Goal setting for innovation
- Exploring the relation to operational goals

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Abstract

Goal setting is proven to affect the choices and focus of the employees towards certain tasks, therefore it has been suggested for ensuring that sufficient focus and attentions is direct towards explorative activities (Lund & Magnusson, 2015), which are otherwise at risk of being down prioritized (Levinthal & March, 1993). Such effects of goal setting can though not be expected in situations where there is low commitment to the goal program (Latham, 2004). A factor which is important for increasing the goal commitment, is having clear rationales for the goals set. However, because there are few studies on goal setting for innovation, rationales for establishing innovation goals and hinderers affecting goal commitment have still not been researched from an innovation perspective. Moreover, much of the existing goal setting theory has derived from research related to productivity aspects (Latham & Yukl, 1975; Lund & Magnusson, 2015) which have more in common with operational activities, than innovation activities.

The purpose of this study is to identify rationales- and hinderers to goal commitment when establishing innovation goals, and to examine how goal setting features for exploration (referred to as innovation goals) differs from goal setting features for exploitation (referred to as operational goals). This research has been conducted as case study at Sandvik Coromant, where both qualitative and quantitative data was collected. Interviews and surveys were done with the help of 32 managers from different departments and managerial levels. The findings are limited to R&D manager’s perceptions of goal setting.

Findings show that rationales for establishing innovation goals are; to directing attention towards- and inspire exploration, to bring innovation to a concrete level and create knowledge, to satisfy prerequisites of innovation and/or innovation culture, to come up with new ways of working or improving processes, and to generate new ideas or/and present and implementing them. Hinders affecting goal commitment were identified as the following; misconceptions about innovation from defining it as output only, failing to convince individuals that the goal program is important and lack of resources. Further, according to this study goals for innovation differ from goals for operational activities. Goal features preferred for the two were opposites to each other. Goal features for operational activities aim to reduce variance and control the performance outcome, whereas goal features for innovation aim to trigger essential parts of innovation such as creativity, learning and experimentation, and therefore increases variance.
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1. Introduction

Innovation is one of the most important characteristic associated with success. This is evident by looking at innovative companies which achieve stronger growth and more success than companies which do not innovate (Tidd & Bessant, 2013). What should not be overlooked though, is the fact that many of these companies do not only focus on exploration. Simultaneously, they must work on exploitative activities, to develop the existing ideas, with respects to increasing demands of better quality, reduced costs and faster deliveries (Boer & Gertsen, 2003). It is however a challenge to combine exploration and exploitation within one company and unit (Lund & Magnusson, 2015). Many times, the exploitation activities are expected to happen more urgently and also yield faster returns, hence explorative activities are at risk of being out-crowded by exploitative activities (Levinthal & March, 1993). A similar phenomenon can be evident among research and development organizations where the research part often work more exploratory on generating new knowledge and ideas, whereas the development part more often is engaged in exploitative activities to realize existing ideas using available knowledge (Lund & Magnusson, 2015).

Focusing solely on exploitation activities– or for that sake only focusing on exploiting the existing in some phases of the innovation process is likely to lead to a constant suboptimal stable condition (March, 1991). In situations like this it could be beneficial to encourage and direct focus and attentions towards a more explorative thinking through the whole organizations, regardless of which innovation phase you are working in (Martini et al., 2013). Goal setting related to exploration has been suggested for this purpose (Lund & Magnusson, 2015), and can be effective in these cases due to its known ability to affect the choice and focus of the employee towards certain tasks (Locke & Latham, 1990). Moreover, there are studies supporting that proactive goal setting can in fact boost individual innovative behavior (Odoardi, 2014). The positive effects and outcomes of goal setting are however explained as limited to certain conditions and can for example not be expected in situations where there is low commitment to the goals (Locke et al., 1988). One prerequisite of goal commitment is that the individual is convinced that the goal is important (Locke, 1996).

In addition, Earley (1986) argues that the experienced meaningfulness of goals can be increased by expressing goal rationales, which in turn leads to increased goal commitment. This is something that has been proven by research conducted by Li and Butler as well (2004). Their research shows that goal rationales are indeed important for increasing goal commitment, especially for assigned goals. However, because there is a lack of plausible existing theory on goal setting specific for innovation, few rationales for setting innovation goals have so far not been offered in existing literature. At the same time, hinders affecting the commitment to innovation goal programs have not been researched from an innovation perspective either. Because goal commitment is a construct
that is central to goal setting theory (Locke et al., 1988; Locke, 1996) these two research gaps are important to investigate. It is especially interesting in the case of Sandvik, which had both managers who did and did not commit to fulfilling the task of setting innovation goals in their departments, with different rationales expressed for their choices.

In goal setting theory, there have been some attempts to differentiate the goal features during different circumstances, i.e. by suggesting performance goals in secure situations where necessary knowledge and skill is already acquired (Winters & Latham, 1996) e.g. operational activities, and learning goals in complex or novel situations where additional knowledge development is necessary (Seijts & Latham, 1999) as when exercising innovation activities. Furthermore, general goal setting theory suggest for that goals should be challenging and specific (Locke, 1996) or according to the widely used SMART-criteria, meaning goals should also be measurable, attainable, realistic and time-bound (Doran, 1981, Macleod, 2012). However, much of the existing goal setting theory has derived from researches on productivity aspects (Latham & Yukl, 1975; Lund & Magnusson, 2015), which by definition seem to have more in common with exploitative activities than explorative. Magnusson and- Martini (2008) further suggest that in order to pursue exploitation or exploration there is a need to dive in to the differences between the two and the different organizational challenges towards pursuing them. Hence, several goal features would need to be further investigated from both an innovation and-operational perspective. In order to find out how they differentiate from each other, and which goal features that are perceived as best suited in relation to their different purposes of exploration or exploitation.

In summary, previous studies thus indicate the following research gaps; there is a lack of plausible existing theory regarding rationales for establishing innovation goal programs, as well as regarding possible hinders affecting the commitment to innovation goal programs. Moreover, the literature does not offer a straightforward picture of how goal features for innovation differs from goal features for operational activities. To investigate these gaps, this research has been conducted as a case study at the product development- and R&D departments of Sandvik Coromant, in the form of a bachelor thesis work at the University of Gävle.
1.1 Purpose and research questions

The purpose of this study is to identify rationales- and hinders for establishing innovation goals, and to examine how goal setting for exploration (referred to as innovation goals) differs from goal setting for exploitation (referred to as operational goals).

Research question 1. What rationales are there for establishing innovation goals?

Research question 2. What hindrances to goal commitment can be identified when establishing innovation goals?

Research question 3. How do goal setting features for innovation differ from goal setting features for operational activities?
2. Method

In this chapter, the research strategies and methods applied for collecting and analyzing the data will be described and discussed before the validity and reliability of the research will be evaluated.

2.1 Sandvik Coromant

Sandvik is an engineering group which provide tooling systems and tools for industrial metal cutting, products for industrial heating and advanced stainless steels and special alloys. Moreover, they also offer tools, service and technical solutions for the mining and construction industries (Sandvik, 2017). Sandvik Coromant is a company within the Sandvik Group that is developing and manufacturing tools, tooling solutions and know-how to the metalworking industry. The company also invests extensively in research and development, which is also one of many reasons to why they are the world’s leading supplier within their business (Sandvik Coromant, 2017).

Sandvik Coromant has a yearly target setting process. In addition to this, the R&D- and product development departments initiated, for the first time, the setting of individual goals specific for innovation during 2016. The mangers had to make sure that every individual at their department had an innovation goal set.

2.2 Case study

Because this was their first time of establishing a goal program specific for innovation, Sandvik, Coromant was planning a follow-up. The follow-up was sought for investigating the outcome of this goal setting program specific for innovation, and to further use the information as input for the next years target setting process. From this notion, it was perceived as a good opportunity to at the same time use their follow-up sessions to conduct a case study for building more knowledge around goal setting for innovation.

Case study researches are especially appropriate for empirically investigating contemporary phenomena within a real-life context, like with this situation (Yin, 2003). Case studies are often used to investigate a single unit for the sake of trying to understand a larger class in similar situations (Gerring, 2004) i.e. this study design allows for in-depth investigations (Bryman & Bell, 2011).
2.3 Reasoning in research

In research, the relation between theory and empiricism can be described as inductive or deductive (Bryman & Bell, 2011). Or in some cases, even as abductive, when the research does not follow the pattern of pure deduction nor of pure induction (Kovacs et al., 2005).

The inductive approach enables theory generation by a frequent interplay between data collection and data analysis (Glaser & Strauss, 1967). This should occur with minimal interference with existing theoretical literature related to the subject until a framework of concepts has been established from the data (Glaser, 1992). The logic behind this is usually based on the idea that the researcher should enter the research with as little predetermined ideas as possible (Glaser, 1978). With this approach, there are no hypotheses and concepts established when the research initially takes off (Ibid). The research starts with data collection and theory is developed thereafter and then further complemented by pre-existing theory (Glaser & Strauss, 1967). With this reasoning, general facts or principles are developed from individual cases or particular facts (Guthery, 2008). This is one of the reasons why this logic has been criticized. Arguments have been that it is not reasonable to generate universal principles based on particular observations (Hume, 1967; Popper, 1959).

The deductive reasoning can be considered the opposite to inductive approach due to it contrary to inductive reasoning being driven by pre-existing theory and concepts. The process of a deductive approach is characterized by starting with existing theory and formulating hypotheses or research questions and eventually collecting appropriate data to test the implications of the previous theory (Patel & Davidson, 2003; Skinner et al., 2015).

None of the three research questions were of pure deduction or induction character, making the research to follow more of an abductive research approach (Kovacs, 2005). The research initially started out according to a deductive manner, where a search for relevant literature was done in order to develop a framework of concepts and themes. However, because there is little literature on goal setting for innovation, research question one and two were to a large degree approached from an inductive logic as well, as this logic aims to explore and create understanding (Einsenhardt & Graebner, 2007).

The third research question was mainly done in a deductive manner, in order to test pre-existing goal setting theory in term of goal features, from both an operational perspective and innovation perspective, and to identify differences between these two. The inductive element in this research question was the collected reflections and motives that the participants spoke out during the survey being filled in. This was done with the purpose to create a deeper understanding and to not only test pre-existing theory, but to further supplement it.

The benefit of an abductive approach is that it allows for new observations to be made during the process, and at the same time the theory and hypotheses are adjusted and
refined which creates more depth and understanding (Alvesson & Sköldberg, 1994). Moreover, it allows for new insights to occur about existing phenomena by examining it from a new perspective (Kovacs, 2005).

2.4 Research strategy
In addition to the deductive, inductive and abductive logic the data collected have been of both qualitative and quantitative kind. The qualitative data was used to explore and create a deeper understanding of behaviors, meanings and context of events (Forde, 2014; Berkwits and Inui, 1998). This by capturing expressive information in natural settings (Lincoln & Guba, 1985) from the participant’s viewpoint through as in this case interviews. Because this method is useful when investigating motivations and influence of values on choices (Berkwits and Inui, 1998) it is especially appropriate for identifying rationales for establishing innovation goals, and for identifying hinderers to goal commitment.

The quantitative data was used to examine if there are differences between goal setting for operational activities and goal setting for innovation. Quantitative research can be used to produce findings by quantifying and measuring different phenomena (Carr, 1994). This approach seemed well suited for answering the third research question as it allows for eventual differences to stand out more clearly by displaying differences in numbers, and occasionally statistical visualizations. Though this had to be accompanied by qualitative method as well, as quantitative research on its own tend to overlook the respondents’ experiences and perspectives (Ary et al., 2013). This was considered and address by supplementing the quantitative data with qualitative data. This seemed as an important additional step to identify the motives for potential differences that were to be observed and for a deeper understanding of factors influencing the choice of goal features. This approach was believed to increase quality of the data as it allowed the respondents to raise issues and topics that otherwise might not have been included in the data though only survey research (Carr, 1994). The combination of both approaches is also argued to maximize the strengths of both strategies and at the same time minimize their weaknesses (Johnson & Onwuegbuzie, 2004) and in that order, it is argued to strengthen results and promote the development of theory and knowledge (Tashakkori & Teddlie, 2010).

