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Leading and Organizing for Radical Innovation

A qualitative benchmarking study of how SKF could stimulate radical innovation

Master Degree Project in Innovation and Industrial Management

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LEADING AND ORGANIZING FOR RADICAL INNOVATION
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ABSTRACT

Studies show that one of the most important factors for innovation success is that leaders support and involve in innovation efforts. Even though radical innovation is essential for long-term success, and that radical innovation requires different managerial approaches than incremental innovation, little attention has been paid to the relationship between leaders and radical innovation. This study aims to focus on this particular relationship from the viewpoint of large Swedish manufacturing companies. The main purpose in this qualitative benchmarking study is to investigate what leadership practices that stimulate radical innovation and to give SKF, the project sponsor, recommendations out of the findings. Leadership in this context refers to a fusion of traditional leadership and management approaches. Empirical findings demonstrate that it is necessary to establish an innovation process specifically for radical innovation. Additionally, a culture where risk and failure is accepted is essential for radical innovation success, and it is beneficial to define the concept of radical innovation, not only related to technology and products but also comprising the whole company. Findings also show that communicating a clear direction of where innovation is desired, educating about innovation, and providing time and financial resources for innovation are all important leadership practices in order to stimulate radical innovation.

Keywords: *radical innovation, leadership practices, management practices, radical innovation process, radical innovation management, radical innovation leader*

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TABLE OF CONTENTS

ABSTRACT	3
ACKNOWLEDGEMENTS	4
1. INTRODUCTION.....	8
1.1 BACKGROUND	8
1.2 PURPOSE AND RESEARCH QUESTION.....	9
1.3 DELIMITATIONS.....	10
1.4 DISPOSITION.....	10
2. THEORETICAL FRAMEWORK.....	11
2.1 LEADERSHIP	11
2.2 RADICAL INNOVATION DEFINITION.....	12
2.3.1 THE INNOVATION PROCESS.....	13
2.3 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION.....	15
2.4 LEADERSHIP PRACTICES	16
2.4.1 PROVIDE AND COMMUNICATE VISION AND MISSION.....	16
2.4.2 ACCEPT RISK AND FAILURE.....	18
2.4.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS.....	18
2.4.4 DESIGN INNOVATION TEAMS.....	19
2.4.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS.....	20
2.4.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY.....	20
2.4.7 REWARD AND RECOGNIZE INNOVATION.....	21
2.4.8 EDUCATE AND TRAIN FOR INNOVATION.....	21
2.4.9 SUMMARY OF LEADERSHIP PRACTICES.....	22
3. METHODOLOGY.....	24
3.1 RESEARCH DESIGN.....	24
3.2 RESEARCH STRATEGY	26
3.3 RESEARCH METHOD.....	26
3.4 SELECTION OF FIRMS AND RESPONDENTS.....	27
3.5 DATA ANALYSIS.....	29
3.6 RESEARCH QUALITY.....	30
4. EMPIRICAL FINDINGS.....	32
4.1 RADICAL INNOVATION DEFINITION.....	32
4.2 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION.....	34
4.3 LEADERSHIP PRACTICES	35
4.3.1 PROVIDE AND COMMUNICATE VISION AND MISSION.....	35
4.3.2 ACCEPT RISK AND FAILURE.....	36
4.3.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS.....	37
4.3.4 DESIGN INNOVATION TEAMS.....	41
4.3.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS.....	42
4.3.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY.....	44
4.3.7 REWARD AND RECOGNIZE INNOVATION.....	46
4.3.8 EDUCATE AND TRAIN FOR INNOVATION.....	47
4.3.9 SUMMARY – IMPORTANT TAKEAWAYS FROM EMPIRICAL FINDINGS.....	49
4.3.10 SUCCESS FACTORS FOR RADICAL INNOVATION – BENCHMARKING.....	51
4.3.11 BARRIERS TO RADICAL INNOVATION – SKF.....	53
5. ANALYSIS.....	54
5.1 RADICAL INNOVATION DEFINITION.....	54

