example, when interviewing different respondents, the discussions and their networks are leading towards new relevant contacts (Bryman and Bell, 2015). Berg and Lune (2014) argues that an appropriate approach to locate subjects with certain attributes and characteristics necessary for a study is using snowball sampling.

3.5.3 Sampling of this study

The performed research was aimed towards exploring the underlying reasoning in the case company around the subject of the thesis. Therefore, it was almost necessary to use a purposive sampling with the snowballing approach. Interviews were conducted using individuals from roles that were involved in and connected to the NPD process. Furthermore, throughout the interviews new relevant contacts and areas to explore for creating a better holistic view of the topic was obtained.

The research consists of interviews with eight people from seven different business areas within the organization. The experience ranged between 1-14 years of product development in the company. Three out of eight interviewees are females. In these interviews there are seven different roles represented of the process, ranging from managers for a business area to specialists contributing to the development teams and even a person from the process development team. On top of that, many of the interviewees had experience in different roles of the process and the organization.
3.6 Criteria of Research Quality

According to Bryman and Bell (2015), the three most important criteria for evaluating the quality of business and management research is reliability, replicability and validity. Even though these criteria are important, they are mostly applicable when evaluating quantitative research. The quality of a qualitative research is preferably evaluated according to two other perspectives: trustworthiness and authenticity (ibid.).

3.6.1 Trustworthiness

Trustworthiness is divided into four categories, wherein each of them corresponds to a criterion of research quality in quantitative research. Credibility is correlated to internal validity in quantitative research. Transferability can be compared with external validity in quantitative research. In quantitative research you are often faced with the question whether or not you are reliable, whereas in qualitative research dependability is preferably questioned. Objectivity is often mentioned in qualitative research, evaluating to what degree the researcher's values has influenced the research, and its equivalent in qualitative research is confirmability (Bryman and Bell, 2015).

3.6.1.1 Credibility

In social reality there are several possible aspects and credibility is the acceptance of others regarding the concluded interpretations in the researcher's findings. Establishing the credibility is done using good practice in the field and sharing the findings with the studied individuals and company, confirming the findings with the social world (Bryman and Bell, 2015).

3.6.1.2 Transferability

This quality criterion covers the aspects of how well the context and the social world researched is described and detailed. The reason for this is to ensure that the research can be performed in a similar context or even the same context but in another time (Bryman and Bell, 2015).
3.6.1.3 Dependability

The quality criteria of dependability is based on the framework of how well the procedures, selection of participants, interview transcripts, data analysis and so on is presented thoroughly. The evaluation is then done using this framework; looking into how well this has been followed and if the decisions made and the theoretical inferences are justified. This is an aspect that has not been widely popular as a pervasive approach to validation in qualitative research within business and management. The reason is simply due to the extensive amount of data and databases generated in qualitative research (Bryman and Bell, 2015).

3.6.1.4 Confirmability

Complete objectivity in research is almost impossible. However, a researcher should be able to show that he has acted in good faith and not allowed personal values or theoretical tendencies influence the research and its findings. By doing so, the researcher then establishes a degree of confirmability (Bryman and Bell, 2015).

3.6.2 Authenticity

The quality criterion of authenticity raises the question of the wider political impact of the research and can be divided into: fairness, ontological-, educative-, catalytic- and tactical authenticity. Are the different viewpoints of the social setting represented in a fair way? That is the question the researcher needs to manage in order to achieve a high degree of fairness. The ontological side of authenticity reflects upon whether the researcher helps the participants and the company to better understand their social surroundings. Another part of the authenticity is supporting the involved in the research to better value others perspective in their social context, which is considered to be the educative part. The catalytic authenticity is considering if the researcher has acted as an enabler for members to take control of their situation and change their circumstances. The last aspect of authenticity, i.e. tactical authenticity, is the evaluation whether the researcher has supported the members with the necessary information and tools to be a part of the actions needed (Bryman and Bell, 2015).
3.6.3 This study’s Criteria of Research Quality

All findings and data collected were shared and reviewed together with the company to ensure that a correct interpretation of the social setting was done. The findings were also compared with the already existing research findings in earlier projects within the field. These research projects also served as a base for understanding and following the good practice of research within this scope. This research was also performed parallel with another co-researcher, which allowed a cross-checking strategy to be established. All these aspects together enhance and ensure the credibility of the research.

In order to establish a reasonable degree of transferability, an in-depth description of the case company and their culture was provided in the empirical data. By describing the case company and its culture there is a possibility for other researchers to identify similar case companies with corresponding social settings and thereby perform a similar research.

A research diary has continuously been written and updated during the project. In this diary all dates, procedures and how the research was going forward were noted. All data during the project has in most cases been collected in different forms such as notes and recordings, thus minimizing the risk of errors in the collection of data. This, combined with the interview transcripts, allows the thesis to maintain a considerably high degree of dependability as a qualitative research.

In qualitative research it is rather hard to prove that the researcher has acted in good faith. In order to ensure that research was performed in good faith the researcher has during the thesis work cross-checked the procedures during several occasions with different persons. These persons; company supervisor, tutor, examiner, co-researcher and classmates have also evaluated whether or not the researcher's personal values and theoretical tendencies has been put aside. This secured the confirmability of the research.

The fairness of this thesis has been ensured by covering different roles in the NPD process, not only directly in the NPD teams, but also specialists contributing to the team and other roles indirectly connected to the NPD process. The researcher has also used participants with different types of gender, experience, years employed in
the company and so on. The main reason for this case study was to further explore and try to understand how the employees work together in the process and how it affects its outcome, thereby covering the ontological side of authenticity. By further elaborating the understanding of the findings presented in the paper, it also allows the research to embrace the educative side of authenticity. This thesis lifts new challenges and perspectives up to the surface and by doing so, enables the company and its different stakeholders to use the material as a basis for further discussion and exploration. Lastly, as a part of this thesis, the researcher has collected scientific backgrounds and findings as part of the research. By doing so, the researcher supports the company with scientific research which is then necessary to take this further into a more tactical perspective.

3.7 Ethical Issues

Johnson and Christensen (2012) describe ethics as a collection of principles and guidelines that help us uphold the things we value. They have also defined research ethics as “A set of principles to guide and assist researchers in conducting ethical studies (Johnson and Christensen, 2012, p. 33)”. Diener and Crandall (1978) have then broken down research ethics into four areas:

- Harm to participants: Harm can be present in the form of injuring physical, as well as personal development and self-esteem, causing stress, stunting career prospects and further employment or “inducing subjects to perform reprehensible acts (Diener and Crandall, 1978, p. 19)”
- Lack of informed consent: Participants in the study need to be thoroughly informed about the purpose of the research and the different events they attend to as a part of the research. The participants can then actively make a decision on whether they want to participate or not based on the given information.
- Invasion of privacy: The informed consent can also be connected to the invasion of the participants’ privacy because it is the framework within which the participants can evaluate if their privacy has been invaded. The participants also need to be informed and encouraged that they are free to choose if they want to answer certain questions or participate in event connected to the research.
Deception: This area covers the aspect where the researcher needs to present the research as what it is. It is not allowed to present the research as something else than what it is in order to get both personal and academic benefits.

3.7.1 This study’s Ethical Issues

The study has been performed with a high degree of deliberateness regarding the participants and the case company as a whole. Participants of the study and the supervisor from the case study company have been given information about the research and its findings. The main objective when approaching people within the organization during the collection of data was to explain the research and its intent as thoroughly as possible, thereby minimizing the risks of lack of informed consent and deception. The researcher encouraged the participants to neglect questions which they were not comfortable answering and therefore making sure that there was no invasion in the privacy. In addition to this, the interviewees were informed that their identity will not be revealed in the research.

3.8 Analyzing the Data

One of the biggest challenges with qualitative research is handling the excessive amount of data that usually is collected and displayed. The next step, which becomes even more challenging, is analyzing this data correctly by seeking an analytical path through the richness of data (Bryman and Bell, 2015). A very common approach to data analysis in qualitative research is interim analysis, which is a cyclic process. The researcher collects data, analyses the data and then identifies new necessary areas of data collection. By using this method, the researcher pursues a successive path towards deeper understanding of the research topic. By collecting data more than once and from different perspectives, it creates well-grounded theories and hypotheses, developing further throughout the research (Johnson and Christensen, 2012).

3.8.1 This study’s Analysis of Data

The iterative process of data analysis in qualitative research has been consistently present during the research. Every day, new interpretations and perspectives of the subject to be viewed upon emerge. The focus was always to refine and develop a
deeper understanding of the researcher’s conclusion. Nothing was seen as absolute, as there is always room for further interpretation and exploration.