2.5 Literature review
For a more rigorous research, it is recommended to establish a framework of concrete and relevant literature (Eisenhardt and Graebner, 2007). The literature review was important in this case to attain a better understanding of innovation, and goal setting in general, as well as to identify what other researchers have done in the same field. It was also necessary for supplementing and explaining the results in this study, by comparing the findings against existing theory.

The literature review is mainly based on material such as articles and books, which have been found through the use of different search engines and databases available through the
proxy server of university of Gävle. The searches for literature were many times initiated by looking though google scholar first. This was done to attain a broader range of hits and for inspiration on further search words and articles, i.e. a snowballing approach was used. The searches continued further with more specific searches on engines such as; science direct, Scopus, Wiley Online Library and journals such as; Journal of Applied Psychology, Academy of Management Executive, The Academy of Management Review, Creativity & Innovation Management etc.

Key words used during the search were e.g.; goal setting for innovation, goal setting, ambiguous goals, specific goals, explore, exploit, goal setting, goal resistance, goal commitment etc.

2.6 Data collection

This section describes the process of collecting the data and the motives behind the methods chosen.

Sample design

The qualitative and quantitative data were collected through interviews and survey research with 32 participants from Sandvik Coromant. 62 managers within Product Management and the R&D organization received the task of setting innovation goals. However, because there was not enough time to collect data from all 62 managers, the participants had to be sampled through stratified purposeful sampling. Stratified purposeful sampling is a sampling design where the population is divided into different sub-groups or strata’s, usually based on characteristics from which participants then are sampled (Patton, 2001). This method is commonly used to attain capture major variation and information-rich samples, and to at the same time reduce the sample size (Ibid). This was done to attain an appropriate coverage of the Product Management and R&D organization (abbreviated CD), and to have all managerial levels represented. The first strata’s (groups) from which participants were chosen from are the different product units. The product groups had to be further divided in managerial levels containing; managers, middle manager and senior managers which participants then where sampled from. This sampling was done by my supervisor at Sandvik Coromant, who had a good insight into the CD organization.

From this sample design, 36 participants were chosen of which 32 of them agreed to participate, 17 of them from departments in Sandviken, 8 from departments in Västberga, and 7 of them from departments on other sites abroad.

Interviews

To conduct in-depth interviews and to attain the participant’s perspective, semi-structured interviews with open-ended questions were conducted (Schmidt, 2014). As with this research the purpose of in-depth interviewing is commonly to seek deep
information and knowledge (Gubrium & Holstein. 2002). Semi-structured interviews are more flexible in that manner that it allows the interviewer to ask additional follow-up questions, leading the respondents to expand their responses (Rubin & Rubin, 2005). Most of the interviews were conducted under approximately 30-40 minutes, face to face, whereas some had to be conducted through video conferences due to some participants being positioned abroad.

Before the interviews were conducted an interview guide was developed. The interview guide started by presenting critical details of what is being studied and why, as well as confidentially aspects regarding the participant and the study. Basic background questions were initially asked. This is something that is recommended for warming up the participants and to build trust before the main questions (Jacob & Furgerson, 2012).

**Pilot interviews**

The interview guide was used in 10 pilot interviews. This was done to test the completion time, and to assure that the questions were perceived right as well as to assure that the right questions were asked to ensure internal validity (Teijlingen & Hundley, 2010). After the pilot interviews, some questions in the interview guide were slightly revised and two questions were excluded as they were not considered to generate any value to the research. The data from the 10 pilot interviews were included in the research, which perhaps can be questioned. However, the pilot interviews were perceived as successful and the adjustments made on remaining questions were small, such as rephrasing the questions. Exclusion of the pilot data is also argued not to be necessary as qualitative data collection is naturally of progressive kind where new insights can be gained for each interview conducted, leading to improvements (Ibid).

**Survey research**

The quantitative data was collected through a survey which was filled in by 30 participants directly after the interview questions belonging to research question one and two were completed. Two of the participants were however asked to fill in the survey at another time, due to lack of time. The reason for doing most of the surveys during the same session was because of the choice to combine the survey data with further collection of qualitative data where the participants were asked to motivate their choices loudly while answering the survey. This seemed like the approach which would save time and at the same time give that in-depth data. Furthermore, conducting the surveys while having the participants doing it face to face also provides a chance to clarify questions and concepts, and is also argued to gain a higher response rate (Donsbach et al., 2007).

**Survey design**

The survey in this research was designed using an interval scale, which is a type of scale that can be used to assign different observations numerical scores in order to register the degree of distance between the them (Watt & Van den Berg, 1995). The scale used in this
research ranged from 1-6, starting from the left, with two goal features on opposite sides of the scale, as seen in figure 1. This method is appropriate for enabling quantification of the difference between variables, and to detect relationships between variables (Ibid). Additionally, it is also preferred because the data collected from it can be exposed to many useful statistics (Ibid).

The goal features used in the interval scale have derived from pre-existing goal setting theory. The goal features were then tested from both an innovation- and operational perspective through the survey. The participants where first asked if they would like to participate in the survey research and then the two perspectives (operational activities and innovation activities) where explained to make sure that all participants had a common idea of these two when answering. Innovation activities were in this case explained as “working with something new”, and operational activities were explained as “working with the existing”. Moreover, the term innovation has in this research been defined and explained to participants as “generating new and insightful ideas and implementing these to create value for the customers as well as for the company”.

A table with explanations and definitions of each goal feature was developed to be used if there was any need to explain the meaning of the goal features to the participants. This was done to communicate the same definition to every participant. The table with definitions can be found in appendix seven.

<table>
<thead>
<tr>
<th>Relative scale</th>
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<tbody>
<tr>
<td>Attainable objectives</td>
</tr>
<tr>
<td>Ambiguous objectives</td>
</tr>
<tr>
<td>Learning goals</td>
</tr>
<tr>
<td>Self-generated objectives</td>
</tr>
<tr>
<td>Long-term</td>
</tr>
<tr>
<td>Time-bound goals</td>
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<tr>
<td>Quantifiable goals</td>
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</table>

*Figure 1. The figure visualizes the survey.*

When the survey research started the participants where asked for example “do you prefer more attainable or challenging goals for operational activities?”. They had to then mark their answer with an O on the scale regarding goals for operational activities. The same question was then asked from an innovation perspective, and they had to mark the survey on the same scale using an X this time. The participants were also asked to verbalize their reasoning to why they were marking- and thinking a certain way. This survey was also tested by conducting 10 pilot sessions, but was perceived as successful and no further edit was needed. The 10 pilot sessions were consequently included in the data collected and the participants were not aware of this being pilot sessions, which means this fact could not affect them.
2.7 Data analysis

This section describes the process of analyzing the data and the motives behind the methods chosen.

Qualitative data

The interview data was audio recorded with the permission from the participants. In order to analyze the data, an approach similar to framework analysis was used. Framework analysis is a process which includes steps such as familiarization, identifying a thematic framework, coding, charting and finally mapping and interpretation (Srivastava & Thomson, 2009). This approach is used to describe and interpret what is happening in a particular setting (Ibid).

The analysis process was commenced by listening to the audio recordings, and transcribing them into separate text files using Microsoft Words and further becoming familiar with the material by rereading it. A thematic framework was developed through identifying common key concepts, themes and issues that had been expressed by the participants, which were then further labeled/coded. The labeled concepts, themes and issues with belonging quotes were entered in Excel to allow the use of drop list- function filtering between labels, making the interpretation step easier. This step is known as charting.

To interpret the data, themes or explanations perceived as adequate to answer the research questions were included in the research, in a final step.

The framework analysis was a necessary approach to be able to handle the large amount of qualitative data that was collected. This method enables going back and forth in the data as the analysis process is a series of interconnected stages (Smith & Firth, 2011).

Quantitative data

To make sense of the quantitative data, and to further visualize it by graphs it had to go through statistical analysis. IBM SPSS Statistics a software for statistical analysis, was used for this purpose (IBM, 2017). The first step in the analysis process was to extract descriptive statistics for each variable in the data. Descriptive statistics displays key numerical values which makes it possible to focus on specific properties of the data (Johnson et al., 2012) and as in this case also to evaluate which statistical tests that were best suited for further statistical analysis, and for testing assumptions of these. The numerical values that were of interest initially were the mean values (average), skewness and kurtosis which can indicate whether the data follows a normal distribution or not (Loring et al., 2017).

Normality test

Many types of inferential and parametric statistics are built on the assumption of normally distributed data (Ghasemi & Zahediasl, 2012). Ghasemi & Zahediasl (2012) further explain that two things indicating non-normal data are for example, lack of
symmetry (skewness) and lack of pointiness (kurtosis). Data with skewness and kurtosis near 0 indicate normality. Acceptable ranges in small samples sizes, can be considered values between 1.96 and -1.96 (Ibid). Although few variables (appendix 1) fell outside of that range, for the sake of being accurate a normality test was conducted for all variables anyway. The Shapiro Wilk test which test for normality, displayed that either of the variables were normally distributed. Based on this knowledge, the analysis of the quantitative data was thereafter conducted through non-parametric statistical procedures, that do not require normal distribution (Corder & Foreman, 2014).

**Wilcoxon signed ranks test and sign test**

Firstly, the difference in goal features between innovation and operational activities had to be calculated and visualized. This was possible by checking the mean value in the descriptive statistics for each goal feature, first for innovation and then for operational activities. These were then compared and subtracted with each other, to find out how much of a difference there was between innovation and operational goals. Wilcoxon signed ranks test and sign test which is the non-parametric equivalent to t-test (Corder & Foreman, 2014), was conducted to compare the means of goal features to see if there was any statistically significant difference between innovation- and operational goals.

Significance levels of $p < 0.05$ ensure a 95% chance that any observed statistical difference will be real and not due to chance (Ibid). Results with the values lower than 0.05, were perceived as statistically significant.

**Spearman rank-order correlation**

Part two of the qualitative analysis was to detect relationships between the goal features (variables), and if some variables changes with respect to another. This can usually be done by a correlation analysis, which measures how variables are related, and the strength of the relationship between variables (Corder & Foreman, 2014). Spearman rank-order correlation, which is a non-parametric correlation test was used for this purpose. Values close to 1.0 or $-1.0$ indicates a nearly perfect relationship, $0.5–0.5$ a strong and $0.3–0.3$ a moderate relationship (Ibid). The significance levels (2-tailed) in this test were also examined. Results with the values lower than 0.05, were perceived as statistically significant.

**Interpretation of mean values**

Figure 2, below visualizes how different mean values were interpreted for innovation, and operational goals. For example, during question 1 (attainable- versus challenging goals), if the mean value was between one and three it would have been perceived as attainable. If it would be between four and six, it would be perceived as challenging. If the value would fall at 3,5 it would be perceived as a mixture of both goal features. All mean values were however analyzed with consideration to the qualitative data collected during the survey research, where participants explained their choices when marking on the scale.
2.8 Research quality

To evaluate the quality of the research some aspects of trustworthiness need to be regarded. Usually the terms validity, external validity and reliability are of interest when discussing the quality of the research. Reliability is a measurement concerning how reliable the collected and analysed information is (Biggam, 2008), i.e. to which extent a test or experiment can lead to similar results when repeated (Carmines & Zeller, 1979). The internal validity is usually an evaluation concerning if a test or experiment measures what it was intended to measure (Ibid). Validity can also be interpreted as Cronbach and Thorndike (1971) explain it, that one validates the interpretation of data arising from a specified procedure, and not the test. The generalizability or external validity is also important to discuss as it evaluates if the results can be generalized to other situations (Anderson & Bushman, 1997).

Research with low validity and reliability might not be considered to give a fair representation of the reality, and is therefore of low scientific value (Ejvegård, 2003).