5.2 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION.....	55
5.3 LEADERSHIP PRACTICES	56
5.3.1 PROVIDE AND COMMUNICATE VISION AND MISSION.....	56
5.3.2 ACCEPT RISK AND FAILURE.....	57
5.3.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS.....	58
5.3.4 DESIGN INNOVATION TEAMS.....	60
5.3.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS.....	61
5.3.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY.....	61
5.3.7 REWARD AND RECOGNIZE INNOVATION.....	62
5.3.8 EDUCATE AND TRAIN FOR INNOVATION.....	63
6. CONCLUSION.....	65
6.1 WHAT LEADERSHIP PRACTICES FAVOR RADICAL INNOVATION FOR LARGE SWEDISH MANUFACTURING COMPANIES?.....	65
6.2 HOW COULD RADICAL INNOVATION BE DEFINED FOR SKF?.....	67
6.3 WHAT CHARACTERIZES A SUCCESSFUL LEADER FOR RADICAL INNOVATION?.....	68
6.5 RECOMMENDATIONS – HOW COULD THE FOUND LEADERSHIP PRACTICES BE APPLIED TO SKF?.....	68
6.6 SUGGESTIONS TO FUTURE RESEARCH	70
REFERENCES	71
APPENDIX 1 - INTERVIEW GUIDE USED IN THE BENCHMARKING STUDY	75
APPENDIX 2 - INTERVIEW GUIDE USED AT SKF.....	76

LIST OF FIGURES

FIGURE 1.1 DISPOSITION	10
FIGURE 2.1 THE STAGE-GATE™ NPD PROCESS	14
FIGURE 2.2 “THE HOURGLASS MODEL OF HOW SERIAL INNOVATORS INNOVATE”	14
FIGURE 2.3 CONCEPTS USED FOR THE INNOVATION PROCESS IN THIS THESIS	15
FIGURE 3.1 RESEARCH DESIGN	24
FIGURE 3.2 RESEARCH DESIGN – PARTS INCLUDED	26

LIST OF TABLES

TABLE 2.1 SUMMARY OF LEADERSHIP PRACTICES FROM THEORY	22-23
TABLE 3.1 BENCHMARKING STUDY	28
TABLE 3.2 SKF STUDY	29
TABLE 4.1 SUMMARY EMPIRICAL FINDINGS, RADICAL INNOVATION DEFINITION	33
TABLE 4.2 SUMMARY EMPIRICAL FINDINGS, CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION	35
TABLE 4.3 SUMMARY EMPIRICAL FINDINGS, LEADERSHIP PRACTICES	49-51

1. INTRODUCTION

This section provides a background discussion to the purpose of this thesis. It introduces the project topic and project sponsor - SKF. Additionally, it explains the purpose and research questions, the delimitations that have been made and outlines the disposition of the thesis.

1.1 BACKGROUND

Globalization, technological development and changed customer demand have created a business environment where the ability to add value highly depends on creativity and innovation (Mumford et al., 2007). The current rapidly changing society has resulted in that companies, now more than ever, have to focus on being innovative to survive in the long run (Mumford & Licuanan, 2004; Byrne et al. 2009). Different organizations may focus on either radical or incremental innovation, depending on the competition that the organization faces. However, there is no doubt that an appropriate balance between radical and incremental innovation is essential to stay competitive on the market (Oke et al., 2009).

According to a McKinsey study with 2,927 worldwide executives, the most important factors for innovation success are to integrate innovation into the corporate strategy and that leaders support and involve in innovation efforts. Looking at the former factor, a “focused, clearly articulated and, integrated” strategy is a key success factor for innovation (McKinsey, 2012). However, Soken and Barnes (2014) mean that a problem with this is the lack of a shared definition of innovation on an organizational level. Examining the second factor, the leader and the leadership has been paid significant attention to in literature (Mumford et al., 2007; Byrne et al., 2009), as well as the importance of the role of the leaders in shaping the success of creative efforts (Mumford & Licuanan, 2004).