3.9 Criticism to chosen method

As stated previously in the methodology chapter, generalization of the findings in a qualitative case study is almost nonexistent. This is the major scientific drawback with this type of research. Furthermore, a very delicate issue in qualitative single case study research is disregarding subjective interpretations and conclusions. This aspect was minimized using the co-researcher of this research project as a critical evaluation method. The meaning of this research is also to expand the understanding of the social environment on a deeper level, which is the main reason for qualitative research. This understanding could go way beyond the researcher’s sole interpretation since there was a second researcher closely connected to this research paper involved. Another issue with this type of research is the absence of quantifiable measures. All findings are based on interpretation connected to the background of the research in terms of literature and experience of the researcher. Another drawback with the chosen iterative approach in types of the intrinsic exploratory case study and snowball sampling is the risk of ending up in a dead end. When following all of the side tracks and new perspectives, it is easy to get lost in the research. The key for success was having the purpose of the research in focus, always connecting back to the purpose of the research for guidance.
4 Empirical analysis

4.1 The Case Company

The company was founded in Sweden and has its headquarter in the country. It is a global company producing, sourcing and selling products all over the world. The organizational structure is built upon a matrix constellation incorporating the different functions of the organization. Cross-functional teams are then created with participants from different functions. The individuals in each function report to a functional manager while they are all working in different projects in different business areas. The office consists of many open landscapes with people organized according to their product groups. The company has 8 business areas which then are divided into 20 business units in total, each unit with its own responsibility for certain types of product groups. There are then 55 development teams spread among these business units with the amount of teams depending on the complexity of the business units and their range.

4.2 The Old Product Development Process

Before the new process with cross-functional teams was introduced, there was an old process which was more or less driven by one entrepreneurial product developer who developed an idea through stepwise input from all departments, which facilitated interaction with all involved roles. Since all individuals had different competence profiles and backgrounds, it resulted in that some product developers would focus on certain areas whereas others focused on other areas of issues. The product developers worked in isolation with developing a product idea with product purpose, needs, style, sales volumes and so on based on the overall company plans. The development of the idea and design were in some cases done in collaboration with a designer. When a product developer had a product idea, the range manager would conduct a design review. After the product design was established, the development phase of the project would start. Throughout the development phase there were often more than 50 people involved from different divisions in contributing to the project. The way the project was pursued and information was shared was through big meetings with people connected to the project. On top of that, the people contributing to this project were also at the same time involved in many other projects. After a certain amount of development,
resulting in clear requirements and design sketches, the project was presented to a management team for evaluation.

The company was set up in such a way that during certain predefined dates throughout the year the company had several decision gates with a group of managers from different departments, often above 20 people. In these decision gates, the management team evaluated the NPD projects from different perspectives of the organization, giving opinions regarding the project as a whole. In some cases important decision makers did not participate in these decision gates, which then resulted in that projects did not get some critical feedback which would be needed at that stage of the process. Regardless of the complexity of the projects, they had all the same decision gates. One drawback with the decision gates was the long time between the first and final evaluation of each project which then could result in a shift of focus or new insights coming in too late in the project. In these decision gates the projects either got an approval to continue with finalizing the development or a decision that some aspects of the projects needed to be re-evaluated. When the product with all its requirements was fully specified it went through a last decision gate with the management team with the aim of approval to continue with the execution of the product and all aspects of it. At some of these final evaluation meetings the project proposition was declined and the development team was forced to go back in the process. The execution phase with production, preparation for sale start and marketing was not previously a part of the defined NPD process but was of course done accordingly. The old NPD process is illustrated in figure 2 below.

“You clearly recognized a shift of focus when you recently had the top manager of the company talking about for example lowering prices or increasing quality. The focus of the decision gates then shifted towards these recently highlighted areas.”

(Interviewee 6)

“I don’t think the old one was good at all. It was not clear in decision-making. I had late opinions in the process that delayed the process. Many people were giving input and it was hard to define what was really a decision and not. It was not right from the beginning. We failed many times later in the process because we had not secured certain things in the beginning. I don’t think it was better.”

(Interviewee 5)
4.3 Purpose of Creating a New Process

The benefits of the old process were the simplicity as well as a good cultural fit with products developed by entrepreneurial and innovative product developers. Another good part was that managers and decision makers were seeing prototypes and products, which they love! However, the company is now operating in a complex world with increased requirements on the products in terms of legislations, environmental issues and so forth together with a more complex organization. Moreover, the company has ambitious plans for growth and expansion. The company believes that the old process was not scalable with the setup of that time. It needs to be more flexible and account for a more complex world with different requirements and markets. Together with the flexibility comes the speed. The company could not secure that the projects were running in an appropriate speed according to the project complexity. The old process was not favorable for the company with regards to securing the product quality and doing things right the first time. One reason behind the rework was that the customer’s perspective was not always secured in all steps of the process. By analyzing the voice of the customer, the company got a wake-up call that customers perceived that the company’s innovativeness was in decline. With the new process, the company aimed specifically towards four categories of improvements: reducing the time-to-market, increasing the overall process efficiency, delivering more innovative products and developing outstanding employees.

“The worst thing was that we did not have a good team which was taking care of the offer as a whole and all the different perspectives of the design. We had each of the stakeholders more or less fighting for their cause with the support of their functional managers. It sometimes resulted in a lot of internal negative energy because everyone was more or less fighting for their KPIs. We were much more separated and not united towards a common goal.”

(Interviewee 1)
4.4 The New Process

In 2013 the company launched its new cross-functional development process which consists of five people in the middle pursuing the project with the support of several contributors, also known as specialists. There is one manager connected to the project who is the decision maker responsible for evaluating if the project is developing accordingly. The new process allows teams to be more flexible regarding time and the steps that are necessary to go through or even skip, while continuously being supported and evaluated by a manager. Since the manager is often well informed on the status of the project, the decision points then work more as a check-up to see if the project is deviating from the project scope. Consequently, major changes in the design or the requirements do not occur in the middle of the process, which was the case in the old process. The NPD team is responsible of covering all the aspects of the organization, from supplier to customer. Each person is responsible for a certain part of the value-chain. However, a person in the team may not have all the answers for all questions in his/her area of responsibility. They are therefore supported by other contributing roles. By doing so, the company creates a structure which covers many aspects of the value-chain, increasing the possibilities for doing things right from the beginning and thereby decreasing the need for rework. The process is now as a whole connected, from the beginning of creating a project scope to the end with execution and follow-up, with the cross-functional team being responsible for the whole project journey.

The process starts with a project scope which is created based on a 1-2 year strategic plan that the business unit as a whole has created together. An organizational five year business plan which the top management has created is the basis for the strategic plan on a business unit level. The project scope describes the objectives for the project, both in abstract words but also in sales volumes and other quantitative measurements. The project scope is then evaluated by the manager connected to the team to ensure that the project is aligned with the overall business plan and defined within certain frames. A kick-off is then done together with a management team connected to that business unit and with the approval from them, the project moves into the exploration phase of the process. In this phase the team explores how the project could meet the requirements specified in the project scope and evaluate it from the different perspectives of the team. When the team has
created a concept they ask for approval from the manager to move further in the process. After the approval, it is time to create a product design and again, after the product design is finished, another approval meeting occurs with the manager. With an approved design, the team proceeds with fully developing the product and all aspects that need to be considered and specified connected to the product. With a fully developed business case it is time for the final approval in the process of the manager. When the team has a full business case approved, it is time for the execution phase with production, marketing and everything that needs to be settled before sales start. As the last step of the process, there is a follow-up which is done approximately six months after the sales start where the team evaluates whether the project fulfilled the requirements specified in the project scope and take learnings from the project. Figure 3 below illustrates the new process in the company.

“I feel that we are contributing a lot and we are able to unleash more of our potential as a company to influence our business and to create designs and products that are really unique.”

(Interviewee 1)

“You have much more stakeholder involvement at any point so the product is always evaluated from more perspectives than only one and the chance to miss something is smaller.”

(Interviewee 3)

Figure 3: New NPD process

4.5 Team Structure

The cross-functional NPD team in the middle consists of product developer, project coordinator, retail responsible, supply responsible and technical responsible. The product developer is the person in charge of the project. The project coordinator's role in the team is keeping track of all the tasks, decisions needed to be taken and that the team is following the process accordingly. A retail responsible has the responsibility of ensuring that the project fulfills the perspective of meeting the customer in different sales channels. The supplier perspective is taken care of by
the supply responsible. All technical issues related to the project are covered by the technical responsible. These roles are supported by different specialists who work with several projects in parallel. The competence of these specialists is taken into the team in different tasks during the development according to the process. The specialists connected to the NPD team are: designer, requirement engineer, construction engineer, packaging engineer, supplier capacity responsible, market responsible, range responsible and market demand responsible. A designer is working together with the product developer with designing the product, but in some cases a designer is not needed where the product developer are capable of covering that aspect on his/her own. The designer can both be an internal employee but it can also be a collaboration with an external designer. Legislations and standards all over the world are covered by a requirement engineer, securing that the product fulfills all these requirements. A product with all its necessary parts are constructed and digitally assembled by a construction engineer. In order to ship and sell all products, they need to be put into packages of different types and sizes, a responsibility which falls on the packaging engineer. A supplier capacity responsible works closely with the different suppliers to the company and ensures that the right capacities and techniques are in place. The market responsible is in charge of ensuring that all products are marketed properly regarding different types of pictures, product descriptions and so on in different sales channels. A range communicator has the responsibility of making sure that the product fits into their respective range and how they are communicated to the market. The market demand responsible is evaluating the market demands connected to sales volumes, ensuring that the right quantity is produced for the different sales channels. Figure 4 below illustrates the team structure and its connections.
4.6 Standardization

First of all, all the interviewees expressed that they are satisfied with the new process compared to the old one:

“There were not much positive things in the old process because I see all the benefits in the new one.”