For qualitative research, it is argued that other appraisal instruments are better suited to evaluate the research design, than reliability, external and internal validity (Hannes, 2011). Such is for example Hannes (2011) interpretation of Lincoln and Guba’s (1985) quality assessments, which addresses validity, reliability and generalizability from a qualitative perspective, with terms such as credibility, dependability, and transferability. The credibility evaluates how well the views of the participants are represented by the data, and the dependability, evaluates if the research process in logical, well documented, and traceable, for example regarding the methods that have been used and the decisions that have been made by the researcher (Hannes, 2011). Lastly the transferability evaluates if the findings of the research can be transferred to other situations with similar characters and populations (Ibid). These terms are usually used to critically evaluate findings, and have been included when evaluating the research quality of this research.
Validity and credibility

Whether the findings and the data are a good representation of the views of the participants or not, is something that can be assessed by letting the participants evaluate the data (Hannes, 2011). This was to a degree addressed by presenting the results to managers of Sandvik Coromant. The participants were also asked if they wanted to add anything at the end of the interview and survey. The internal validity was also addressed in another manner, by having the interviews audio recorded and verbatim transcribed (Field and Morse, 1985), which can also prevent loss of important information. During the process of data being collecting and analysed, peer debriefing was done frequently with supervisors, which is a recommended assessment to increase the credibility (Hannes, 2011). For the sake of internal validity, pilot-sessions were also conducted to test if the interview script and survey were sufficient. Fortunately, the script and survey went through minor changes early on, and after evaluation that it was not considered affecting the research quality, the pilot data was included in the research.

The credibility was also assessed by comparing the findings obtained with pre-existing theory (Brink, H, 1993; Shenton, A. 2004). The validity or credibility of the conclusions although raised as it was done through triangulation, where multiple sources of data were combined, in this case both interviews and survey, as well as comparing these to pre-existing theory (Brink, H, 1993; Rothbauer, 2008).

Reliability and dependability

Qualitative methods are argued not to have a high reliability due to the difficulty of attaining similar results when replicated. This is because different researchers can have different interpretations and understandings of the reality, and therefore the reality can be explained in many various ways depending on the researcher (Collis & Hussey, 2009). To address this, the data analysis has been done through a structured framework analysis. This enabled drawing of conclusions closer to the raw data.

Another issue regarding reliability is the use of semi-structured interviews with open ended questions and spontaneous supplementary questions. This might affect the reliability as it becomes harder to attain the same results. From this fact, the qualitative research felt more fairly evaluated through the concept of dependability. Firstly, the dependability was assessed by giving the participants the same verbal definitions of different concepts, such as innovation, operational activities, innovation activities, etc. This was done to create a common understanding of the concepts in the study, before continuing further with the interview questions. To further asses the dependability the research processes have been documented in detail in the methodology section, this to enable future replication of the research (Shenton, A. 2004; Brink, H, 1993).

To minimize the risk of incorrect inferences, assumptions of different models were checked before conducting statistical test, such as the assumption of normality for parametric tests. For similar reasons the statistical test Cronbach’s alpha which measures
reliability was not used here, as the assumption of unidimensionality was violated (Tavakol & Dennick, 2011), as the scale in the survey measures two features at the same time (two-dimensional). If used in this case it would underestimate the reliability a lot (Ibid). The two-dimensional scale was however perceived as a better design than the one-dimensional, in this case study. This because participants first went through interviews, so the survey was designed to be as short as possible, and to not seem demanding and time-consuming, as the survey otherwise would have consisted of 14 questions, instead of 7.

**External validity and Transferability**

Approximately half of the samples were taken from other sites than Sandviken, as some departments of Sandvik Coromont are positioned abroad. Despite the fact that participants were chosen from different departments that vary in different ways from each other, it was still possible to discern common themes in the results and analysis. The sampling design has perhaps contributed to the findings being transferable within departments of Sandvik Coromant to a larger degree. However, generalizations to other firms and settings can be questioned. It is argued that it is difficult to generalise from case studies, as the case must be of something broader than itself, and that the case to some degree must be similar to a larger population, in order for the findings not to be considered only uniquely bound to the case (Gerring & Seawright, 2007).

Because it is hard to evaluate to what degree the research is transferable, a thick description of the case and the research process has been given so that readers can follow all steps of the research and the logic behind chosen methods. This is known as auditability (Lincoln & Guba, 1985) and was done to let the readers evaluate for them self’s if the findings can be transferred to their specific situation.
3. Theoretical frame

This chapter presents existing literature and previous research related to themes relevant for this study.

To attain a better understanding of the existing goal setting theory it is important to define the goal term as well as important features connected to goals. In the following text, an exposition of the literature will be made regarding goals, goal setting and in particular goal features and their connection to performance.

3.1 Goal setting

Goal setting is a way of specifying what is important and where attention needs to be directed in term of activities to reach the goal (Locke, 1996). It can also be described as a process where an individual directs energy and time in behaviors, activities and in evaluating and selecting actions towards a desired outcome (Parker and Ohly, 2008).

If goal setting is performed in an appropriate way it has been shown to improve both performance outcomes and behaviors (Locke & Latham, 2002). Performance and behaviors are affected positively, because goals influence the direction, persistence and effort of attention, and at the same time it stimulates strategy development (Locke & Latham, 1989). Moreover, tasks which are connected to goals are more interesting to individual, and hence more attention is directed to them both behaviorally and cognitively (Shah et al., 2002).

To attain a better understanding of the existing goal setting theory it is important to define the goal term as well as important features connected to goals. In the following text, an exposition of the literature will be made regarding goals, goal setting and in particular goal features and their connection to performance.

3.1.1 Goal definition

A goal can be defined as “an unrealized state or condition that members of an organization do not possess but which is deemed desirable” (Emsley, 2003, p. 345). Locke (1996) further describe goals as both an internal and an external aspect since they are internal ideas about desired ends and at the same time as they externally refer to the object or condition that is sought. There are two general goal attributes; the content, which is the actual object sought and the intensity, which is the focus, scope and complexity of the choice process (Ibid).

3.1.2 Goal features

Different combinations of goal features can have different impacts on performance, for example, the more challenging the goal, the greater the achievement (Locke, 1968). Winter (2000, p. 990) point out that it is not a secret that high aspirations can often contribute to high achievement. Personally challenging and intriguing tasks are more likely
to produce creative work as long as the person is qualified for the work (Amabile, 1988). Challenging goals that are further accompanied by the feature of being specific can give an even higher level of task performance (Locke, 1996), which is something that has been proven consistently through several laboratory and field studies (Locke & Latham, 1990, 2002; Heslin et al., 2008). On the other hand, if one is asked to do their best, then the goal is vague and compatible with several different outcomes, even outcomes lower than one’s best (Locke, 1996). When goals are specific the performance is more precisely regulated. Often specificity is linked to quantification of the goal, goals that are quantified have a high goal specify. What happens is that the variance in the performance is reduced, since the performance outcome is more controlled (Ibid).

### 3.1.3 Learning- and performance goals

Although challenging goals are mostly recommended, there are cases when the employees lack knowledge and skill, in those cases “do your best” goals are more efficient for increasing the performance, rather than setting challenging performance goals (Seijts & Latham, 2012). Even better in such cases is to have a combination of goal features that are challenging and of learning kind, especially when empathizes is on developing effective processes and pursuit of ideas, this because these goals focus attention on learning by discovery of new processes, procedures, or systems. This learning process is important to eventually be able to master complex tasks (Ibid). Seijts and Latham’s (2012) conclude that the primary difference between a performance goal and a learning goal is the aim of the instruction. Performance goals focus on motivating the employee to use acquired knowledge and skill, whereas learning goals aim to increase the knowledge and skills of the employee. Performance goals focus attention on a specific outcome, where the employee uses strategies and routines they’ve already learned and which they know are effective. It is only in such cases were they already have requisite ability that challenging performance goals can enhance performance with much better results than setting “do your best” goals, or by setting learning goals (Ibid).

### 3.1.4 Stretch goals

Another type of goal feature similar to the combination of challenging and performance goal but more extreme is the stretch goal. These types of goals can be experienced as impossible within the organizational capabilities when it comes to knowledge and skill. This in turn triggers an obligation for significant changes (Sitkin et al., 2011). As Sitkin et al. (2011) explain, the purpose of this type of goals is to promote a higher performance by triggering creativity and assumption breaking thinking, which makes us think outside of the box. This means a shift of attention from old routines and assumptions, towards novel and creative approaches (Rousseau, 1997).
3.1.5 Ambiguous goals

Contrary to specific goals there are goals which are stated in ambiguous terms (Rollinson, 2008). Ambiguity can be understood as the existence of different interpretations of the same piece of information (Brun et al., 2009) or as “something that represents an inability to interpret or make sense of something” (Brun et al., 2009, p. 66). These goals do not specify what should be done (Rollinson, 2008), and hence more options are available, as well as a larger solution space (Brun et al., 2008). These goals are great for e.g. idea generation, because ambiguity leaves the interpretation space needed for new and different ideas to emerge (Ibid).

3.1.6 SMART goals

To make goal setting consist of concrete action steps Doran (1981) published the SMART-criteria approach which has similarities with Locke and Latham’s (1990) goal setting theory. It has though been further developed and used by many other researchers, so the words within the acronym have changed over time as seen for example in MacLeods interpretation (2012). The SMART criteria consist of five significant letters, which in this context represents; specific, measurable, attainable, relevant and time-framed (MacLeod, 2012; Locke & Latham, 2003).

Specific goals give the opportunity to precisely regulated performance, and to make the performance more controllable (Locke, 1996). High specificity is more easily attained through quantification of the goal, meaning goals are designed so the outcome is measurable (Ibid). Measurable goals clarify what the person needs to do to achieve that specific goal (Locke & Latham, 1990). Further, measurable goals are beneficial as they enable one to examine if there is any indication of progress, if goals have been met and to what degree (Yemm, 2012). The SMART-criteria further suggests attainable goals. This enables goal commitment, by convincing the individual that progress can be made towards the goal, by narrowing the gap between ability and demand (Weick, 1984), this with respect to available time, talent and resources (MacLeod, 2012). This removes some uncertainty and feeling of overwhelm (Weick, 1984). The letter R stands for relevant/realistic goals, this means that goals can be challenging but still in good alignment with the companies- and the teams mission (MacLeod, 2012). Lastly, time-bound goals have a limit for achievement which one must deliver within, otherwise things might not be finished (Ibid).

3.1.7 Goal commitment

Although goal setting can entail many benefits, it is not entirely effortless. The positive effects cannot be expected when there is low goal commitment or no goal commitment at all (Locke et al., 1988; Locke, 1996). Goal commitment can moreover be explained as the determination to try achieving a goal or the extension of effort towards accomplishing the goal without abandoning it or lowering the original goal (Hollenbeck and Klein,
Studies have generated several determinants to goal commitment (Locke et al., 1988). However, two crucial prerequisites of goal commitment are that the individual is convinced that a goal is attainable, meaning progress can be made towards it, and that the individual is convinced that the goal is important (Locke, 1996). Regarding the expectations of attainability, Kerzner (2009) explains that insecurity regarding the task or project and the uncertainty regarding the reward after completion can decrease the commitment to tasks. Kerzner also suggests that lack of commitment could be due to something as simple as individuals having personal interest elsewhere. Furthermore, it is argued that by letting the employee actively participate in the goal setting a higher commitment can be achieved than by assigning goals to them. However, this could affect the goal difficulty as the goals might be set less challenging, than when assigned by someone else (Locke, 1966). Though, setting challenging goals has been explained to have a positive effect on the commitment as well (Locke et al., 1996).

As earlier mentioned in the introduction, providing the individuals with plausible and convincing rationales for the goals raises the commitment to goals (Latham et al., 1996; Earley, 1986). Moreover, it is suggested according to studies, that the commitment is higher when a request from legitimate authority is made (Latham & Lee, 1986). This however applies both to goal setting and when introducing new tasks in general (Golembiewski, 2000).