An interesting aspect to consider is that there exist a significant difference between the impact of radical versus incremental innovation on the firm (Hurmelinna-Laukkanen et al., 2008) and radical innovation implies a greater challenge for organizations in comparison to incremental innovation (Büschgens et al., 2013). Although researchers agree that different management approaches are necessary depending on if stimulating incremental or radical innovation (Hurmelinna-Laukkanen et al., 2008; Oke et al., 2009), and that radical innovation is crucial for long-term success and growth (Alexander & van Knippenberg, 2014; Gassman et al., 2012), surprisingly little attention has been paid to the connection between leadership and radical innovation.

This connection has now been brought into light within SKF, a multinational Swedish company that develops products within bearing technology, such as bearings, seals, lubrication systems and linear motion (SKF, 2015, Products). SKF has approximately 48,000 employees and operates in more than 130 countries (SKF, 2015, Our Company; SKF, 2015, Organization). They are currently doing reorganization, where they aim for a more decentralized organizational structure. According to SKF, one of their drivers is innovation (SKF, 2015, Vision, mission, drivers and values), and they are now investigating how their leaders could stimulate and impact radical innovation, and what a company-shared definition of radical innovation could be. Regarding how leaders can impact innovation, earlier researches have discussed two broad categories; the attributes leaders possess, and what they must be able to do (Mumford et al., 2007). Therefore, to get a holistic perspective, it is relevant to both investigate what characterizes a successful leader for radical innovation, as

well as what the leader can do to stimulate radical innovation. In this paper, the latter is referred to as “leadership practices”.

1.2 PURPOSE AND RESEARCH QUESTION

The purpose of the thesis is to investigate what leadership practices that favor radical innovation, and to give recommendations to SKF out of our findings.

To accomplish this, we need to understand what radical innovation means to SKF by defining a common concept for the organization, investigate effective leadership practices that favors radical innovation and analyze how to apply the findings to the current situation at SKF.

According to the Global Innovation Index 2014, which takes into account both innovation potential on a market economy level as well as actual innovation output of a country, Sweden is ranked as number three in the whole world (The Global Innovation Index, 2014, The human factor in innovation). Looking at only patent applications, Sweden was the fourth most innovative country in Europe the same year according to the Swedish Patent and Registration Office (PRVbloggen, 2015). Since SKF is a Swedish company, and since Sweden seems to have both great innovation potential as well as proven evidence of having innovative companies, it is both relevant and interesting to investigate the relation between leadership and radical innovation within innovative companies in the country. Therefore, a part of this study will consist of a benchmark study. To add value to SKF, the study will be limited to investigate large Swedish manufacturing companies that are similar to SKF. To fulfill our purpose, and with this in mind, we will use the following research question and sub questions:

What leadership practices favor radical innovation for large Swedish manufacturing companies?

Sub question: How could radical innovation be defined for SKF?

Sub question: What characterizes a successful leader for radical innovation?

Sub question: How could the found leadership practices be applied to SKF?

It is important to clarify that the word *leadership* in this context refers to both leadership and management. The reason to this is that since SKF aims to find out how their leaders can stimulate and impact innovation, it adds more value to have a broader scope and include both concepts. Investigating the concept of leadership, De Jong and Den Hartog (2007) describe that there are some basic elements that most definitions include in the concept, which are “groups”, “influence”, and “goals”. Looking at the concept of management: “Management can get things done through others by the traditional activities of planning, organizing, monitoring and controlling - without worrying too much what goes on inside people’s head...” (Nicholls, cited in Strannegård & Styhre, 2013, pp. 171-172). With this in mind, the concept of leadership in this context is referred to as being conducted “from a managerial perspective and takes place in a group context in which the leader either influences his or her followers’ behaviors, or plan, organize, monitor and control to meet desired organizational goals”.

1.3 DELIMITATIONS

Since the main objective is to investigate what leadership practices that stimulate radical innovation for large Swedish manufacturing companies, this paper will exclude specific practices for medium-sized, small companies and startups.

Due to constraints in time, the number of companies interviewed is limited to 10 manufacturing companies and the one innovation agency of Sweden, Vinnova. Also, the number of respondents at both the benchmarking companies and at SKF is limited due to time constraints.