(Interviewee 3)

Researchers have recently argued that standardization allows companies to create a common way of working and communicating, enabling knowledge management, product and process development and the adoption of new technologies, thereby resulting in an enhancement of the innovativeness of the company (Wang et al., 2016; Funk and Luo, 2015; Wright et al., 2012). Improving lead-time is done through identifying activities adding value and eliminating activities that do not (Ciarapica, 2016; Tyagi et al., 2015; Morgan and Liker, 2006). In order to do so, the company needs to work accordingly. The new process needs to become a natural way of working for the employees and it is not until then you can start to improve:
“Of course it is a changing world so I think that the most important thing is that everyone is running accordingly and it is first then that you can give input to the process. Otherwise you might then say ‘this is too complicated’. I would then ask people if they have read it and the answer is ‘no’, then of course it is complicated. You need to take the time, you need to work with it and then you can see where the improvement possibilities are. We need to dare to work accordingly; sometimes we are fast into evaluating before we have really tested it out. It is always easy to find new ways to destroy it.”

(Interviewee 6)

“All in all I think the process provides us with a clear structure of how to work and has become a base in a natural way for our way of working. Because the more natural it becomes to work according to the processes the more focus you will have on the content instead. I also think that when we now have implemented this we should not be too fast in changing the process. Because then we need to go back again and learn and develop. We should be rather careful actually with making too big changes. However, we should always question how we can do things even more fast and efficient; that is the mindset we need to have.”

(Interviewee 8)

4.6.1 Old process

The old process was, according to the majority of the interviewees, standardized in such a way that it limited the flexibility:

“There were these big meetings which were very un-flexible as they were normally once a month. If you were not ready to that day you might have to postpone the project another four weeks if the management team were not able to put together a extra meeting.”

(Interviewee 6)

When you started as a new employee, it was not clearly explained and understood:

“Actually when I started as a product developer it was not explained to me, it was not clear. It was more that I understood that I had to deliver to certain decision points and those were steering the process at that time. I knew that I needed to get that kind of information at that time, it was not so much described what the input and the output was and what was happening in that certain step of the process.”

(Interviewee 5)

The old process had a well imprinted rhythm in the organization:

“People were used to have a certain rhythm in the NPD development. It was like a pulse of the company and they knew naturally by hearth what the next step of the process was. This made things very smooth for a lot of roles to execute their actions and to finalize their work.”

(Interviewee 1)

4.6.2 New process

The definition of standardization used in this thesis is based on processes designed to collectively cover the consensus of the company (Wang et al., 2016). This is reflected in the current NPD process of the company since there is more stakeholder involvement at any stage of the process. The interviewees describe the new process as quite standardized:
“You have much more stakeholder involvement at any point as such that the product is always evaluated from more perspective than only one. The risk of missing something is smaller.”

(Interviewee 3)

“The new process is very well described in most roles. Now it has been a simplified version that has been worked through but it is very well described. It is easy to understand what is happening when and what the responsibility every have. It is more not to get stuck. You cannot use the process as a manual you need to use it as a support, I think it is a different mindset.”

(Interviewee 5)

“If you look on the NPD team members it is very structured and mapped in a very good way. The overall levels are clear and very well described.”

(Interviewee 6)

A common mistake negatively affecting the creativity in NPD teams is the creation of homogenous teams (Amabile, 1998). The same people are working in the same teams and business areas for a long time, which might affect creativity negatively. Many interviewees mentioned that every NPD team is developing products differently, but still following the same process as the other teams:

“I am working in two teams and in “my team” which I have been working in since I started we are doing it in one way but even if we are following the same process other teams are doing it in different ways.”

(Interviewee 4)

If everyone was working in the same way, it would make the tasks of the specialists easier:

“If I were a specialist I would find it easier if we were working in the same way. Now it is really different, even in the ways we write notes for the meetings and all this small things, that still for me as a receiver would make it a lot easier of everything looked the same.”

(Interviewee 4)

Some business areas appear to not fully follow the defined team structure in the process:

“I know that in some business areas they do not have full NPD teams. Then I know that in some areas they have teams responsible for the development phase and another team responsible for execution. I think it looks probably very different in different business areas depending on how they have tried to organize in the smartest way.”

(Interviewee 5)

This, together with other aspects around LPPD, represents a need for refocusing Lean towards creating value rather than minimizing waste, which might even result in adding more activities in order to increase the value (Browning, 2003). There is a good example in the company where the absence of standardization in a certain task creates frustration and inefficiency:
“The product sample process is a mess, it is one of the main frustrations I have had in this role. At one period I spent like half of my time running after samples and working with samples, finding out that the samples was wrong with some detail that was changed. That is not standardized and it would really help us.”

(Interviewee 2)

There is a need for simplifying and making the process less complex:

“I think we still have potential to simplify it with not too many steps and decision points, it is a bit complicated right now. I think we have some potentials but the purpose was also to make a process that is flexible for the different product areas. So it is not standardized for everything.”

(Interviewee 5)

The same interviewee also states that the company should recognize the best way and then implement it in the whole organization, where the complexity of each business area should steer the amount of NPD teams:

“I think that probably should the best way be identified and that should then be applied in every business area. The complexity of each business areas should then be reflected in number of NPD teams. In some areas you have higher complexities so then that will require more teams or more specialists. If you have lower complexity you have different challenges, maybe you have a higher amount of projects that you need to run. There are different driving points from different areas that we need to consider.”

(Interviewee 5)

Only a part of product development activities is process-like and predictable and can be planned beforehand (Ciarapica et al., 2016; Gudem et al., 2014). Some interviewees state that the company needs to be careful to not standardize to a too great extent and doing things a little bit different in the business areas:

“I think it is necessary to do things a little bit different in the business areas because of the materials and the long-term projects that some business areas are working with.”

(Interviewee 4)

“We are a learning company, I think we need to be open and learn and secure that we in a smart way can work with complex projects as well as the more “easy fixes” like changing color or pattern on already existing products.”

(Interviewee 6)

“I think that you can standardize up to a certain point and just having the process in place on a fairly basic level is a kind of standardization. If you move too far into standardizing in the details i think you lose a little bit of ownership and creativity.”

(Interviewee 8)

Continuous improvement is driven by the people working in the processes, who know the most about the process and their needs, thereby developing the standards for improved and predictable results (Liker, 2004). Six out of four interviewees stated that everyone connected to the process in one way or another was responsible for improving the process:
“I think we have a lot of responsibility in that, because we know our tasks the most.”
(Interviewee 2)

“I think it is everyone’s responsibility. Taking an active part of it, lifting it up to the process team that is sitting there to support as well with trainings and things like that.”
(Interviewee 6)

Whereas the last two interviewees believed more in an external partner being in charge of the development:

“The responsibility lies on the functional managers and the whole matrix. I also believe that in the future we will have a team of few people in charge of maintaining the process.”
(Interviewee 1)

“The responsibility of improving the process should not at the business areas, because if the business areas take a lead in that it would then start drifting away from one common process.”
(Interviewee 3)

4.7 Creativity

Creativity is divided into three parts: expertise, motivation and creative-thinking skills (Amabile, 1998). The findings of this thesis show that the case company knows the importance of one of the parts, motivation. In fact, they even recognize personal, also known as intrinsic in the literature, as the type of motivation needed. In addition to this, some interviewees mentioned motivation as an important factor and its connection to the process:

“People need to get the competence of how to use the process and what the possibilities of the process are and to navigate and feel comfortable in the frame of the process. The second thing is the motivation, this is extremely important; that people get the right level of personal motivation.”
(Interviewee 1)

“Securing a good start will kick me even more to do something that is really good at the end. You need to secure that you have the drive and right competences based on the needs for the projects that you are working with.”
(Interviewee 6)

“In the past you had meetings where you discussed the running and upcoming range. We are all working with delivering our products so it is of course very interesting and very funny to know what is coming 2-4 years ahead. This is a big motivator and energy giver.”
(Interviewee 7)

Creating a positive environment where the people around you are excited about their jobs is important for fostering creativity (Amabile, 1998). The attitudes among the employees towards the new process have been an issue:

First of all, that all the roles are really adopting the process. I still see resisters, I still see people who, after one and a half year with the process ongoing, still claiming “it was still better when we did it the old way”. So first of all, people need to be onboard. They are not many but still, they are there. If we have one person like this into the project everything can be affected.
4.7.1 Old process

The main comment connected to the old process was that it was driven by one product developer:

“It was one main player who was actually setting the conditions for the project from one perspective only and that was usually the design perspective. So everything was about design and expression and not so much about function and comfort which are more important for the customer.”

(IInterviewee 3)

4.7.1.1 Challenge

Some good ideas were not successfully developed when one role was responsible for covering several aspects of the product:

“Probably we put a lot of time in the creative part, but in some cases we paid the price of the creativity later in the process when it was not possible to do those things.”

(Interviewee 6)

“Sometimes a product which was very good in terms of price but then bad in quality hit the market, so all aspects of the product were not secured.”

(Interviewee 3)

It is not always that easy to completely fulfill all requirements from all perspectives, as creativity needs to be present throughout the process and the potential for more improvement is still there:

“You need creativity even if you have decided a concept; you need to be creative in the solutions to get to that concept. Then you need to be creative in your material choices to reach the lowest price. To there is creativity that need to happen throughout the process to be able to reach the goal with all the different aspects of the product. I think that is where you need to be creative to be able to reach all of those aspects. I think the existing process allows creativity but I am not sure that we have understood or are using the right tools to fully utilize creativity.”