From a more general view, commitment can be defined as “involvement and a generalized sense of purpose that allows people to impose meaning on things, events, and persons” (Weick, 1984, p. 46). Furthermore, resistance and commitment are explained as two sides of the same coin. If resistance is not apparent in the beginning, individuals’ lack-of commitment can result in strong resistance further on in the change process (Bradutana, 2015). Human beings tend to naturally resist change, even when change or new task represents growth and development (Fine, 1986). This is due to fear of the unknown (Baker, 1989). Baker (1989) further summarized several studies on resistance to new tasks or change. She found that workers might also experience fear that they might not have enough skill to perform the new task. However, if workers received clarifying information about a change or a task, they accepted it better than those who don’t, even if the message would be negative (Miller, 1985; Baker, 1989). Moreover, if managers fail to emphasize that change is needed, or fail to communicate that a performance gaps exist, then it could lead to resistance. The same applies to when managers fail to explain the positive effects of the change and to commit sufficient recourses for the change (Baker, 1989).
3.2 Innovation

Innovation creates advantages and value in many ways. New products can for example make it possible to reach new markets, as well as increase profitability and market shares (Tidd, Bessant, 2013). There is a constant change of environment, for example new requirements, changed laws, competitors and other threats, which can close existing pathways. Companies therefore need the capability to respond to changes for survival in the long run (Ibid). The ability to continuously offer and replace products with better versions becomes important. This can be achieved by companies that know how to create novelty both in their offerings and in the way they deliver them (Ibid).

3.2.1 Defining innovation

Lund (2015) explains that there is often a failure to make the distinction between output and activities or processes in innovation. The word “innovation” can describe both an output and an activity (Crossan & Apaydin, 2010). Viewing innovation as a process or as an outcome is not the only way the meaning of innovation can differ. In fact, there seems to be some overlap between several different definitions which often makes it tough to get a clear and authoritative definition of innovation (Baragheh et al., 2009). Damanpour and Schneider (2006) highlight this phenomenon as well by concluding that innovation is studied in many disciplines and has been defined from different perspectives in research. Unfortunately, the lack of a common definition risks undermining the understanding of the nature of innovation (Zairi, 1994; Cooper, 1998).

Two definitions of innovation which when combined have similarities with the one which have been used in this study are for example the one of Cuffaro & Zaksenberg, (2013) and the one of Kumar (2013). The first definition says that innovation is “A new idea, method, or device. The act of creating a new product or process, which includes invention and the work required to bring an idea or concept to final form.” (Cuffaro & Zaksenberg, 2013, p. 255). The other definition states that innovation is “a viable offering that is new to a specific context and time, creating user and provider value” (Kumar, 2013, p.1).

An important aspect to remember when referring to innovation is the difference between the words “innovation” and “invention”. This is something that needs to be distinguished. This difference can be explained by a quote of Fagerberg, (2003, p. 3) which says that “Invention is the first occurrence of an idea for a new product or process, while innovation is the first commercialization of the idea”.

3.2.2 Explore versus exploit

Another distinction important to outline, especially in this study, is the one between operational innovation and operational improvements. Martini et al., (2013) explain that both concepts overlap and become fuzzier due to them being different events integrated in a continuous learning and innovation process. Operational innovation is about coming up with entirely new ways of doing things (Hammer, 2004), and this process innovation is
just as important as product innovation (Tidd & Bessant, 2013). Though it can be mistaken for operational improvement or operational excellence, two terms that refer to achieving higher performance through existing modes or operations (Hammer, 2004), for example by working to reduce errors, cost, delays etc., but all without fundamentally changing how that work is accomplished (Ibid). The latter mentioned improvements can be considered to fall under the term of *exploitation* which is in other literature is defined by similar terms such as refinement, choice, production, efficiency, selection, implementation and execution (March, 1991). Hence, exploitative activities can be considered as refinements of an existing technology, using existing knowledge and skill, also referred to as operational activities, in my study.

In addition to exploitation, March (1991) has also proposed the extensively used definition of exploration, which includes things captured by terms such as search, variation, risk taking, experimentation, play, flexibility, discovery, innovation. Explorative activities can be considered as developing something new, and are in this research referred to as innovation activities.

### 3.2.3 The innovations process

Innovation can also be considered as the successful implementation of creative ideas within an organization (Amabile & Pillemer, 2015). Tidd & Bessant (2013) have summarized this process towards innovation, containing four steps, from concept generation, project assessment, product development to product commercialization. This is similar to Crossan & Apaydin’s (2010) three step model consisting of the following steps; initiation and decision making, development and implementation, and commercialization.

The first step of the innovation process is about identifying opportunities/ideas for new products or services and concept development. This step further includes making decision about which project to continue with. The following step is development and implementation or the problem solving/design stage where the chosen concept is translated into a physical product or service. During implementation, the concept first goes through validation procedures. The last step, commercialization involves marketing activities. In this step, the product goes through market testing- and launching activities, among other things (Crossan & Apaydin, 2010; Tidd & Bessant, 2013).

### 3.2.4 Exploiting the existing and exploring the future

What can easily be overlooked from the short introduction of the innovation process above is the complexity within these steps. Research and development organizations are constantly under the pressure of working with both exploration and exploitation during this process (Lund & Magnusson, 2015; March, 1991).

Govindarajan and Trimble (2010) have devoted the last ten years studying the best practices for executing an innovation initiatives. They conclude among other things that many business organizations are not built for innovation, they are built for efficiency. The
day-to-day pressures can be enormous because of the need to work on both exploitation and exploration, something that is not easily done (Ibid). These two aspects, exploration and exploitation are in a constant competition of scarce resources (March, 1991), and there is a need to find a stable balance between them as both are essential for an organizations survival and prosperity (March, 1991). To engage in one of these at the cost of the other is likely to cause unwanted effects on the expected performance. To solely focus on exploration gives the cost of experimentation but without gaining the benefits from it. On the other hand, to solely focus on exploitation is likely to lead to a constant suboptimal stable condition (Ibid). Moreover, it is often up to the employees to divide their time between explorative and exploitative activities (Birkinshaw & Gibson, 2004).

Lund (2015) has made a visualization (figure 3) inspired by Crossan & Apaydin (2010) which shows where in the innovation process exploration is more concentrated. The red areas in figure 3 marks the concentration of explorative activities. It is further explained that the activities outlined in the different phases of innovation will likely overlap each other, but for the sake of visualization they have been depicted as a linear- and sequential process (Lund, 2005).

![Figure 3. A visualization made by Lund (2005) illustrating where in the innovation process exploration activities are more concentrated](image)

The perspective here is that the nature of activities involved in the early stages of the innovation process are more of the exploratory character (Ibid)

Another way to look upon the balance between exploration and exploitation is the dual organization (Magnusson & Martini, 2008) i.e. an organization that can attain both exploration and exploitation simultaneously through the whole organization. Magnusson and Martini (2008) further suggest that to pursue exploitation or exploration there is a still a need to dive in to the differences of these two and the different organizational challenges towards pursuing them.

### 3.3 Goal setting from an innovation perspective

Now that some basic concepts have been established for both goal setting and innovation, it is necessary to examine how the two are said to be connected to each according to existing literature.

#### 3.3.1 Different rules for innovation

The exploitation part of the organization seeks efficiency by making every activity, task and process repeatable and predictable. Innovation on the other hand is by nature non-routine (Govindarajan & Trimble, 2010) and involves some degree of ambiguity and
uncertainty (Sicotte & Langley, 2000). Hence, it is suggested that planning and organizing must be addressed differently when leading an innovation initiative, as there are some fundamental incompatibilities between efficiency and innovation (Sicotte & Langley, 2000). Govindarajan and Trimble (2010, p.14,) further state that “while break all the rules is toxic as a leadership mantra, there is some truth in that notion, because there are different rules for innovation”.

As previously established, the literature on goal setting mainly recommends specific and challenging goals. The reason for this is so that the goals can lead to a higher level of task performance, in comparison to setting an easy, vague and ambiguous goal, which is often referred to as a “do your best” goals (Locke & Latham, 1990, 2002; Heslin et al., 2008). Moreover, to make the goal setting into concrete action steps the SMART criteria specifies that goals should be specific, measurable, attainable, relevant and time-framed (Doran, 1981; Locke, Latham, 2003; MacLeod, 2012). However, there are several arguments that some of these goal features are not beneficial under certain conditions, such as when creativity and innovation are sought (Prather, 2015; Lund, 2015; Locke, 1994). Moreover, there seems to be some inconsistency in literature regarding which goals that are best suited for innovation (Lund & Magnusson, 2015).

3.3.2 SMART goal criteria from an innovation perspective

Prather (2005) is one scholar that has criticized the use of the SMART-criteria for innovation. He points out that setting SMART goals is an effective way of planning the goals setting and to raise the likelihood of delivering satisfactory results, because the SMART-goal criteria works well when developing an existing system which is already well-known, or at best when trying to work with incremental improvements. The reasons for this that the ambiguity in these situations is small, and therefore also when setting these goals. However, the use of the SMART-criteria is argued not to be applicable when setting goals for radical breakthrough innovation, and it is even suggested to be counterproductive (Ibid). Prather (2005) argues that from an innovation perspective, specific goals could restrict the novel and creative thinking, as it retains us “in the box-thinking”, hence more ambiguity is recommended. Furthermore, realistic goals may also restrict the novel and creative thinking. Novel ideas- even those having strong potential will get thrown aside and they will never get attempted because they are hard to achieve and don’t fit the current frame (Ibid). A study by Kerr & Landauer (2004) is in line with these arguments, by showing that having goals that went beyond the achievability inspired and lead the engineers to come up with radically different solutions, instead of just making minor improvements. Further, specific goals are meant to control and reduce variance in performance (Locke, 1996), which is excellent for exploitative work, for example when you want standardized processes (Benner & Tushman, 2003). This is however not desirable when working with creativity, which is an essential part in innovation. Variance in these cases is beneficial for performance, since it can cause happy accidents to occur (Locke, 1996).
Continuing, goals which are set up to always be realistic and relevant to the stated issue are argued to hinder positive and temporary detours which otherwise could have given positive outcomes (Prather, 2005). Gurteen (1998) is on the same track by stating that if you always insist that new ideas must have some business relevance or business value it could hinder the creativity both on individual and organizational level, this because new ideas come from experimenting with thoughts. If this process is hindered at an early stage by what is not allowed or even by rewards and/or punishments, it stifles the creativity.

It has been shown that if goals are assigned for other aspects of performance such as production and not for creativity then creative performance is less likely to occur (Shalley, 1991). Therefore, leaders must be aware of goal setting and job requirements that may contradict engagement in creative activities, which in the end could lead to behaviors with less creativity in their jobs (Ibid).

It seems as many companies are under the constant pressure of delivering profits and that can suppress innovation initiatives, because they do not contribute to immediate profits (Govindaramjan & Trimble, 2010). In contrast to this, goal theory mainly recommends time-bound goals (Doran, 1981; MacLeod, 2012) although, goals with the need to meet short-term metrics don’t favor radical innovation (Prather, 2005). This because that radical innovation projects are mainly long-term focused by nature (Ibid). In turn this highlights another conflict between innovation and ongoing operations, the tension between short-term and long-term priorities (Govindarajan & Trimble, 2010). Research shows that if people strive for goals focused on complex activities, for example innovation, but lack prior training or experience, they will become the least effective in discovering suitable task strategies, in particular when there is a time-pressure (Locke, 1996). The same applies to situations where there is a high pressure to perform well (Ibid). Having time-bound goals can create time-pressure which forces fast action and decision-making (Prather, 2005). But when it comes to innovation time-bound goals could do more damage than good. Time pressure could force one to take shortcuts and safe actions, and the breakthroughs that are aspired can be missed due to no time for experimentation and playing with ideas (Ibid).