Moreover, we will focus on real-life examples of how the companies actively work with leadership for radical innovation, and provide SKF with inputs, thus not intend to draw general conclusions of what works for all kinds of companies. We will not dig deeper into the innovation process, thus not investigate more thoroughly how to generate ideas, how to develop an innovation or launch it. Instead we will focus on the overall picture and bring forward specific areas that are relevant for a leader to consider. We will also provide real-life examples of how radical innovation can be stimulated in practice.

1.4 DISPOSITION

Figure 1.1 shows the disposition of the thesis and provides an overview of what the different chapters contain.

Introduction	<ul style="list-style-type: none">• Introducing background, purpose, research question, sub questions, delimitations
Theoretical framework	<ul style="list-style-type: none">• Common concepts• Radical innovation definition• Characteristics of a successful leader for radical innovation• Leadership practices
Methodology	<ul style="list-style-type: none">• Research design, strategy, method, data analysis, selection of firms and respondents, research quality
Empirical findings	<ul style="list-style-type: none">• Radical innovation definition• Characteristics of a successful leader for radical innovation• Leadership practices
Analysis	<ul style="list-style-type: none">• Radical innovation definition• Characteristics of a successful leader for radical innovation• Leadership practices
Conclusion	<ul style="list-style-type: none">• Answers to research question and subquestions• Suggestions for future research

Figure 1.1 - Disposition

2. THEORETICAL FRAMEWORK

The theoretical framework aims to explore the concepts used in the study, and provides a point of origin for the rest of the paper. The theoretical framework consists of three main parts. This first part discusses the topics of leadership, radical innovation and the innovation process. This part introduces the concepts and builds a foundation for answering to the sub-question “how could radical innovation be defined for SKF”. Part two and three present earlier research and theory of what leaders can do to impact innovation. The second part consists of found research about how the leader is, thus provides a basis for answering to the sub-question of what characterizes a successful leader for radical innovation. The third part builds the foundation for answering to the main research question what leadership practices that stimulates radical innovation for large Swedish manufacturing companies. It consists of eight leadership practices, developed by the authors, which are frequently mentioned as stimulating innovation.

2.1 LEADERSHIP

Since there exist no commonly shared definition of leadership, the concept means different things to different people (De Jong & Den Hartog, 2007). De Jong and Den Hartog (2007) describe leadership as “the process of influencing others towards achieving some kind of desired outcome”. Additionally, they describe that there are some elements that are common to include in the concept, which are “groups”, “influence”, and “goals” (ibid.). Oke et al. (2009) refer to leadership as “a social process that takes place in a group context in which the leader influences his or her followers’ behavior so that desired organizational goals are met”.

According to Strannegård and Styhre (2013, pp.159-160) leadership does not necessarily need to be conducted from a managerial perspective, i.e. from someone in a superior position within an organization. It could also be influencing efforts from a junior to a senior employee or between peers. However, the managerial approach has been paid most attention in research (Strannegård & Styhre, 2013, pp.159-160) and since this paper aims to provide SKF with recommendations from a managerial perspective, we choose to look at leadership from this viewpoint.

Looking at the concept of management: “Management can get things done through others by the traditional activities of planning, organizing, monitoring and controlling - without worrying too much what goes on inside people’s head. Leadership, by contrast, is vitally concerned with what people are thinking and feeling and how they are to be linked to the environment to the entity and to the job/task” (Nicholls, cited in Strannegård & Styhre, 2013, pp. 171-172). Most managers conduct both management and leadership, however, the leadership part is more about inspiring and influencing others and contains a voluntary part. Even though you can order people to do a particular task it is impossible to force them to for example change their mood (Strannegård & Styhre, 2013). Even though not all leaders are managers and not all managers are leaders (Strannegård & Styhre, 2013), this paper will address both concepts when talking about leadership in the context of “leadership practices”. The reason to this is the added value it will provide SKF with if investigating both concepts, and that it might be hard to distinguish between the two since they are fuzzy and subjective concepts. The following definition will be used throughout this paper:

“Leadership is conducted from a managerial perspective, and takes place in a group context in which the leader either influences his or her followers’ behaviors, or plan, organize, monitor and control to meet desired organizational goals”

- By authors

2.2 RADICAL INNOVATION DEFINITION

Innovation is a multi-faceted concept that has been described as the quest for finding new ways of doing things. The concept innovation does however not only mean a change in the status quo; it also includes the creation and commercialization of new knowledge and discoveries. Soken and Barnes (2014) argue that innovation “is about creating value and that it requires individuals and organizations to embrace something new”.