(Interviewee 5)

4.7.1.2 Freedom

Clear objectives and directions positively affect the generation of creative solutions without restricting how problems are solved (Thamhain, 2003; Amabile, 1998; Cuming et al., 1975). The old process allowed a product developer to operate with more freedom:
“I was satisfied in the old process as well. It gave us a bit of freedom, you started to learn a lot and then you built up your setup in how you wanted to do thing.”

(Interviewee 6)

The old process was also more driven by ideas:

“One benefit with the old process was that it was more idea driven. If I came up with an idea I just put it on the table, then we would discuss whether it was a good idea or not. It was not so clearly described what is going to be delivered from a business dimension.”

(Interviewee 5)

However, this freedom did sometimes result in preconditions which limited the success of the project, since it did not cover all aspects of the organization:

“If you limit creativity to look, then maybe the old process were supporting creativity; with a product developer working on his/her own, disconnected from the other roles and then presenting a design and fighting for it. In many cases this was also creating preconditions for not having a success on the market. A truly creative product is when you incorporate all different perspectives of the organization in the design with no exceptions.”

(Interviewee 1)

Creativity in NPD projects can be maintained on a high level under certain circumstances while retaining high expectations of delivery precision and tight schedules (Stetler, 2015). The findings in this report point towards that this was not the case in the company’s old process:

“If you are short on time you tend to get more into a production mode and do as we have done before.”

(Interviewee 2)

4.7.1.3 Supervisory Encouragement

The old process was built on management taking decisions:

“The old process was more based on that the management should take decisions in certain steps.”

(Interviewee 8)

These decisions were not always taken at the right time and the way in which information was handled was not clear:

“I was a part of the old process and was frustrated quite many times. Due to that decisions were taken much later than it was supposed to. The information handling was a weak side which was creating confusion and I would say even stress into the team members.”

(Interviewee 3)

People felt closer to the products before, which meant a different level of engagement regarding product development:

“Maybe the old process gave more people a closer connection to the products because there were more people involved in the presentation of products at certain decision points. Today there are
functions that feel a bit disconnected because they are not part of these kinds of decision points. It was a different level of engagement around product development.”

(Interviewee 5)

Similarity, uniformity, continuity of behavior and bureaucracy hinder the creation of new innovative ideas, making companies stick to existing products and technologies (David and Rothwell, 1996; Thompson, 1965). Managers need to encourage teams to keep working on their ideas (Amabile, 1998). Thinking outside the box was not encouraged in the in the old process. If creativity happened it was welcomed, but not structured:

“I do not think that the old process supported creativity. It did not have the create concept phase at all. We were very much doing the same over and over again. We applied new patterns and colors on existing products; it was not so much developing new solutions. It was not encouraged through the process, it was more if it happened that I was at a supplier and I came up with a good idea. There was of course an opening to do that. But we were not structured in terms of planning and all the preparation work.”

(Interviewee 5)

4.7.1.4 Resources

Several interviewees mentioned that time were not spent exploring in the old process:

“We did not invest so much time in the beginning of the process to do a bit more research and try different tracks. This was the reason for later delays and loops which was cause projects to creep or to not succeed at all.”

(Interviewee 3)

“Previously we were inefficient and not securing the right competence from the beginning, getting it right from the beginning and we did not spend time on the creative part. We did not explore or generate so many new ideas; it was the same of the same all the time.”

(Interviewee 5)

“We had a lot of discussions when we started that we did not get enough time in the creative phase. I think it comes down to that if you have an already existing action plan and sales start dedicated, if you then starts to count backwards then it is natural that we have to cut maybe in the beginning of it before you can start to run.”

(Interviewee 6)

The usage of every role’s time in the old process was not that efficient:

“I think as the efficiency became lower I think that the creativity most likely suffered more times in the past as it does today. You had to spend more time keeping bigger meetings, more time finding people for decisions.”

(Interviewee 7)

4.7.1.5 Organizational Support

An interviewee stated that the old process was not really customer focused:

“It was a different way of working; it was more range-focused than customer-focused.”
Another interviewee described it as:

“The old process was not created to develop products; it was created to deliver projects.”

(Interviewee 7)

4.7.1.6 Work-Group Features

The old process did not have one strong NPD team:

“In the old process I think what was missing was one strong core team were people worked closely together with very good understanding of each other’s agenda, limitations and opportunities.”

(Interviewee 1)

“It was very much to go into the creative phase, product developer and designer and then starting to hand over to the team. Depending on the skills and the knowledge of the product developer you might have lost some of the information that was needed for the brief to the designer, but that is of course very much depending on the knowledge that the people had.”

(Interviewee 6)

This created an unbalanced prioritization among the different aspects of the product:

“I think for the time being a good process, but then we all realized that we are not looking from all perspectives on the products. Sometimes we would be very good in the design and then really weak in the price. Sometimes we would be really good in the price but the really bad in the quality.”

(Interviewee 3)

The big meetings were sometimes creating frustration:

“Meetings were more or less structured in a way to tick off lists and so on, which was probably not that really motivating for all the people sitting in those meetings. People were scheduled and they were supposed to be there. I think that was what trapped us quite sometimes when you get people frustrated; why do I need to be here?”

(Interviewee 6)

4.7.2 New process

Exploration is allowed in the new process, but all roles are not closely connected to the projects, which results in communication challenges.

4.7.2.1 Challenge

Several interviewees have mentioned that the new process has resulted in that communication becomes a challenge, which affects creativity:

“You are not that updated. Maybe you do not catch the smaller things that you could be really creative about. I hope that I am going to be more aware of the creative part in developing the product because that also helps me. In a lot of cases we have for example a target customer in mind. In many cases I have looked into notes from meetings just to get inspiration instead of really asking somebody. Those small details that the NPD team might already has thought about is something that
could support the creativity, a lot of those things can just slip by somewhere on the road. Those things are super hard for us to catch because we are not a part of the process.”

(Interviewee 2)

4.7.2.2 Freedom

Clear objectives and directions positively affect the generation of creative solutions without restricting how problems are solved (Thamhain, 2003; Amabile, 1998; Cuming et al., 1975). The project scope in the new process allows the NPD team to proceed with clear limitations:

“In the scope we define clearly what we want to achieve described in words on a more abstract level. Together with the abstract part we also define specific goals in numbers, for example how many pieces we would like to sell. This is a very clear definition and this allows us once it gets approved to move forward without much hesitation, following very clear borders and limitations in our decisions.”

(Interviewee 1)

“I think the new tool that we have gives us more the frame that we need to do it in a certain way and it also creates creativity because now we actually have a good time plan that we can work on.”

(Interviewee 4)

However, research has shown that too specific objectives might affect creativity (Amabile 1997; Shalley 1991). An overemphasis on efficiency runs the risk of negatively affecting sales, production and creativity (Amabile et al., 2002; Lawson 2002). This does in some cases happen in the case company, with project scopes being too detailed, thereby limiting the creativity:

“There are so many perspectives into product development that you need to consider but still not lose out on some freedom. When we have been putting down too many details too early it has been hard to think outside of the box. Then I think we could probably be more creative throughout the process if we stay in that kind of possibility driven atmosphere and not start with limitations and structure.”

(Interviewee 5)

“I think that the frames that we are given within the process do not hinder us from doing a good job with creativity. If we choose to see the process as a hindrance or containing too high walls so to say, that becomes a problem. That is more a mindset issue for us.”

(Interviewee 8)

The NPD teams should not be focusing fully on the process:

“I think that we should not be totally process driven because then we will lose the creativity of doing it our own way.”

(Interviewee 4)

“Developing our ways of working sits a lot in focusing less on the structure and process and more on the different roles of the NPD teams and how they want to work within the frames that the process gives. Because the more natural it becomes to work according to the process, the more focus you will have on the content instead; spending less time discussing the process and instead focusing on the actual task.”

(Interviewee 8)
4.7.2.3 Supervisory Encouragement

Sometimes the specialists connected to the NPD team feel a bit monitored:

“I do not like the feeling of having the NPD team check up on my tasks and responsibilities because I have that covered. But then of course they need to be aware of it but sometimes it feels like they try to check up on you in an away. In the end we do not want them to come in and try to fix our issues, we fix our problems because that is our expertise.”

(Interviewee 2)

Managers need to support and encourage teams to keep working on their ideas (Amabile, 1998). Good planning allows a better dialogue with your management:

“If you plan in a good way when you have your project portfolio you could have much better dialogues with your management, securing that you have the time for the creative phase.”

(Interviewee 6)

There is a lot of responsibility put on the NPD team:

“A positive thing i think with the new process is that you get a bit more power as a NPD team. You have a good control of your project portfolio which you did not have that much before. The management need to understand and give the responsibility to the NPD team so it is clear from the start what we want to do with the scope and the ambitions and that we clarify all the questions there.”

(Interviewee 6)

“The NPD teams have a huge responsibility but also freedom to act within certain frames, described in the scope of the project and the different roles. They have the mandate to really drive a project from A to B together with the sponsor, but as long as you are within certain limits the possibility to take decisions and run yourself is huge. I like that approach a lot, we believe in people and believe in their abilities to take decisions and develop and that I think is reflected in the process.”