3.3.3 Performance- or learning goals for innovation

Idea generation which is crucial for innovation, depends to a large degree on activities and behaviors such as is information seeking, questioning and experimentation (Pattersson, 2002). Setting performance goals for innovation could potentially suppress innovation initiatives (Locke et al., 1981; 1994), because performance goals don’t enable these activities and behaviors (Sejits & Latham, 2005). Do your best-goals are more efficient for increasing the performance in this case, rather than setting challenging performance goals. Moreover, it suggested to be even better to set challenging learning goals, especially when emphasis is on developing effective processes and pursuit of ideas. This is because these goals focus attention on learning by discovery of new processes, procedures, or systems,
to eventually be able to master complex tasks (Ibid). Also, deep knowledge and understanding of tasks are important for creativity (Amabile, 1998). If not for that reasons it is certainly important when there is uncertainty and ambiguity about a situation. In complex and unpredictable situations people tend to feel insecure in their own state of knowledge or the state of knowledge in general (Brashers, 2001). In changing environments performance goals can lead to cognitive narrowing, whereas learning goals leaves room and support to the employees to openly challenge old ways (Locke et al, 1994). For this to happen goals must though be accompanied by a supportive and trusting climate where risk-taking is allowed. Because performance goals focus a lot on output, there could always be a concern about what the consequences will be if the goal has failed to be reached (Locke 1996). Fear is one of the most common blocks of creativity, as people fear getting things the wrong way or making a fool of oneself because of failure (Gurteen, 1998). To set goals that reinforce the risk of feeling as a failure can therefore be contra productive if innovative outputs are sought. Studies by Dweck & Leggett, (1988), and Elliott & Dweck (1988) reinforce this. Their findings suggest that a performance orientation in goals lead to a lot of focus on the result, the consequences of poor performance, as well as the disapproval of others if one would fail. In contrast, goals that are learning oriented lead to individuals aiming for tasks that are more challenging and that enable them to develop new competence. At the same time their task confidence increases and they could see failures as a natural part of the process (Ibid).

To sum up, performance goals and goals according to the SMART-criteria seem to not be the optimal choice for innovation (exploration) as they can suppress innovation initiatives. For innovation, ambiguous- and challenging learning goals are suggested, to encourage creativity, learning, and exploration which are essential part of innovation (Pattersson, 2002).
4. Result

This chapter will present the results from the interviews and the survey research, in form of tables and summaries in text.

4.1 Rationales for setting- or not setting innovation goals

After receiving the task to set goals for innovation, 15 of the interviewed managers indicated they did so, and 17 of them indicated they did not set innovation goals. The rationales for setting- or not setting innovation goals are summarized in table 1 below.

Table 1. The table summarizes the rationales for setting or not setting innovation goals.

<table>
<thead>
<tr>
<th>Rationales for setting innovation goals</th>
<th>Managerial level</th>
<th>Rationales for not setting innovation goals</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Target setting process becomes the hand rail of the year</td>
<td>Senior manager</td>
<td>- Already working innovatively</td>
</tr>
<tr>
<td>- Brings innovation to a comprehensive level</td>
<td></td>
<td>- It would not contribute to anything more than what we already have</td>
</tr>
<tr>
<td>- Gives an opportunity for discussion and change</td>
<td></td>
<td>- It feels too forced</td>
</tr>
<tr>
<td>- Highlights the importance of being creative in the daily work</td>
<td></td>
<td></td>
</tr>
<tr>
<td>- Support the innovation process</td>
<td>Middle manager</td>
<td>- Innovation is something others do</td>
</tr>
<tr>
<td>- Opportunity to do something fun and out of the ordinary</td>
<td></td>
<td>- Goal down prioritized</td>
</tr>
<tr>
<td>- Creates a sense of being part of the innovation process</td>
<td>Manager</td>
<td>- Did not remember the task to set innovation goals</td>
</tr>
<tr>
<td>- Support the innovation process</td>
<td></td>
<td>- Did not understand the purpose and task</td>
</tr>
<tr>
<td>- Small steps towards innovation</td>
<td></td>
<td>- Not necessary as everything we do has to do with innovation</td>
</tr>
<tr>
<td>- Chance to improve individual skillset</td>
<td></td>
<td>- Will not set goals on patent and invention disclosures</td>
</tr>
<tr>
<td>- Create an innovation culture</td>
<td></td>
<td>- Relying on resources from others</td>
</tr>
<tr>
<td>- Establish a better connection between departments</td>
<td></td>
<td>- Innovation is something others do</td>
</tr>
<tr>
<td>- Inspires employees</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2 Rationales for establishing innovation goals

The managers which indicated they did set innovation goals, felt it could be beneficial for a number of reasons. One benefit mentioned is that the goal setting process becomes the hand rail of the year, i.e focus of the year. This as it directs focus towards targets which every employee could be checking against to see what needs to happen, if they are delivering or falling behind. One manager felt that these goals could bring innovation to a more concrete level for employees who initially though that innovation is only about creating something revolutionary and groundbreaking. Instead the goals could make them regard innovation as smaller improvements or that changes towards innovation are possible. To set goals for innovation was also seen as a way to create a sense of being part of the innovation process, even for those who are not working within the design process. Managers also express that innovation goals can help to support the innovation process and
provide the opportunity to discuss, challenge old structures, and surface different ideas, desires or hinders. Another manager felt that innovation goals could be used to improve individual skillsets, i.e. to move forward as a team and create a culture where you can speak more freely which in turn will help to bring new ideas and embrace change. By setting goals you can also establish a better connection between departments which could help the sharing of ideas and information, and thereby trigger innovation. A manager mentioned that they had an employee coming up with a great idea to change something in a process. This was an idea that they then implemented. This doesn’t happen often in their department, so it inspired the rest of the employees, and the manager felt you could continue to inspire employees by setting innovation goals. Managers also felt that it is important to remind employees and highlight that innovation should be part of the daily work, and that the goal setting could give them an opportunity to be creative.

4.3 Rationales for not establishing innovation goals

The managers which did not set innovation goals expressed several rationales behind their choice. Managers felt for example that the daily routines and demands got in the way, so the goal setting for innovation was not prioritized. Some managers did not understand the task, i.e. the importance or purpose of setting goals for innovation. Some felt that goal setting for innovation was not necessary as their daily work is already all about innovation and that the exploratory aspect should be a natural drive from within, not requiring an external goal. A few managers described that they thought that innovation goals were supposed to be formulated as delivering as much patents as possible, and this in turn felt to them as the wrong approach because it focuses too much on quantity over quality, which can leave you with a lot of ideas lacking actual value. Moreover, some regarded innovation as only “output-related” and felt confused as some though it was outside of their area to design a product, which left them wondering what could be included as innovation goal if not related to the product.

Innovation goals that required extern resources outside of one’s department such as knowledge, skill, equipment etc. were sometimes abandoned early since they needed resources or time from others and were therefore not within their own realm.

Some manager explained that they experienced resistance to the goal program from both managers under them and other personnel. One manager explained that this was because they failed to communicate support to their personnel. Another manager expressed that the employees in their department should have been better prepared, further referring to the fact the managers usually are prepared during a longer time, before introducing new tasks or projects. The rest of the personnel on the other hand are many times handed out the new task or project without any sufficient preparation.
4.4 Goal setting features for innovation activities and operational activities

The majority of the respondents felt that there were differences between operational- and innovation goals, regarding all the goal features that were measured. This can be seen by the different mean values in table 2. However, by looking at the standard deviation in the same table, it can also be seen that opinions were more scattered regarding some goal features. From an innovation perspective, it was during questions six and seven (i.e. Time-bound vs. No specific deadline and Quantifiable vs. Non-quantifiable) that the answers were more scattered, and the standard deviation became as high as $\sigma=1.62$ and $\sigma=1.68$ respectively. The largest dispersion ($\sigma=1.68$) was for time-bound goals versus without a specific deadline, for innovation activities. It is also around this question that the variance is the lowest but from an operational perspective, which gives the largest difference in standard deviation between innovation and operational goals ($\sigma=0.79$). For operational goals, the managers seemed to agree more as the values five out of seven times are less dispersed from the means then for innovation goals. There is some variance here as well and the largest can be found around whether operational goals should be self-generated or set by the manager. The smallest dispersion can be observed in question three ($\sigma=0.95$) and six ($\sigma=0.89$), as they seem to share the opinion that operational goals should be more of performance kind and more time-bound.

Moreover, the Wilcoxon signed ranks test and sign test revealed that there were statistically significant differences between innovation- and operational goals, regarding all goal features. This can be seen in table 2 as well, where these values were all lower than 0.05.

Table 2. The table visualizes descriptive statistics containing mean value, standard deviation and the values from the sign test.

<table>
<thead>
<tr>
<th>Question</th>
<th>Goal features</th>
<th>Type of goal</th>
<th>Mean</th>
<th>Stdev</th>
<th>Sign test</th>
</tr>
</thead>
<tbody>
<tr>
<td>Question 1</td>
<td>Attainable vs Challenging</td>
<td>Innovation goal</td>
<td>4.2</td>
<td>1.04</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 2</td>
<td>Ambiguous vs Specific</td>
<td>Innovation goal</td>
<td>2.7</td>
<td>1.26</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 3</td>
<td>Learning vs Performance</td>
<td>Innovation goal</td>
<td>4.6</td>
<td>1.05</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 4</td>
<td>Self-generated vs Set by manager</td>
<td>Innovation goal</td>
<td>4.5</td>
<td>0.95</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 5</td>
<td>Long-term vs Short-term</td>
<td>Innovation goal</td>
<td>3.8</td>
<td>1.37</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 6</td>
<td>Time-bound vs No specific deadline</td>
<td>Innovation goal</td>
<td>3.4</td>
<td>1.68</td>
<td>0.00</td>
</tr>
<tr>
<td>Question 7</td>
<td>Quantifiable vs Non quantifiable</td>
<td>Innovation goal</td>
<td>3.2</td>
<td>1.62</td>
<td>0.00</td>
</tr>
</tbody>
</table>

As earlier mentioned in the method chapter, acceptable values for skewness and kurtosis in small samples sizes where considered to be values between 1.96 and -1.96 (Ghasemi & Zahediasl, 2012). Although few variables (see appendix 1) fell outside of that range, for
the sake of being accurate a normality test was conducted for all variables. The test revealed that none of the variables were normally distributed (see appendix 4).

4.4.1 Differences between mean values

As seen in table 2, the mean values tell us that the respondents see differences in regards of goal features, between operational- and innovation goals. Figure 4 summarizes how large these differences are for each goal feature.

![Differences between means](image)

Figure 4. The figure visualizes how large the differences are between mean values for innovation- and operational goals, for the different goal features.

4.4.2 Rationales behind chosen goal features

In addition to providing a survey response, respondents also gave their reflections and explained their preferences. These rationales are summarized here, for each goal feature. The summaries are also accompanied by visualizations of where on the interval scale the means for innovation- and operational goals fell.

**Ambiguous goals versus Specific goals**

The largest difference can be observed between ambiguousness and specific (2.33). Many of the respondents argued that goals for innovation should be more ambiguous to leave room for creative and outside of the box thinking to find new solutions. They felt goals that are too specific would be very controlling and lock out interesting opportunities. The few who wanted goals for innovation to be more specific argued that it was to make the fuzziness of innovation more comprehensible. The majority agreed that operational goals should be specific because it is easier to point out a clear direction as its more concrete what end result one is aiming for.
Learning goals versus Performance goals

Respondents explain that innovation is part of working towards something new and unknown, and from that end it is hard to set performance goals, although it might be tempting. They regarded innovation as a continuous learning process where new ideas are generated from learning, consequently goals should be mostly of learning kind. Operational goals are more of performance by nature, they felt. This is an opinion which respondent agreed more on, as seen in the table of descriptive statistics, where the values are more clustered together ($\sigma = 0.95$) around the mean for operational goals, compared to innovation goals ($\sigma = 1.27$).

Time-bound goals versus goals with no specific deadline

A common view among respondents were that regardless of which type of goal, it will be ineffective if not time-bound somehow. This because people need deadlines for something to happen and because the manager needs to be able to follow up the results. Many of them agree that operational goals absolutely should have a stricter deadline, whereas innovation goals should have a deadline as well but not as strict as you don’t want to force out ideas.

Self-generated goals versus goal set by manager

For goals regarding innovation they express that it could be important to consider and involve the employee more in order for the goals to be more aligned with the individual abilities, and to attain more commitment from the employee. They also explained that this
might lead to more sharing of ideas and knowledge, as employees often have specialized technological skills and knowledge within different areas, that the manager does not always have. Goals that are only set by the manager can be limited to just that managers’ skill and creative thinking. Respondents also noted that they are mainly used to top-down goals when it comes to operational goals and that a manager needs to decide more when it comes to operational activities, in order to secure that the goals are aligned with the organizations main purpose and objective.

Figure 8. The figure visualizes the difference in means for innovation and operational goals regarding self-generated vs goals set by manager.