Innovation has also been categorized into two different kinds; radical innovation and incremental innovation (Oke et al., 2009) and it is a shared belief that there exist a difference between the two concepts (Hurmelinna-Laukkanen et al., 2008). Incremental innovation is an “improvement effort of something that already exists” whilst radical innovation is “the discovery of something completely new” (Oke et al., 2009).

However, there exist no globally accepted definition of radical innovation. Nevertheless, there are some common characteristics that seem to build up the concept (Hurmelinna-Laukkanen et al., 2008). Radical innovation is expected to imply more fundamental changes for the company’s activities, and is often related to higher risks during both the development and the commercialization in comparison to incremental innovation (Büschgens et al., 2013). Gassman et al. (2012) define radical innovation as “products that have a high impact on existing markets or create wholly new markets by offering totally new benefits, significant improvements in known benefits, or significant reduction in costs”. This definition is similar to other researchers’ as well (Colarelli O’Connor and DeMartino, 2006). However, radical innovation should not be seen as only related to products. Following OECD’s categorization, the concept of innovation can be divided into four groups: Product innovation, process innovation, marketing innovation and organizational innovation¹.

¹OECD defines innovation as: Product innovation: “A good or service that is new or significantly improved. This includes significant improvements in technical specifications, components and materials, software in the product, user friendliness or other functional characteristics”; Process innovation: “A new or significantly improved production or delivery method. This includes significant changes in techniques, equipment and/or software”; Marketing innovation “A new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing”; Organizational innovation “A new organisational method in business practices, workplace organisation or external relations” (OECD, 2015, Innovation)

With Gassman et al's (2012) definition and OECD's categorization in mind, the concept of radical innovation in this paper will be referred to as:

“Radical innovation is product-, process-, marketing- or organizational innovation that has high impact on an organization's existing/new activities or existing/new markets by offering totally new benefits, significant improvements in known benefits, or significant reduction in costs”

- By authors

Hurmelinna-Laukkanen et al. (2008) suggest that the radical part of innovation is highly conceptualized, meaning that the radicalness can differ depending on “the product assortment, the marketplace, or on the individual firm”. Moreover, they mean that both macro- and micro-level aspects can be considered, as well as both marketing and technological viewpoints (ibid.). With regards to this, the concept can be both on a national level and a subjective level for the firm. In this paper, a subjective and firm-specific approach will be used, with the aim to investigate the firms' own interpretations of radical innovation. This, since a radical innovation for one firm might mean an incremental innovation for another firm (Hurmelinna-Laukkanen et al., 2008).

It should also be mentioned that similar concepts have been labeled differently within research, e.g. discontinuous innovation, disruptive innovation or architectural innovation (Hurmelinna-Laukkanen et al., 2008), but that this paper only will use the terminology radical innovation.

2.3.1 THE INNOVATION PROCESS

To be innovative, it is not sufficient to be creative and come up with new possibilities and ideas; successful *implementation* is also required (Oke et al., 2009). In literature, common is to refer to the innovation process as consisting of different steps, however with different denominations. Many researches refer to two main phases: first being idea generation and second implementation (De Jong & Den Hartog, 2007; Byrne et al., 2009) or development and launch (Bel, 2010). Some of the key processes in the idea generation phase are to define a problem, gather information and construct a concept (Byrne et al., 2009). This phase requires creativity and vision (Bel, 2010). In the second step, some of the core processes include to evaluate and develop ideas (Byrne et al., 2009), and the importance of efficiency and discipline is stressed (Bel, 2010).

Related to this, there has been suggestions to models for how new product innovation should be developed successfully. Griffin et al. (2014) state that for new product development (NPD), the most known process is the Stage-Gate™ model, developed by Robert G. Cooper. This process of developing new products is mainly linear in nature, and the product follows different stages where managers are to decide if the product should proceed to the next stage or not (ibid.). Figure 2.1 shows the process.