(Interviewee 8)

4.7.2.4 Resources

Faster time-to-market was in the beginning seen as something that might negatively affect creativity:

“In the beginning I thought that the faster time-to-market would negatively affect creativity. But now I see that in reality they allow more time where needed and actually extend the exploration if the project is complex. We are from the beginning aware of the complexity of the project and is thereby allowing more time and resources”

(Interviewee 1)

The new process allows more time for the specialists to focus on their task, releasing energy for being creative working with tasks rather than solving issues:

“Perhaps the new process gives us more time to think. It gives you more time to be creative. Freeing up time and mental energy to be creative rather than running after things and coordinating things, minimizing those hustles where you instead of being creative of solving the problems could be creative in our task.”

(Interviewee 2)
Resources need to be allocated in a way that allows incubation and exploration (Stetler, 2015; Amabile et al., 2002; Amabile, 1998). Research has shown that innovation and efficiency can work together, for example by facilitating innovation through allowing flexibility in early stages and then standardization and structure in the later stages to gain efficiency (Naveh, 2005). The new process allows the company to focus on covering as many aspects of the product early on, thereby increasing the efficiency and also allowing the team to explore possibilities more freely:

“Most people are happy with the exploration, the time when you apply creativity to explore and research. There is a dedicated time for that and then you are not afraid that you are kind of losing time during that. It is really well invested time from the beginning.”

(Interviewee 3)

“A success factor is the allowance of idea creation, efficiency that it is adapted to every products timeline, that you have the right competences and spend the right time from the beginning; which of course will result in a higher quality throughout the development and execution.”

(Interviewee 5)

“I think the new process support efficiency because you have more people involved from the start which means that they can in a better way put demands on each other and have the dialogue in an early stage.”

(Interviewee 6)

Teams need to know what resources the company actually can afford to put into the project. Deadlines and goals need to remain stable, thus being meaningful and not something that is defined just because it is necessary (Amabile, 1998). It is important that the company allows appropriate time in the process and that the manager puts realistic timeframes:

“It is up to us to use the process in a way that we have the time and possibility to create the creativity and also for me as a leader to put a realistic timeframe in this. If we are really squeezing a project from a time point of view and does not take the time it needs then of course the creativity is limited.”

(Interviewee 8)

4.7.2.5 Organizational Support

Organizations foster creativity through information sharing, collaboration and minimizing governance (Amabile, 1998). The new process is supporting creativity in the projects:

“We have quite good guiding questions which are helping you to consider if you explored all the possibilities or if you should connect to a specialist who has more knowledge connected to a new material or type solution.”

(Interviewee 3)
Standardization assists companies to adapt faster and adjust the supply chain according to new product designs connected to changes in customer demands (Baud-Lavigne et al., 2012). There are more resources and people connected to the exploration in the new process, trying to grasp the customer needs:

“The process support creativity since there is allocated activities connected to exploring. This is exactly when you as a specialist or whoever else member of the team are able to look around. Our focus is always the customer so everything starts from there, what is the input from the customer, what is the input from our colleagues sitting in retail and what are the trends on the markets. It is up to the team to decide how to be creative.”

(Interviewee 3)

The energy goes down when you are forced to fill in things in the system that are uncertain or irrelevant at the moment:

“In one way I can feel that if you are forced to fill in some things the energy actually goes down. Should I then fill in something that is not real or could I leave it blank and take it in the next step? In one way I can feel a little bit in that sense, maybe not the creativity but the energy will definitely go down if this is popping up all the time.”

(Interviewee 4)

Researchers argue that process modeling increases the process understanding and creates a framework that enables process improvements (Browning, 2003). It is important that everyone connected to the process has a deep understanding of it:

“An important success factor is understanding the process, not only the NPD team but also the specialists and the management. The more you understand the more possibilities you see. The key is not to limit yourself, which comes when you have started to use it and can navigate within the frames. That comes with experience but it also comes with mindset.”

(Interviewee 8)

4.7.2.6 Work-Group Features

The definition of creativity used in this report is “a complex, cognitive process that involved finding and developing solutions to novel, ill-defined problems that will enhance the organization in the form of its products, services, processes and procedures” (Waples and Friedrich, 2011). It seems that some of the employees in the company believe that creativity is only connected to a small part of the process, the exploration:

“More people are involved in the process, this is a good thing. Before in our old process it was only one function, which was the product developer who were doing the exploration side. So it was just one point of view into the whole creativity part. Now it is five points of views onto the creativity.”

(Interviewee 3)

“The biggest difference compared with the old process is that you as a product developer is not alone in the creative phase. Securing a good start will kick me even more to do something that is really good at the end.”
One dominant factor affecting the creativity in NPD teams is the frequency of interaction with one another, an optimal frequency has been identified as being relatively low, as a frequency which is to high results in a decrease of the creative performance (Leenders et al., 2007). In the new process, more people are involved, but only when needed:

“The way I see it, the process is designed in a way so that you tunnel all focus in the development process, with each and every role’s competence in mind. So that you are only involving the persons that are needed to take certain development step. Instead of involving, for example, the whole project team.”

(Interviewee 7)

Teams need to consist of supportive individuals with diversity in types of background, perspective, expertise and creative-thinking skills (Amabile, 1998). The new process has a diverse team that from the beginning considers several aspects of the product. The involvement does not stop there; it remains throughout the entire process:

“You have much more stakeholder involvement at any point as such that the product is always evaluated from more perspective than only one. The risk of missing something is smaller.”

(Interviewee 3)

However, one interviewee expressed the need of extending the involvement of the design department:

“With the competence the design department has they could probably lift the create concept phase and they could even facilitate and help the NPD team to challenge and lead those parts in the process. I think when it comes to creativity throughout the process they could also contribute.”

(Interviewee 5)

4.8 Efficiency

4.8.1 Old process

The characteristics of the old process were slow decision-making in the teams as well as within the management:

“I think that the lack of efficiency in the previous version was due to that you had a quite complex setup of teams with tricky constellations.”

(Interviewee 7)
4.8.1.1 Challenge

The biggest challenges in the past were the slow decision-making process and the involvement of too many stakeholders:

“The big challenges we had in the past was the slow decision-making process and that there were ’too many chefs in the kitchen’.

(Interviewee 7)

The challenges may remain the same as before, but nowadays, they are more visible compared to how it was in the past:

“I do not think there are maybe new challenges. It is more visible now and we can question other things that is not related to our process, actions that we cannot sort.”

(Interviewee 4)

“It is rather that the current challenges were perhaps challenges in the past as well, but as we had bigger challenges we did not notice them as frequently. Communication was most likely a challenge in the past but you did not notice it as well as you do today when it is perhaps the biggest bottleneck in today’s process.”

(Interviewee 7)

4.8.1.2 Freedom

The previous process was not flexible in types of timelines and decision-making:

“Before we were doing standardized timelines and we had fixed weeks for decision-making, so that was not helping efficiency.”

(Interviewee 5)

Administration was not a big part of the old process, either:

“It was not as much administration before as the new process we have now is fuelled with or has become. The feeling is that before we had less and more efficient administration than today.”

(Interviewee 5)

4.8.1.3 Supervisory Encouragement

The decision-making in the old process was complex:

“The decision-making was more complex in the old process. It was a full management team in all decision points; they contained a lot of people. It was more preparing the presentation and it took a lot of time. The old process was more decision-making driven than actually working with the content as such.”

(Interviewee 5)

The directions from the management were not always clear in the past:

“In the past you could work towards one target and then at the decision point you changed direction. Then perhaps you have invested several weeks on a direction that is no longer valid.”

(Interviewee 7)
4.8.1.4 Resources

There were many meetings in the old process with many participants:

“A challenge with the old process was of course all the meetings. As I was not only connected to one team I felt like that I was almost in meetings all the time. Sometimes I would say that those meetings were not really efficient either.

(Interviewee 6)

“More or less everyone gathered into every meeting which meant that you had persons like me being involved too early and not really contributing or gaining anything from participating, the efficiency of each individual's time was not that good. You moved slower because you had more people in the room. However, perhaps fewer rushed decisions were made before with the costs of perhaps not making any decisions at all, since you had to have everyone on board for every single detail.”

(Interviewee 7)

Time plans were done unprofessionally and the use of resources was not really considered in the old process:

“Sometimes in the past the time plans was really unprofessional. We have just been guessing how much time we need. The resources was an aspect of which was never considered in the past.”

(Interviewee 3)

It happened that you spent time working on a project which management then would turn down:

“In the old process we could end spending a lot of time doing things before we met the management and then it might be that you got a ‘no’.”

(Interviewee 6)

“In worst case there is no present critical manager or function in this meeting, it is a big meeting. And then for example we don’t take into account critical input regarding retail aspects. Then we learn on the next gate check that this product is not actually fully relevant because in half of our market this type of this size is not any more relevant and we need to change it to another one or whatever. This is changing the business case; this is changing everything, the testing whatever it could be. It’s an avalanche of activities.”

(Interviewee 1)

Some projects were even brought into the company without any further evaluation:

“Sometimes projects were just taken into the organization in order to just have a project. When you then started to work with it and you start thinking, do we really have a need for it? In most cases the answer was no.”

(Interviewee 3)

4.8.1.5 Organizational Support

One thing that the organization was not in all cases securing before was the connection between the different perspectives of the organization and the customers:
“What was missing before in my eyes is that there was not a good link between the technical opportunities and the needs from retail and the customers.”