**Long-term- vs Short-term goals**

Innovation goals could be both long term and short term according to managers. The majority however, explained that you should not force innovation within to short period of time, especially if the goals are related to innovation culture, as that is something that is built over time. Some also explained that it could depend on which phase of the innovation process you are setting goals within as well and the nature of the goal, e.g. if it is a large goal or a small goal. Short term goals can sometimes be preferable for innovation activities, because people want to see some kind of progress to keep going. When it comes to operational goals managers seemed to agree more that such goals should be short-term as we more often need to see progress, but even here it could depend on many other factors e.g. individual characterizes, they argue.

Figure 9. The figure visualizes the difference in means for innovation- and operational goals regarding long-term- vs short-term goals.

**Quantifiable- versus non-quantifiable goals**

Most of the managers found it desirable to be able to make both operational goals and innovation goals quantifiable in order to be able to measure and to follow up, but at the same time many of them expressed that it can be difficult to quantify innovation goals. There is also a risk that irrelevant things are being measured just to have something to show, the respondents argue. Quantifiable goals facilitate follow up and this seems important from a manager’s perspective as they often need to show some improvements.
Figure 10. The figure visualizes the difference in means for innovation- and operational goals regarding quantifiable — vs non-quantifiable goals.

**Attainable goals versus challenging goals**

Innovation goals are argued as more challenging by nature, since innovation to some degree can involve working towards something uncertain and unknown, whereas with operational activities you often know more about the situation, as it involves working with the existing. Respondents also mentioned that if you want innovation to happen then you should aim even higher to trigger a more diverse thinking. It was also deemed a little bit more acceptable to fail with innovation goals than operational goals. However, some of the managers argued that in many cases it depends on characteristics of the employee regardless if innovation goals or operational goals.

Figure 11. The figure visualizes the difference in means for innovation- and operational goals regarding attainable- vs challenging goals.

**Spearman’s rank correlation**

After conducting Spearman’s correlation analysis between innovation variables (see appendix 2) the following can be seen; a significant negative (-0.357) correlation between learning/performance goals and goals that are time bound/without a specific deadline. This correlation is significant but can be considered weak. A visualization of this correlation can be seen in figure 12. The second correlation, between quantifiable/non-quantifiable and time-bound/without a specific deadline, turned out to be positive (0.516) and significant. This can be considered as moderate strong. A visualization of this correlation can be seen in figure 13.

![Figure 12. A visualization of significant correlations between innovation variables.](image-url)
Spearman’s correlation analysis between operational variables revealed the following results (see appendix 3); a significant positive correlation (0.374) between Ambiguous/Specific and Learning/Performance, a significant negative correlation (-0.437) between Ambiguous/Specific and Time-bound/without a specific deadline, and a significant negative correlation (-0.411) between Time-bound/without a specific deadline and Long-term/Short-term goals. The visualizations of all three correlations can be seen in figures 14 to 16.

Figure 13. A visualization of significant correlations between innovation variables.

Figure 14. A visualization of significant correlations between operational variables.

Figure 15. A visualization of significant correlations between operational variables.

Figure 16. A visualization of significant correlations between operational variables.
5. Discussion

In this chapter of the thesis a discussion and reflection of the findings in relation to the themes and concepts presented in the theoretical framework will be provided.

5.1 Rationales for establishing innovation goals

The first research question of this study aimed to identify rationales for establishing innovation goals. A handful of different rationales for setting innovation goals were expressed by managers. To make sense of these rationales, they can be roughly categorized into different areas which they seem to be related to or target. These categories are the following: to directing attention towards- and inspire exploration, to bring innovation to a comprehensive level, and to create prerequisites of innovation and/or innovation culture. Each category with examples, is presented in table three.

Table 3. The table displays rationales for setting innovation goals and the categories they are divided within.

<table>
<thead>
<tr>
<th>Direct attention towards- and inspire exploration</th>
<th>Brining innovation to a comprehensive level</th>
<th>Satisfy prerequisites of innovation and/or innovation culture</th>
</tr>
</thead>
<tbody>
<tr>
<td>· Target setting process becomes the hand rail of the year</td>
<td>· Brings innovation to a comprehensible level</td>
<td>· Create an innovation culture</td>
</tr>
<tr>
<td>· Highlight the importance of being creative in the daily work</td>
<td>· Small steps towards innovation</td>
<td>· Support the innovation process</td>
</tr>
<tr>
<td>· Inspire employees</td>
<td></td>
<td>· Creates a sense of being part of the innovation process</td>
</tr>
<tr>
<td>· An opportunity to do something fun and out of the ordinary</td>
<td></td>
<td>· Establish a better connection between departments</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Gives an opportunity for discussion and change</td>
</tr>
<tr>
<td></td>
<td></td>
<td>· Chance to improve individual skillset</td>
</tr>
</tbody>
</table>

In addition to these three categories, appendix six displays categories with examples on innovation goals that were set by the participants. When considering these examples of innovation goals as well, it seems as two additional rationales for setting innovation goals, beside the already mentioned are; to to come up with new ways of working or improving processes, and to generate new ideas or help develop existing ideas. Now, to summarize them all, this gives us five final and main rationales for establishing innovation goals. These are the following: to directing attention towards- and inspire exploration, to bring innovation to a comprehensive level and create knowledge, to create prerequisites of innovation and/or innovation culture, to come up with new ways of working or
improving processes, and final which is to generate new ideas or/and present and implementing them.

Goal setting theory mainly rationalizes goal setting for performance improvements and/or for knowledge development (Locke, 1996; Locke & Latham, 2002; Seijts & Latham, 2012). Others, suggest proactive goal setting to boost innovative behavior of individuals (Odoardi, 2014), or to ensure that sufficient focus and attentions is direct towards explorative activities (Lund & Magnusson, 2015). These are some rationales found in literature which seem to have much in common with some of the rationales identified in this research, such as for example attention direction towards exploration, satisfying prerequisites of innovation, and improving processes. However, since a study examining rationales for setting innovation goals have not been done before, this research offers a more detailed picture on what rationales there can be for establishing goals for innovation, and a broader range of rationales than what pre-existing literature perhaps offers. In addition, it also shows that innovation goals can be used by managers to make innovation more concrete and achievable for employees, which seems to be a finding new to this study.

5.2 Hindrances to goal commitment when establishing innovation goals

The second research question identifies hindrances to goal commitment when establishing innovation goals. Approximately 50 percent of the managers did not to fulfill the task of setting innovation goals in their departments. Looking through all the rationales for not setting innovation goals in table 1, it seems as they can be categorized according to three main factors. These three factors can be seen in table 4, which are the following, misconceptions about innovation, individuals not convinced and lack of resources. The findings suggest that the first factor was not necessarily related to the goal setting, but more likely related to misconceptions about innovation, mainly from defining it as output only, or seeing innovation only as something radical. This is evident in some of the rationales expressed for not setting innovation goal. For example, some managers felt like innovation is something others do, further explaining that it is out of their field to design a product, or out of their ability to do something groundbreaking and radical. Others expressed that innovation is something they already do, just because they manage a R&D department, so they felt innovation goals were not needed. There were also statements that “we will not set goals on invention disclosures and patents”, and hence goals were not set. This because they were unable to imagine other ways of setting innovation goals, and hence forgetting for example process innovation, and activities in innovation.

The second factor can perhaps explain the lack of commitment, as managers were not convinced that the goal program was important. The rationales pointing towards lack of commitment can be seen in table 4, under category two; individuals not convinced. The third factor identified is lack of resources. Participants explained that the daily demands
got in the way, or that they were dependent on resources from others which were rarely available, so the goal setting for innovation was abandoned at an early stage after initiation.

Table 4. The table displays the rationales for not setting innovation goals, and how they are categorized.

<table>
<thead>
<tr>
<th>Misconceptions about innovation</th>
<th>Individuals not convinced</th>
<th>Lack of resources</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Innovation is something others do want to do with innovation</td>
<td>- Did not remember the task to set innovation goals</td>
<td>- Dependent on resources from others</td>
</tr>
<tr>
<td>- Not necessary as everything we do has to do with innovation</td>
<td>- Did not understand the purpose and task</td>
<td>- The task of setting innovation goals was down-prioritized</td>
</tr>
<tr>
<td>- Will not set goals on patent and invention disclosures</td>
<td>- It would not contribute to anything more than what we already have going on</td>
<td></td>
</tr>
<tr>
<td>- Innovation is something others do want to do with innovation</td>
<td>- It feels too forced</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Already working innovatively</td>
<td></td>
</tr>
</tbody>
</table>

Although hindrances to goal commitment especially for innovation goal programs have not been researched before, the three factors identified can to some degree be further explained by already known phenomena in existing literature. For example, researchers have concluded that it can be difficult to get a clear and authoritative definition of innovation (Baragheh et al., 2009) as there is overlap between several different definitions. A lack of a common definition risks undermining the understanding of the nature of innovation (Zairi, 1994; Cooper, 1998). Literature also explain that there is often failure of making a distinction between output and activities or processes in innovation (Lund, 2015). This was clearly reveled in this case study. Although previous researches have touched this issue of definitions difficulty, this research can perhaps extend the knowledge by showing how common misconceptions about innovation can in practice become a hindrance affecting the commitment to innovation goal programs.

Regarding goal commitment, one important prerequisite mentioned in goal setting theory is that the individuals must be convinced that the goal setting is important (Locke, 1996). Moreover, Baker (1989) emphasizes that when changes are about to occur or when new tasks are about to be introduced within an organization, it is important to clearly introduce the change or new task, otherwise the change or task is at risk of being resisted. Baker, (1989) also expresses that there is a need to explain why the change is needed by showing the performance gap that exists, communicate the positive effects of the change or the task, and commit needed recourses. Although, these suggestions are not from a goal setting perspective, they seem relevant in the case of goal setting for innovation. Looking
at the rationales for not establishing innovation goals in category two and three from table 4, it becomes apparent that there are striking similarities between these rationales and what both Baker (1989) and (Locke, 1996) describe. Perhaps not fulfilling these aspects could explain why some did not commit to the task of setting innovation goals in their departments. Beside the rationales, this was to a degree confirmed by at least two managers who explained that they failed to communicate support and prepare the personnel and managers under them, before setting the goals, or handing out the task of setting innovation goals.

Goal setting is suggested for directing attention towards innovation activities (Lund & Magnusson, 2015), as innovation activities are at risk of being deprioritized due to the urgency of exercising the more short-sighted exploitative activities (March, 1991; Lund, 2015). A particularly interesting notion in this research is that even when goal setting programs are initiated for ensuring attention to explorative activities, they are still at risk of being deprioritized because of the short-sighted exploitative activities, even at a managerial level. This in turn indicates the importance of establishing goal setting programs for innovation not only for employees, but at every managerial level as well. Hence, it also becomes important for the higher hierarchal levels of management to lead the way and to assure commitment by preparing the managers under them by explaining the importance of the goal setting, communicating positive effects and committing the right resources.

Summarizing this discussion, three main hinders have been identified which affected the commitment to the innovation goal program negatively. One of these was due to misconceptions about innovation. This is one of the more novel findings, which would by logic not apply to general goal setting as it is specifically linked to innovation related goals. The other two hindrances are; lack of resources and failing to convince the individual that the goal program is important. Moreover, although this type of investigation seems to not have been done from an innovation perspective before, some hindrances identified correspond well with what the recommendations of more general literature on goal setting (Locke, 1994) and task commitment (Baker, 1989) suggest.

5.3 Differences in goal features between innovation- and operational goals

The final part of the research was to examine how goal features for innovation differ from goal features for operational goals. The results from the survey show that there are perceived differences in goal features when setting goals for innovation activities and operational activities.

For operational goals, participants prefer specific, attainable, short-term, time-bound, quantifiable, performance goals, which are set by a manager. Whereas for innovation goals they prefer goal features such as, long-term, challenging, ambiguous, non-quantifiable, learning goals, which are self-generated and with a less strict deadline.
When choosing the goal features for innovation goals, participants further referred to things such as the following: to trigger broader thinking, working towards something uncertain and unknown, innovation as a continuous learning process, new ideas generated from learning, sharing of ideas and knowledge, leaving space for creativity and out of the box thinking to occur. Regarding the features for operational goals, the referred to the following; need to see progress, easier to follow up, goals aligned with the organizations main purpose and objective, stricter deadline, naturally more of performance kind and to point out a clear direction as it is more concrete what end-result you are aiming for.