(Interviewee 1)

Previously, only one function decided which projects were brought into the business:

“The fact is that before in the old process it was only one function deciding which projects to bring in for the next few years.”

(Interviewee 3)

Assignments in the old systems were also not really applicable or relevant for the specialists:

“As it has been before the old system did not really help us at all. Because the things we tick of there are not really relevant to what we do now. It was more that they have been there since forever so we just tick in the same ones and kind of understand what they mean but they are not really applicable to us. It is more like i understand what they mean but that is not really something we do maybe.”

(Interviewee 2)

4.8.1.6 Work-Group Features

Each team needs a shared excitement in the task, a willingness to support the group and a good ability of recognizing the individual's unique contribution to the team (Amabile, 1998). Today, the NPD team is compromising in different perspectives due to some reasons, but this understanding was not easy to obtain before:

“In a lot of cases we are actually increasing the cost of our product and this was fully acceptable because it was relevant for the offer and the business. This type of understanding was very difficult to get in big groups with a lot of people who rarely meet each other and who rarely cooperate in a very close way.”

(Interviewee 1)

4.8.2 New process

Delivery speed is seen as a crucial measurement in NPD and standardization and innovation improve the delivery speed (Wang et al., 2016). The intention with the new process was to have a shorter time-to-market, but this seems to not always be the case:

“We can always add more resources but we cannot create time. We are trying to be efficient but what I have noticed during the new process is that due to many reasons, I would not blame the process, we are not delivering faster to the market. I think the reason for this is the fact that we entered the new process without any clear roles, job descriptions or tools.”

(Interviewee 3)

However, visibility in the new tool will allow the teams to be more efficient in the long run:
“In the long run I think that this new tool will make us efficient. Since the tool and the process is so visible, you know exactly where you are in the project if you go in. Cutting lead times and focusing more sharp during a certain period on the things that you should do and do not drag it on because we can.”

(Interviewee 4)

4.8.2.1 Challenge

Tasks need to be challenging for the employee to a certain degree, so that they are neither overwhelming nor creating boredom (Amabile, 1998). Whereas the theory is discussing challenge in types of the tasks given to the employees, the findings presented in this report were more focused towards the process:

“The process requires excellence in operation; we need to be good in what we do. We need to be sharp in our actions and how we anchor decisions. We need to inform related people from other roles that depend on our decisions. This has not always been the case. So good communication has been lacking sometimes”

(Interviewee 1)

“I think that a challenge is not to get stuck.”

(Interviewee 5)

“There are new demands put on us. We are growing and getting more and more people involved, which mean that we have to structure the way we are developing products.”

(Interviewee 6)

There were several interviewees that mentioned communication as a challenge within the process:

“We do not really get the information in time. This result in rework since we have performed tasks based on wrong information.”

(Interviewee 2)

“One challenge is the communication part; the NPD team that is working every day in the project need to have the competence to know when to involve what specialist to different parts of the process. If the communication challenges are solved you would then spend less time having to go back and revisit decisions due to lack of communication.”

(Interviewee 7)

A challenge for the company which was mentioned by some of the interviewees was the challenge of process change:

“I do not blame the process for not fully delivering what we expected; I blame more the situation that some people are still acting the old way. I still see people who are not aware of how their input, contribution and decisions are affecting the final result.”

(Interviewee 3)

A company needs a conscious endeavor and in many cases a cultural change that supports creativity in order to be a truly innovative company (Waples and Friedrich, 2011; Amabile, 1998). The main challenge for the case company is adapting to the new process:
“I would not say that we have more challenges than just the fact to adopt. As soon as you have adopted the process, it is then much easier because you have more supportive tools compared with before.”

(Interviewee 3)

“I think there are still a lot of roles that has not adapted to the process which not makes it quicker, the design department for example have not worked in the process.”

(Interviewee 5)

“The main challenges overall is the shift of mindset and the dialogue between the management and the NPD team.”

(Interviewee 6)

4.8.2.2 Freedom

The new process allows the teams to more freely decide how much time needs to be spent in each step of the process:

“Depending on the scope the “create” stage of the process can be very short, almost nonexistent, or very long.”

(Interviewee 1)

“I think when you have learned the process you then know where you can shortcut, when you have a confidence that you know why certain steps are taken, without jeopardizing the quality of the product requirements. Then I think you can speed up efficiency when you have confidence in the process.”

(Interviewee 5)

“Some of the bigger ones you need to spend a lot of time in the early phase to investigate and securing that we are doing the right things, but when we are ready we need to get it out quite fast.”

(Interviewee 6)

The use of common sense is necessary when navigating in the process:

“If a project is simple then we really need to use common sense to not make things more complex than they are.”

(Interviewee 3)

“If you look at the process as a help and not something that you need to follow on each and single point then I think it is a super good tool to help the efficiency.”

(Interviewee 4)

“It is important to use common sense to secure that all are aligned and finding the ways of how to work. If you are a bit older in your position and you have been there for some time, use your common sense and there will be activities where you can spend very short time. It is very much up to the NPD team not to make it too complicated; it is sometimes very easy to make things complicated.”

(Interviewee 6)

“If we think that for a project we can move faster through one phase in the process and have good reasons for doing that then we should use that common sense and not slavishly following the structure.”

(Interviewee 8)

Researchers argue that the purpose of standardization is to create stable and flexible processes with reduced variations and predictable outcomes (Morgan and Liker,
2006). The new NPD process of the company seems to be flexible to a higher degree than the previous one was:

“We allow products with higher complexity to go on one way and the products with lower complexity go a really fast track. Our flexibility has increased tremendously in that sense and I am sure that we unleash a lot of development time.”

(Interviewee 1)

“It has been very much up on the agenda that we are working with different types of projects with different levels of complexity. Depending on the need for that project you need to put extra time efforts into some of the activities. For me it comes very much down to common sense when you make your time plan and setup, because you will know quite much about the product and that you are changing the color and why.”

(Interviewee 6)

Even though there is flexibility allowed in the process, it seems that some parts of the execution phase are less flexible:

“We kind of have a rule which is the “eight months rule” whereas it takes four months to produce all the pictures and then we have four months that the products need to be visible on the web.”

(Interviewee 4)

Some researchers emphasize that reduced time-to-market leads to a big competitive advantage which allows companies to exploit market opportunities to a greater extent (Millson et al., 2011; Davila and Wouters, 2004). Flexibility is considered as a challenge since it hinders the goal of getting a faster time-to-market:

“In order to meet up to the overall goal and the faster time to market we all need to work together in the pipeline. We cannot have the goal or KPIs for parts of the pipeline; we need to have the same for all and finding a smart way to do it, working as one company with the same aim for the customer.”

(Interviewee 6)

“Some parts of the process are super good but then we are still having the boundaries like the “eight month rule”. It does not matter how fast we are developing products actually because we will not get it out any faster anyways.”

(Interviewee 4)

The higher demand on shorter time-to-market puts pressure on the specialists that follow the “eight month rule” due to agreements with their partner:

“As the NPD team are getting more pressure on doing things faster and faster we are also pressured to do things faster and faster. But we cannot really because we have an agreement with our partner in the business organization. A 3D model takes eight weeks. A main product picture takes six weeks or if it is four weeks. We cannot really adjust that at all to be honest.”

(Interviewee 2)

The process needs to allow some freedom, as long as the NPD teams are achieving what is expected:

“You need to have a nice balance and not describing too much in detail. I think we need to look into the efficiency and not to copy and paste just because it fits in one business area with that
organization and setup. I think we need to have a bit common sense and leave some freedom there as long as we work according to the process, doing what we need to do.”

(Interviewee 6)

4.8.2.3 Supervisory Encouragement

The NPD teams have a close connection to a manager throughout the entire process:

“We are able with a simple decision structure to have very quick decisions; we are meeting on a weekly level. When we are ready to present for a certain milestone and if we then show a clear case we can get an approval and continue the development.”

(Interviewee 1)

The new process also has flexible decision points:

“A benefit with the new process is the flexible decision points and then of course having a good relation with your sponsor.”

(Interviewee 6)

“You are not having so strict decision points. You have more of a small team working with product development and then they have the speaking partner in the management that they can use more or less whenever to get decisions or to get input on the direction.

(Interviewee 7)

However, managers need to understand what certain decisions result in:

“The management group need to realize when and how their decisions are to be given and what it means if they change mind later and what implications that will result in. Especially after decisions are taken; if we are turning back it should then be clear what the consequences are and what pressure it puts on the development team.”

(Interviewee 3)

Although the new tool is there to support all stakeholders, some felt as if they had to nag in order to get things reported in the system:

“I can feel that we have become kind of ambassadors for the system. I do not think that is really fair. Even if we are working a lot in it, it should be all functions system. It feels like we are the one nagging saying ‘you should tick off this, you should do this and this’: But the aim is to deliver the project in the best way.”

(Interviewee 4)

It would be beneficial to have a change leader connected to the new tool supporting the employees and connecting to the process team:

“When we started the new process we had a change leader in our business area who was taking all our questions and I think that is super important. Even if I have not worked in the old way I can hear people that are saying ‘but in the old way we always did this, that has always been happening in the old process’. Those questions need to be lifted and brought back to the process group. I would say the support from the management is definitely where it lies from the beginning, the management and the energy that they are pushing it as well is super important.”