Managers want to involve the individual more when setting innovation goals compared to when setting operational goals. This because knowledge sharing seems important for innovation and because they want the individual to be more committed and for the goals to be aligned with the individual abilities. Additionally, it was suggested by managers that it is important to involve the individuals, as they often have specialized skills and knowledge within different areas that the manager do not always possess.

To make sense of the correlations in the results, different correlation loops have been visualized, as seen in figure 17, below. The red loop visualizes the correlations that occurred between innovation variables, and the blue loop correlations between operational variables. The figure further visualizes the goal features that were preferred for innovation with a black frame, and goal features preferred for operational activities with a grey faded frame. When combining the preferred goal features and the correlations for innovation, the results showed that learning goals were suggested for innovation, and in this instance, goals tended to also be with a less strict deadline than operational goals, and that was further related to goals also being non-quantifiable. For operational goals the result showed that goals were preferred to be more of performance kind. In this instance, they tended to also be more specific, and specificity is in this case was further related to goals being time-bound, and time-bound goals were related to also being be short-term. This, to some degree highlights Govindarajans & Trimbles (2010) argument about there being a conflict between innovation and ongoing operations, because of the tension between short-term and long-term priorities. Businesses are under a constant pressure of delivering profits and that can suppress innovation initiatives, because they do not contribute to immediate profits (Ibid). Moreover, studies suggest that when working with something new or complex and when there is a lack of training or experience within that task, people tend to become less effective when there is a time- and performance pressure (Locke, 1996). For operational goals that would not be the case as it entails working with the existing, without fundamentally changing how that work is accomplished (Hammer, 2004) using already acquired knowledge.
Figure 17. The figure visualizes two correlation loops. The red lines show correlations that occurred between innovation variables and blue lines correlations between operational variables. The preferred goals features are also visualized, those preferred for innovation with a black frame and those preferred for operational goals with a grey, faded frame.

5.3.1 Goal features from an operational perspective and their relation to existing literature

In goal setting literature challenging and specific performance goals are mainly encouraged (Locke, 1996) or goals according to the widely used SMART-criteria (Doran, 1981; MacLeod, 2012). These recommendations seem to correspond well with the preferred goal features for operational goals. This can perhaps be explained by the fact that a large number of existing studies on goal setting and performance focus on productivity aspects (Latham & Yukl, 1975), which have a lot in common with operational activities (exploitation) by looking at how exploitation involve things such as refinement, choice, production, efficiency, selection, implementation, execution (March, 1991). Most of the goals preferred for operational activities, such as specific, time-bound, quantifiable and performance goals, aim to control and reduce variance in performance according to goal setting theory (Locke, 1996; Benner & Tushman, 2003), which is also in line with the purpose of efficiency and exploitation, by looking at March’s description (1991) of exploitation.

The differences between goals for innovation and goals for operational activities, are perhaps not surprising when regarding by which terms exploration (innovation) is defined on the other hand, e.g. search, variation, risk taking, experimentation, play, flexibility, discovery (March, 1991). These are terms very similar to what the participants expressed when talking about innovation goals. From that notion, the preferred goal features for operational activities which aim to control performance outcome and reduce variance seem to rather contradict these terms describing exploration and innovation.

5.3.2 Important components of innovation and their relation to goal features

Creativity, learning, experimentation and variance are essential for innovation (Patterson, 2002; Prather, 2005; Amabile, 1998; March, 1991). These aspects seem to be connected to each other, and according to the literature they can be triggered by
ambiguity, which is further explained as the existence of different interpretations of the same piece of information (Brun et al., 2009) which leaves interpretation space needed for new and different ideas to emerge (Brun et al., 2008).

Innovation activities and explorative aims are more experimental by nature and involves working towards something new. This can entail some uncertainty and risk-taking (March, 1991). It is suggested that in situations of uncertainty and insufficient knowledge, learning goals should be applied, because there is a need to expand the knowledge, to solve complex tasks (Seijts & Latham, 2005; 2012). These suggestions are in line with what the managers explained as wanting to accomplish by their choice of goal features for innovation.

Previous research has shown that if people strive for goals on complex tasks but lack prior training or experience, they will become less effective in discovering suitable task strategies, in particular when there is time-pressure (Locke, 1996). While this can motivate why goals for innovation should be during a longer timeframe and with a less strict deadline, this rationale was not confirmed in this research. The research shows that the choice of making goals long-term (longer than a year), without a specific deadline, not time-bound and non-quantifiable was because it was perceived as not beneficial to stress ideas and because it can be hard to envision what the end results will be with innovation and how long it will take to finish. This because innovation to some degree involves working towards or with something new and unknown. Moreover, the uncertainty that innovation activities can entail (March, 1991; Sicotte & Langley, 2000), can perhaps bring forth feelings of insecurity in the own state of knowledge or the state of knowledge in general (Brashers, 2001). Though, the uncertainty can be reduced by increasing the available amount of information (Seijts & Latham, 2005; 2012). This perhaps explains why involvement of the individual was considered more important when setting innovation goals, as participants argued that there is more knowledge and creativity in the collective than in one single manager. In comparison to operational goals with an exploitative- and efficiency driven aim, which are repeatable, more certain and predictable (March, 1991; Govindarajan & Trimble, 2010), where needed skill and knowledge is many times is already acquired.

Moreover, challenging goals are important to assure a higher goal commitment (Locke, 1996). While this rationale was confirmed here as well, there was another reason explaining the purpose of challenging innovation goals, in this case to trigger a broader thinking. This is similar to what is suggested by Rousseau (1997) and Sitkin et al (2011) who explain stretch goals as a great trigger of creativity and assumption breaking thinking.

Summarizing the findings and the literature review, it is clear that goal features preferred for innovation were chosen for the purpose of triggering and enabling creativity, learning, variance and experimentation. Aspects that are important and essential for innovation. Such goal features are the following; ambiguous, challenging, long-term, non-
quantifiable, self-generated, learning goals without a specific deadline. This research, besides showing that goal setting for innovation differs significantly from goal setting for operational goals, also challenges the SMART-criteria by suggesting that it is not to be preferred for innovation with respect to creativity, learning, variance and experimentation. From that notion, Prather (2015) arguments are empirically confirmed in this study.

Performance goals and goals according to the SMART-criteria are more in line with goal features preferred for operational goals, where variance reduction and control of the performance outcome is usually desired.

Another distinctive difference in the goal setting between innovation activities and operational activities is that innovation goals are preferred to be set with more involvement from the individual, whereas operational goals are preferred to be set from the manager’s point of view. This difference is however not considered in pre-existing literature. Involvement of the employee seem especially important for innovation, as managers explained that goals which are set only by the manager can be limited to just that managers’ skill and creative thinking. Whereas goals that are set together with the employee can contribute to sharing of knowledge and ideas. Perhaps, if goals are set together it might lead to discussions and surfacing of misconceptions about innovation, which in turn can help to make innovation more concrete for the employees, just as suggested by one of the rationales found for setting innovation goals.
6. Conclusions

The purpose of this study was to identify rationales- and hinders to goal commitment when establishing innovation goals, and to examine how goal setting features for innovation differs from goal setting features for operational goals.

Research mainly rationalize goals setting for innovation to ensure that sufficient attention and resources are given not only to exploitative activities but explorative as well (Lund, 2015). While this was found in this research as well, the findings further revealed several other rationales for setting innovation goals. A summary of the rationales seems to suggest that goal setting for innovation could perhaps be used as a tool to directing attention towards- and inspire exploration, to satisfy prerequisites of innovation and/or innovation culture, to come up with new ways of working or improving processes, and to generate new ideas or/and present and implementing them. The most prominent rationale found for setting innovation goals was to bring innovation to a concrete level, as there seem to be some misconceptions about innovation.

Goal commitment is a central construct in goal setting theory and a prerequisite for succeeding with goal programs (Locke et al., 1988; Locke, 1996). The findings show that innovation goal programs can meet some hindrances which can affect the commitment of individuals negatively. Such hindrances in this case have been identified as due to misconceptions about innovation from defining it as output only, managers not being convinced that the goal program was important and due to lack of resources.

The findings further suggest that goals for innovation differ from goals for operational activities. Firstly, innovation goals where preferred as more self-generated, whereas operational goals were preferred to be set by the manager.

Innovation goals were also preferred as more challenging, ambiguous, long-term, non-quantifiable, of learning kind and with a less strict deadline, if compared to operational goals. All of which are goal features which aim to trigger essential parts of innovation such as creativity, learning, experimentation and variance. When setting operational goals, other goal features were preferred, such as attainable, time-bound specific, quantifiable, short-term, and performance goal, i.e. goal features which are commonly used to reduce variance and control the performance outcome.
7. Theoretical and Practical contribution

To begin with, the research extends the knowledge by suggesting that the out-crowding of explorative activities can be an issue occurring even at a managerial level. This implies that if goal setting programs for innovation are to be established they need to be introduced as a mandatory thing at every level of the organization.

The study also contributes to the existing knowledge by indicating that there are some differences in goal setting between innovation and operational goals. It also challenges the widely used and recommended SMART-criteria from an innovation perspective, by suggesting opposite goal features.

The research further raises the awareness that misconceptions about innovation e.g. defining it as output only or as only something radical and groundbreaking can act as a hindrance to the goal commitment when establishing goal programs for innovation. The research to some degree indicates that such misconceptions can perhaps discourage employees who do not work within product design and development from engaging in explorative activities. The goal setting for innovation can though bring such misconceptions to the surface by trigger discussions, hence this could give a chance to clarify things, making innovation more concrete.

The research has some practical implications, for Sandvik Coromant. It could potentially raise the awareness within the company about what rationales there are for setting these goals, what hindrances that can perhaps be expected within this process and not the least by giving suggestions on how innovation goals can be set. This can act as input for Sandvik Coromant in for the next years target setting process, and perhaps it can help to making innovation more concrete as well as help to ensure that attention is directed towards explorative activities to, which was initially the main rationale for setting the innovation goals.

Recommendations for further research

The findings are limited to R&D manager’s perceptions of goal setting and the research conducted is based on one case study, hence suggested goal features for innovation would need to be further investigated in other firms and settings.
8. References


Doran, G.T., 1981. There’s a SMART way to write management’s goals and objectives. *Management review, 70*(11), pp.35-36.