(Interviewee 4)
The role of sponsorship is more to handle deviations and lift those when needed:

“You make your scope with your ambitions and then it is all about taking care of the deviations. You need to be really transparent and lifting up where we see challenges that the NPD team cannot solve themselves and then it needs to be lifted so we do not lose time and cannot move forward.”

(Interviewee 6)

“A good point with the process is the decision structure; it is very lean it is very simple. According to the scope we quickly anchor our decisions with our sponsor and if he has any hesitation then he lift it up to the management team.”

(Interviewee 1)

There needs to be mutual trust and understanding between the NPD team and the management:

“It needs to be a common understanding from the management, built on the trust between the NPD team and the management. Ensuring that we are not creating a lot of extra administration and updates needed to be done that slow down the efficiency and timing.”

(Interviewee 6)

4.8.2.4 Resources

Interviewees are at several times mentioning the different benefits of analyzing the projects from different perspectives at an early stage:

“We are able to spend more time in the beginning and getting cross-functional alignment in an early stage. It is really crucial in order to do the right things for the customer at the end, which is what it is all about.”

(Interviewee 6)

Time has been identified by several researchers as the most important factor in efficiency with regards to NPD in most cases even though efficiency in NPD includes more resources than time (Tyagi et al., 2015; Millson et al., 2011; Davila and Wouters, 2004). The new process allows the specialists to work more efficiently:

“The new process frees up time for me and I do not have to be in meetings where I am either not contributing or getting anything out from the meeting. My time is more respected and used in a better way. It is up to yourself to decide whether you take part of ‘nice to know information’ but you have only had a demand on you to actually participate when you are needed.”

(Interviewee 7)

“Compared to the old process even though we are outside the NPD process it also frees up a lot of time. We can spend more time on the more value-creating parts.”

(Interviewee 2)

However, from a specialist perspective, the focus on NPD and its process is too high:

“With the current setup we now have NPD teams in the development process that is very focused on developing new products, whereas the department where I work are more focused on the running
range today. There needs to be a better balance between these two. I personally work probably 80-85% of my time with the running range where 80% of the money comes from. At the same time you have a very efficient NPD process but you are lacking something in between.”

(Interviewee 7)

The process allows you to detect delays early and react to them:

“You are in control of what you are doing and you can earlier detect delays, which was our weakest point before. Now we have good time plans, even a year ahead from the sales start we can see an indication on that we are going to be late. Then we can decide whether we reallocate resources and postponing something else or we take a conscious decision to move the sales start.”

(Interviewee 3)

In order to be efficient, the company needs to focus on few projects and deliver them faster:

“A huge success factor is to look at each NPD team and really focus on fewer projects at the same time. It is easy that since you are more efficient there is also more time to add more things and then quickly you can sit with 10 projects running in parallel to each other. The efficiency in each project is then of course suffering a bit.”

(Interviewee 7)

“I think one big challenge but that is actually not within the process really is how we prioritize. We want to do so many things and we can see a lot of customer needs and we can also see big opportunity for making business in different ways. We have a little bit of an overload of good ideas and that steers what projects we start, so how to prioritize among those is a tricky thing.”

(Interviewee 8)

Efficiency is not only about delivering faster, it is also about prioritizing which projects that make the biggest impact on the organization:

“The goal is to concentrate on few projects and deliver them faster. The connection between the business plans and the prioritization has not got that much of focus. We need to be able to actually decide what projects to bring in and to really make the evaluation of the impact of each one of them in order to make the right prioritization among them.”

(Interviewee 3)

“We were probably doing a lot of things or I know that we were, but then in the end were we really putting focus on the right projects? I am not always that sure. No, not really.”

(Interviewee 6)

4.8.2.5 Organizational Support

The company is working with standardized solutions which affect efficiency positively:

“Each business unit adjust the process to serve their needs best so most likely one business unit might skip most activities which are into the creative part because they have kind of standardized solutions which they apply quickly so their time-to-market is much faster. In our case we have also started using standardized solution as one solution for lower time-to-market. This means that we have a ready pool with solutions existing and if we want to implement and pick one of them that mean that we know this solution works so we don’t need to redeveloping it so we just take and apply.”

(Interviewee 3)
The connection between the development of standardized solutions and the NPD process is not that clear in the company:

“I think there is an improvement potential in between the development of standardized solution and the NPD process. The development of standardized solution is focused on platforms, components, standards and materials. Today there is a lack of hand over between these two processes.”

(Interviewee 5)

When the specialists are not that involved in the entire process, it allows them to take a more outside-in perspective:

“We are not that involved with the product in reality when they develop it, we are really not. We get one introduction or something and then we need to make it from there. That could be a good thing because we are not that colored by the whole process. Because we are kind of outside it we can then look at it as a customer, which is a good thing. We can actually take the customer perspective.”

(Interviewee 2)

It is important that the new tool can be used as something valuable instead of something that employees use just because they have to:

“The risk is that we are just going to do as before, we do not really care about it because we have our own documents that we work in instead. If the new tool is not going to support me I will just stick to my excel files to be honest. Then I will just go in every week and tick off what i have done because the NPD team needs to know. Instead of actually using it as something valuable and keeping track of where we are and our place in all the deliverables in the process.”

(Interviewee 2)

Appropriate tools and systems need to be implemented in order to support the people and the processes. However, the tools themselves are not the ones solving the problems, but the people operating them (Liker, 2004). Waste in product development is most often associated with doing activities with the wrong input rather than doing unnecessary activities. However, if waste is eliminated on a micro-level within a process, it might create waste on a system level instead (Browning, 2003). The new process is much more supportive than the old one:

“The new process is taking care of much more in types of when the project will be executed, allocation of resources, handling the stakeholders and it helps you a lot to not forget something. It helps you a lot not to make a mistake. It helps a lot of persons that is new in the process. From that perspective, no matter if you are a specialist or a part of the NPD team, the new process is much more supportive if all tools are up and running.”

(Interviewee 3)

“In the beginning I thought that it was a bit complex process for simpler projects. But it is more the questionings that we should finalize before each decision point meeting as I can see as help, if we skip something then that question comes back later on anyways.”

(Interviewee 4)

Within Lean, lead-time is the most crucial measurement for efficiency since it is the root cause of other inefficiencies in the process (Liker, 2004). However, the whole
process is not supporting reduction of lead-times since employees are working against an “eight month rule”:

“Today we are not focusing on the lead-times because we know that we always have an ‘eight month rule’ to work against or towards. We are waiting just because we have the ‘eight month rule’ and we know that we do not have to deliver until then. You do not feel encouraged to always shorten the lead time because you are not really forced to do it.”

(Interviewee 4)

Until now, the NPD teams have not had any tool supporting them in following up on time plans:

“Before we did not have the tool to really support us on the following-up deliverables but now I think people tick of what they should in time, then we can also see that test maybe does not take six weeks but four weeks.”

(Interviewee 4)

Energy or motivation is connected to creativity according to Amabile (1998). However, the limited flexibility of the tools connected to the process does not offer the support needed, which in some cases decreases the energy of the NPD team:

“The tool is also what limits us because we do not have the flexibility that we have in a normal word document where we can write and make changes. Except from the time plan in the tool I would not say that there is any flexibility at the moment at all.”

(Interviewee 4)

“We do not have the supporting tools developed yet to make this process as efficient as it could be in terms of product management tools and portfolio planning tools, so everything has to be done very manual and a bit more complicated.”

(Interviewee 5)

“Proper IT-tools would help us to be even more efficient and putting less effort into administrative tasks. Because we spend quite a lot of time documenting, putting up time plans, changing time plans and so on.”

(Interviewee 8)

As a result, working in the tool becomes rather time-consuming:

“Often in our business area we have the same background for several projects connected to the same sales start. When we previously worked in word documents it was easy to copy and paste and then do individual time plans based on that. Today we need to fill in everything and we cannot copy anything, it is so time-consuming. Right now we are more or less five people doing this sitting and copying. Now we are feeding the system with a lot but we do not get anything back. We are for example still sitting doing manual presentations for each decision point meeting.”

(Interviewee 4)

There is still potential for improvement in terms of documentation and administration of the projects, though:

“I think we can be more efficient in terms of not being so administrative, being a little bit more simplified in the way of documenting or following the process which I think could be improved. The NPD team should not spend time in administration; they should spend time with the product but still
have a clear governance in how they move forward. The process should support them in developing at the products.”

(Interviewee 5)

“There have been some changes in order to make it more flexible and easy to use, which I think is crucial. We need to have tools that are supporting us and not killing us with administration.”

(Interviewee 6)

Standardization allows companies to record past experience and knowledge and thereby create a framework for assimilating and applying knowledge (Lin et al., 2012). Making room for learning and even failure boosts the innovativeness of a company (Lawson, 2002). It is up to the team to handle the documentation in a smart way in order to be able to use that information for future learnings:

“As long as you jump into the new process and start to work with it and avoid unnecessary administration; you and the team by itself actually decide the level of documentation that needs to done. You need to look at it in a smart way as well as understanding why some of the fields are mandatory; it is very often in order to follow-up in the end. That is to me a good way of convincing me to put some efforts into the figures and background.”

(Interviewee 6)

“I think we have a challenge in following-up and taking learnings, I think that sometimes we are pretty lousy on that. I think there is a potential in looking closer into how we in a more structured way following-up projects and take the learnings and feed them into the new upcoming projects.”