Appendix 1. Descriptive statistics of goal features

| N | Minimum | Maximum | Mean | Std Deviation | Variance | Skewness | Kurtosis | Statistic | StDev Error | Statistic | StDev Error |
|---|---------|---------|------|--------------|----------|----------|----------|-----------|------------|-----------|------------|-------------|
| Attainable vs Challenging - Innovation | 32 | 1.00 | 5.00 | 4.2188 | 1.059666 | 1.050 | -1.573 | .414 | 2.269 | .009 |
| Attainable vs Challenging - Operational | 32 | 1.00 | 5.00 | 3.3125 | 1.14828 | 1.319 | .016 | .414 | -.997 | .009 |
| Ambiguous vs Specific - Innovation | 31 | 1.00 | 6.00 | 2.7418 | 1.26466 | 1.586 | .841 | .421 | .555 | .021 |
| Ambiguous vs Specific - Operational | 31 | 2.00 | 6.00 | 4.6126 | 1.95443 | 1.112 | -.774 | .421 | .756 | .021 |
| Learning vs Performance - Innovation | 32 | 1.00 | 5.00 | 3.8056 | 1.27660 | 1.613 | .202 | .414 | -1.116 | .009 |
| Learning vs Performance - Operational | 32 | 2.00 | 5.00 | 4.5026 | .95638 | .903 | -.982 | .414 | 1.486 | .009 |
| Self-generated vs Set by manager - Innovation | 32 | 1.00 | 6.00 | 2.4375 | 1.21649 | 1.400 | 1.244 | .414 | 1.596 | .009 |
| Self-generated vs Set by manager - Operational | 32 | 1.00 | 6.00 | 3.7500 | 1.36783 | 1.871 | -.484 | .414 | -.066 | .009 |
| Long-term vs Short-term - Innovation | 32 | 1.00 | 6.00 | 3.0625 | 1.31630 | 1.738 | .689 | .414 | -1.134 | .009 |
| Long-term vs Short-term - Operational | 32 | 2.00 | 6.00 | 4.8625 | 1.93667 | 1.415 | -.005 | .414 | -1.831 | .009 |
| Time-bound vs No specific deadline - Innovation | 32 | 1.00 | 6.00 | 3.4375 | 1.93365 | 2.635 | -.274 | .414 | -1.333 | .009 |
| Time-bound vs No specific deadline - Operational | 32 | 1.00 | 6.00 | 2.9131 | .99747 | .805 | 1.079 | .414 | 2.241 | .009 |
| Quantitative vs Non quantitative - Innovation | 32 | 1.00 | 6.00 | 3.2188 | 1.62112 | 2.628 | .155 | .414 | -1.371 | .009 |
| Quantitative vs Non quantitative - Operational | 32 | 1.00 | 6.00 | 2.2500 | 1.16399 | 1.205 | 1.178 | .414 | 2.022 | .009 |

Appendix 2. Correlation matrix for goal features from an innovation perspective.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Correlation Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Correlation Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Correlation Coefficient</td>
<td>Sig. (2-tailed)</td>
<td>Correlation Coefficient</td>
<td>Sig. (2-tailed)</td>
</tr>
<tr>
<td>Attainable vs Challenging - Innovation</td>
<td>1.000</td>
<td>.32</td>
<td>-1.3125</td>
<td>.31</td>
<td>-1.0300</td>
<td>.31</td>
<td>-1.0190</td>
</tr>
<tr>
<td>Ambiguous vs Specific - Innovation</td>
<td>-1.3125</td>
<td>.31</td>
<td>1.0000</td>
<td>.31</td>
<td>.0260</td>
<td>.31</td>
<td>1.1390</td>
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<tr>
<td>Learning vs Performance - Innovation</td>
<td>-1.0300</td>
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<td>.31</td>
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<tr>
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<td>-1.2050</td>
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<td>-1.3420</td>
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<td>-1.0190</td>
<td>.31</td>
<td>-1.1180</td>
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<tr>
<td>Quantitative vs Non quantitative - Innovation</td>
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<td>.31</td>
<td>.3420</td>
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<td>.2710</td>
<td>.31</td>
<td>.3420</td>
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</tbody>
</table>

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.10 level (2-tailed).
Appendix 3. Correlation matrix for goal features from an operational perspective.

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Attainable vs Challenging - Operational</th>
<th>Attainable vs Specific Operational</th>
<th>Ambiguous vs Specific Operational</th>
<th>Learning vs Performance Operational</th>
<th>Self-generated vs Self by manager Operational</th>
<th>Long-term vs Short-term Operational</th>
<th>Time-bound vs No specific deadline Operational</th>
<th>Quantifiable vs Non quantifiable Operational</th>
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<tr>
<td></td>
<td>Spacemen’s rho</td>
<td>Correlation Coefficient</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
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<td></td>
<td>Ambiguous vs Specific Operational</td>
<td>Correlation Coefficient</td>
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<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
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<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
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<td>0.123</td>
<td>0.014</td>
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<td>-0.039</td>
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<td>32</td>
<td>32</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td></td>
<td>Self-generated vs Self by manager</td>
<td>Correlation Coefficient</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
<td>Sig. (D.F.100)</td>
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<td>0.003</td>
<td>0.221</td>
<td>0.123</td>
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<td>32</td>
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<td>Sig. (D.F.100)</td>
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<tr>
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<td>Time-bound vs No specific deadline</td>
<td>Correlation Coefficient</td>
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<td>Sig. (D.F.100)</td>
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* Correlation is significant at the 0.05 level (2-tailed).

Appendix 4. Test of Normality

<table>
<thead>
<tr>
<th>Tests of Normality</th>
<th>Kolmogorov-Smirnov*</th>
<th>Shapiro-Wilk</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Statistic</td>
<td>df</td>
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<tr>
<td>Attainable vs Challenging - Operational</td>
<td>0.170</td>
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<tr>
<td>Ambiguous vs Specific Innovation</td>
<td>0.302</td>
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<tr>
<td>Ambiguous vs Specific Operational</td>
<td>0.224</td>
<td>31</td>
</tr>
<tr>
<td>Learning vs Performance Innovation</td>
<td>0.232</td>
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</tr>
<tr>
<td>Learning vs Performance Operational</td>
<td>0.268</td>
<td>31</td>
</tr>
<tr>
<td>Self-generated vs Self by manager Innovation</td>
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<td>31</td>
</tr>
<tr>
<td>Self-generated vs Self by manager Operational</td>
<td>0.259</td>
<td>31</td>
</tr>
<tr>
<td>Long-term vs Short-term Innovation</td>
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<tr>
<td>Long-term vs Short-term Operational</td>
<td>0.163</td>
<td>31</td>
</tr>
<tr>
<td>Time-bound vs No specific deadline Innovation</td>
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<td>31</td>
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<tr>
<td>Time-bound vs No specific deadline Operational</td>
<td>0.274</td>
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</tr>
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<td>Quantifiable vs Non quantifiable Innovation</td>
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<tr>
<td>Quantifiable vs Non quantifiable Operational</td>
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<td>31</td>
</tr>
<tr>
<td>Attainable vs Challenging - Innovation</td>
<td>0.283</td>
<td>31</td>
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</tbody>
</table>

* Lilliefors Significance Correction
Appendix 5. Wilcoxon Signed Rank Test

### Test Statistics

<table>
<thead>
<tr>
<th>Attainable vs Challenging-Operational-Attainable vs Challenging-Innovation</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-2.483</td>
<td>0.013</td>
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</table>

a. Wilcoxon Signed Ranks Test  
b. Based on positive ranks.

<table>
<thead>
<tr>
<th>Ambiguous vs Specific Operational-Ambiguous vs Specific-Innovation</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-4.094</td>
<td>0.000</td>
</tr>
</tbody>
</table>

### Test Statistics

<table>
<thead>
<tr>
<th>Learning vs Performance Operational-Learning vs Performance Innovation</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-3.599</td>
<td>0.000</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.

<table>
<thead>
<tr>
<th>Self-generated vs Set by manager-Operational-Self-generated vs Set by manager-Innovation</th>
<th>Z</th>
<th>Asymp. Sig. (2-tailed)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>-3.066</td>
<td>0.000</td>
</tr>
</tbody>
</table>

a. Wilcoxon Signed Ranks Test  
b. Based on negative ranks.
### Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>Long-term vs Short-term</th>
<th>Operational - Long-term vs Short-term Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z</strong></td>
<td>-2.741&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.006</td>
<td></td>
</tr>
</tbody>
</table>

*<sup>a</sup> Wilcoxon Signed Ranks Test<br><sup>b</sup> Based on negative ranks.

### Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>Time-bound vs No specific deadline</th>
<th>Operational - Time-bound vs No specific deadline Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z</strong></td>
<td>-3.289&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.001</td>
<td></td>
</tr>
</tbody>
</table>

*<sup>a</sup> Wilcoxon Signed Ranks Test<br><sup>b</sup> Based on positive ranks.

### Test Statistics

<table>
<thead>
<tr>
<th></th>
<th>Quantifiable vs Non quantifiable</th>
<th>Operational - Quantifiable vs Non quantifiable Innovation</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Z</strong></td>
<td>-3.073&lt;sup&gt;b&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Asymp. Sig. (2-tailed)</td>
<td>.002</td>
<td></td>
</tr>
</tbody>
</table>

*<sup>a</sup> Wilcoxon Signed Ranks Test<br><sup>b</sup> Based on positive ranks.
Appendix 6. Example of innovation goals that were set

<table>
<thead>
<tr>
<th>Prerequisites for innovation</th>
<th>Process and ways of working</th>
<th>Input (ideas) or output (presenting and implementing them)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working on collaborating with others</td>
<td>Develop a new version/process from scratch</td>
<td>Specify an idea and realize it during Q1</td>
</tr>
<tr>
<td>Extending the usage of SharePoint to share knowledge</td>
<td>Organizing training and exercise material for processes or ways of working</td>
<td>Generate three cross-functional ideas and take them to the right steering fora or implement them directly</td>
</tr>
<tr>
<td>Helping by forwarding information and knowledge between internal clients with the likewise problems</td>
<td>Send employee to attend a specific class, to bring in new knowledge and ways of working</td>
<td>Develop and get the functionality of a software ready for the market</td>
</tr>
<tr>
<td>Contact the engineers and seek out tasks</td>
<td>Looking at a new invention and evaluating if it could be applicable in the existing system and at the same time observe where in the system employees experience hinders</td>
<td>Prepare and present ideas to have others buy in</td>
</tr>
<tr>
<td>Being part of specific amount of projects (...) and actively be part of developing ideas.</td>
<td>Improving existing ways of working</td>
<td>Set aside time to work on an own idea</td>
</tr>
<tr>
<td>Participating in coming researches on how to handle the innovation process</td>
<td>Explore innovative solutions</td>
<td>Take one category and work on an idea within that</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Participate in developing an idea</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Request and direct effort towards activities where we can use the whole organization for idea generation in areas we need help within</td>
</tr>
</tbody>
</table>

Appendix 7. Table with goal features and their definitions

<table>
<thead>
<tr>
<th>Goal feature</th>
<th>Definition</th>
<th>Goal feature</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attainable objectives:</td>
<td>Attainable, easily achieved</td>
<td>Challenging objectives:</td>
<td>Hard to achieve</td>
</tr>
<tr>
<td>Ambiguous objectives:</td>
<td>Room for own interpretation, vague</td>
<td>Specific objectives:</td>
<td>Clear, focused, detailed</td>
</tr>
<tr>
<td>Learning goals:</td>
<td>Learning new things, achieving understanding, mastering new tasks</td>
<td>Performance goals:</td>
<td>Perform, deliver output</td>
</tr>
<tr>
<td>Self-generated objectives</td>
<td>Participatively set goals</td>
<td>Objectives set by manager</td>
<td>Goals formulated by the manager</td>
</tr>
<tr>
<td>Long-term objectives</td>
<td>Long-term, longer than a year</td>
<td>Short-term objectives</td>
<td>Short-term, one year or shorter</td>
</tr>
<tr>
<td>Time-bound goals</td>
<td>With a specific deadline</td>
<td>Goals without a specific deadline</td>
<td>Goals which are not time-bound</td>
</tr>
<tr>
<td>Quantifiable goals</td>
<td>Able to measure by numbers</td>
<td>Non-quantifiable goals</td>
<td>Hard to measure by numbers, needs evaluation</td>
</tr>
</tbody>
</table>
Appendix 8. Interview guide for semi structured interviews

1. Tell me a little about yourself
   - Background
   - Employment position
   - Time of employment

2. Can you describe what your department works with?
   - Tasks, responsibilities

3. How would you say that your departments work relates to innovation?
   - What's your definition/perception of innovation?

4. What goals do you have yourself that are related to innovation
   - Can you provide us with an example?

5. Can you provide us with some examples on goals you set for your department?

6. What did you want to achieve with the goals you set?
   - New ideas
   - Implementing existing ideas
   - Something else

7. How did you perceived and approach the task of setting goals for Idea Management 2016?
   - Your first reactions?
   - Describe your way of approaching the goal setting?
   - How did you go about?
   - Review

8. How do you manage directing attention when you set goals for innovation?
   - Towards or from something

9. Can you describe challenges you came across when setting goals for innovation?
   - Individual, team challenges, cognitive, behavioral (resistance, commitment)
   - Resources- (time, knowledge, material, support)

10. What will you do different next time you set goals? Why?

11. What will you continue doing the same way? Why?

Now I would like your help by answering a quick survey, where you base your answers on what you prefer when setting goals. It would be very appreciated if you could think loudly and reason your answers. (The survey can be found in the method chapter, as figure)

End questions:
- Do you feel like I missed something, that you would like to bring up?
- Is it alright if I get back to you if further information is needed?