(Interviewee 8)

4.8.2.6 Work-Group Features

The management team takes notes regarding the dynamics of the NPD team in the kick-off of the project:

“The kick-off is the first milestone; we present the project scope in front of the management team. This is also an opportunity for them to take notes of the dynamics of the NPD team.”

(Interviewee 1)

All interviewees expressed the benefit of having a NPD team consisting of five different roles as it in a early stage already is capable of ensuring that the product fulfills all requirements from the different perspectives:

“The new process can secure all aspects from the beginning to the end.”

(Interviewee 3)

“The experience is that the new process is helping us to have more and different competences in the start and throughout the process. Before it were only product developers starting the process. Now we have more competences from the start.”

(Interviewee 5)

A small NPD team results in a more efficient product development:

“Since there are fewer persons involved in some of the central decisions you then reach decisions faster and you start perhaps fewer scenarios. That I would say is a big benefit. Having fewer people
involved also frees up capacity at some functions which in theory could lead to that you make fewer projects at the same time more efficient and quicker.”

(Interviewee 7)

Which role that needs to be involved in different steps of the process is important for the quality as well as the efficiency:

“With more people involved it means that you add quality to the process but that could also slow down when the interpretation is that everyone needs to be a part of everything, which can make the process slower. I think that some parts make the process more efficient, but some parts can pull the efficiency down such as wrong interpretation or unclear leadership.”

(Interviewee 5)
5 Discussion and Conclusion

5.1 Standardization vs Creativity

There are several challenges mentioned connected to the new process. Whereas the literature focuses on challenging tasks (Amabile, 1998), the challenges encountered throughout this research are merely connected to the process itself. The challenges in the process are not exclusively new, but the standardization of the new process makes them more visible than before. Amabile (1998) argues that motivation is important in order to be creative. The level of engagement from the management has been lowered, which makes them feel disconnected from NPD which in turn decreases their motivation. The introduction of a new standardized NPD process has also led to the employees having a negative attitude towards it, which in the end also lowers the motivation of the NPD team, resulting in challenges looking bigger than they are in reality; as people are seeing obstacles rather than opportunities. A closer connection to the management and the organization in its entirety needs to be established in the NPD process through standardization. This increases the supervisory encouragement as well as transparency throughout the whole organization. The findings in this thesis points towards it is not possible to be creative and focus on the content of a process until it has become a natural part of your daily routines. This is when an employee can dedicate their full attention and effort to working with the content of the project, i.e. solving issues connected to the product regarding several aspects. What do you need to eliminate from the employee's daily agenda in order to achieve a complete focus on the content of the projects? What is the waste that needs to be eliminated? If we look at the process itself, it is mostly connected to practical issues such as administration, communication, process steps to follow and so on. In other words, the process needs to be completely logical, simple and supportive for the employee. One might argue that standardization decreases creativity as it limiting the freedom of the individuals. The findings in this thesis suggest that this is not the case, as by standardizing the NPD process it is possible to, in a structured manner, cover all aspects relating to the different parts of the organization without forgetting, or creating an imbalance between, the different perspectives of a product and its total offer. This is also what other researchers has concluded (Wang et al., 2016; Funk and Luo, 2015; Wright et al., 2012, Kondo, 2000).
5.2 Standardization vs Efficiency

The progression in a NPD project should proceed without any hesitation or doubts and all steps need to support the progression of the project. There should be no activities or information that does not support the company with progressing projects and continuously improving. The process should support the employees, so that they do not get stuck whilst working in it. The suggestions of this thesis are to allow the employees who work in the NPD process to be in charge of continuously improving the process, because it is they who know their tasks and needs the best. This is also what Liker (2006) emphasized. Standardization allows the company to have a common way of working and also a common language. This allows new employees in the company or new teams to easily fit in and start delivering. Another big advantage of the standardization of the NPD process is that it allows for more efficient decision-making, since there are fewer persons involved in each decision and there is a close collaboration with one manager supporting the NPD team. The close collaboration with the manager allows the NPD teams to work more efficiently; they are continuously guided and supported. Since less people are involved in each stage of the process, this optimizes the usage of time for everyone within it. This is something that has been emphasized by other researchers (Martínez-Sánchez et al., 2006). Because of this, knowing when each role needs to be involved in the process, that the right roles are being informed and that everyone knows their responsibilities has turned into a very crucial endeavor. This is where the standardization contributes. Even though the NPD process seems to be flexible in the development phases, the same flexibility is needed in the execution in order to be even more efficient, as there are some restrictions within it today.

5.3 Creativity vs Efficiency

The most central question in this thesis is: can creativity and efficiency coexist? According to the findings of this thesis, it is possible. The standardization of the NPD process supports the company in covering the different aspects of the organization throughout the process, thereby allowing creative solutions to emerge as well as supporting an efficient execution, which has also been proven by other researchers (Wang et al., 2016). The close collaboration between the five key roles responsible of covering the different aspects of the organization creates a whole
new level of understanding among the employees regarding how different decisions and attributes connected to the product affects the whole value chain. The standardization of the NPD process allows the company to allocate resources needed in the early stages of the process in order to do things right from the beginning, which is beneficial for both creativity and efficiency. This is in line with what Amabile (1998) argues, that an appropriate amount of resources need to be assigned after having considered the complexity of project.

However, the findings also show that the case company still has improvement potential, but in order to reach the perfect synergy between creativity and efficiency, it is crucial to continuously improve. Some activities are not standardized and this creates frustration, negatively affecting both creativity and efficiency. What is very important is that the standardization does not get too detailed, so that creativity and common sense can still be present in the process. The “what” (e.g. information and deliverables) needs to be defined, which allows the NPD teams to instead focus on the “how” (e.g. tools for delivering the ‘what’, such as brainstorming). For instance, how are the NPD teams going to fulfill the requirements and goals set? This may vary in different cases, but the same questions always need to be answered. The tools and the organization need to be flexible enough and allow the NPD teams to freely operate in whichever way they believe to be correct, since they are the ones that know the most about what is necessary in order to reach their goals. Clear objectives for NPD projects together with the collaboration of the manager allow NPD teams to operate within clear boundaries, allowing creative solution and at the same time ensuring that the projects proceed without much hesitation.

The management needs to be supportive, encouraging and challenging the teams to explore and try new things. It is not until the NPD teams naturally know, follow and feel that the process supports them that they can be both creative and efficient. All frustration and distractions with issues not connected to the product need to be eliminated. This allows the NPD teams to be more efficient and focus on being creative in solving the issues related to the product rather than the issues connected to the process. The definition of creativity used in this thesis is the one described by Waples and Friedrich (2011), where they suggest that creativity is something that happens throughout the process and organization on different levels. The findings
in this thesis points towards that the overall attitude towards creativity is that it is something that happens in an early stage of the process. There is only one interviewee that points out that creativity is something that could happen in any stage of the process. The awareness of what creativity is and how it can be utilized throughout the organization needs to be increased.

One of the biggest challenges expressed in this research is communication; poor communication negatively affects both creativity and efficiency. This is something that needs to be supported by both the process and the IT-systems around it, which is not the case at the moment. Communication needs to be encouraged by the management as well as the process; it needs to support cross-functional involvement to a greater extent further out in the organization and not only in the middle of the NPD team. Researchers (Mazzola et al., 2015; Bunduchi, 2013) have shown that supplier involvement in NPD is beneficial for the organization and this is something that can be increased in the case company.

The standardization of the NPD process, with its supporting questions that need to be covered and answered has resulted in a more supportive process, both in terms of efficiency and creativity. These questions support the company to do things right from the beginning, ensuring that everything is covered before proceeding further in the process. These questions also support the NPD teams when evaluating whether all possibilities have been considered or if there is a need of involving some specialist with more knowledge within a specific area.

It is not impossible to be both creative and efficient in NPD development, but it needs the correct mindset. The employees need to continuously challenge the standardized process on how it utilizes the fully potential of the organization. The responsibility lies within all the employees connected to the process, as they are the ones who know the process and their tasks the best. However, there needs to be a defined way of evaluation the process. The company also needs a clear structure when it comes to experimenting with improvements to the process and the implementation of these improvements. This needs to happen throughout the organization in a way that supports all business areas. One issue with IT-tools identified in this thesis is that they could sometimes be seen as the perfect solution to all problems. The tools need to be more supportive and considered as something
valuable for the ones working in the NPD process. However, a tool will never solve underlying issues such as lack of trust, as well as relation-, leadership-, or communication issues. These issues remain in the hands of the people working in the process and them alone.

5.4 Managerial implications

Continuously improving a process in such a complex organization is not an easy task to handle, especially when the responsibility needs to be shared with everyone working in the process. In addition to this, the different NPD teams are working with different types of products and level of complexity. The suggestions in this thesis need to be supported by the correct mindset of challenging the “rules” and how things are “supposed” to be done, not being destructive but experiment and go outside of the comfort zone.

5.5 Suggestions for further research

There needs to be further exploration of what factors that are directly connected to the efficiency of an NPD process. Another area that needs to be further analyzed is how it is possible to measure the success of an NPD process. An extension of this research to further analyze the phenomenon in depth could be done using focus groups in combination with interviews. Another approach could be to conduct interviews with the same individuals twice. While the first interview would be on a more overall level regarding the NPD process, the second round could be more focused on gaining depth while considering the different factors used in this thesis. These findings also need be supported by quantitative data.
References


4th ed.