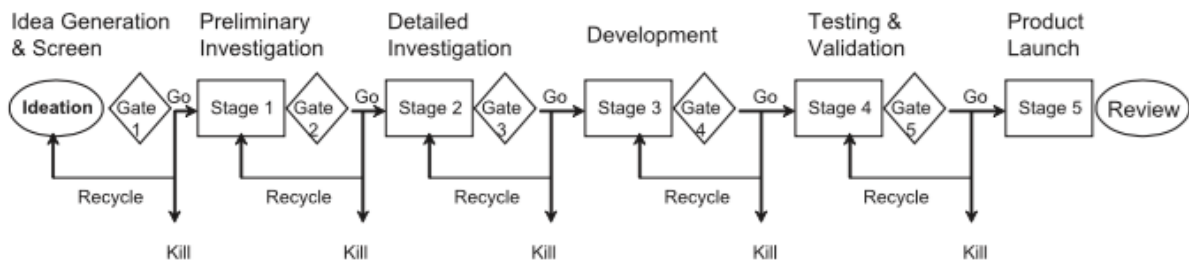


Figure 2.1 - The Stage-Gate™ NPD process (Griffin et al., 2014)

Griffin et al. (2014) mean that such standardized process yields good outcome for incremental innovation, but that they are not as useful for radical innovation. The reason to that is since when developing radical innovation, the process is not as straightforward and linear. Often radical innovation requires more “learn and probe” processes. Studying “serial innovators” (innovators who repeatedly have commercialized new products), in large firms, Griffin et al. (2014) have developed a model for radical innovation development. Figure 2.2 shows their hourglass model of how serial innovators innovate. According to the model, the radical innovation process is rather circular, or iterative, than linear, and the companies refine their efforts during the development. The solid lines show pathways that the companies frequently take, whilst the dotted lines show feedback loops that occasionally are taken (ibid.).

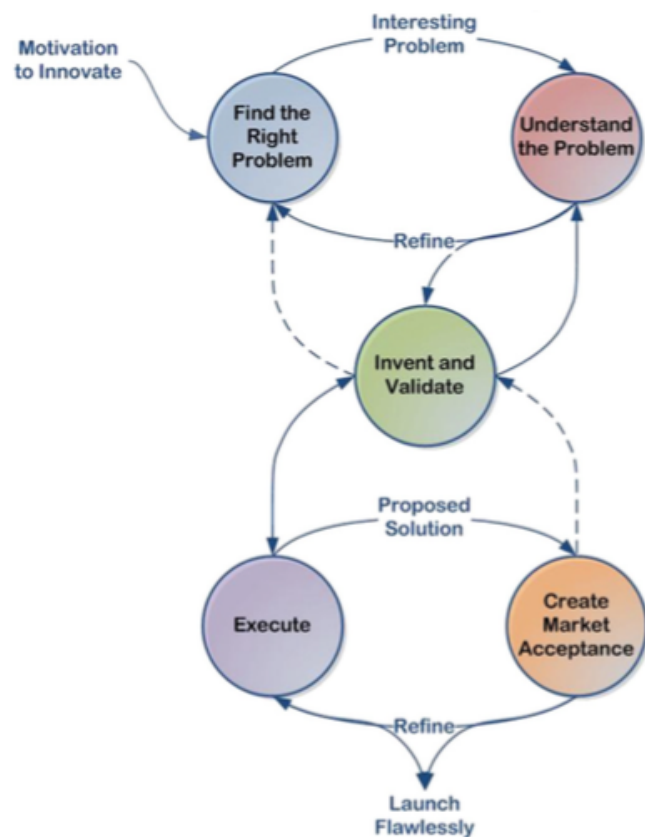


Figure 2.2 - “The hourglass model of how serial innovators innovate” (Griffin et al., 2014)

The innovation process itself will not be in focus of this paper, however, for the reader to understand the concept of innovation and how it is brought forward it is valuable to include what often is meant as an innovation process. Since we are not only focusing on product innovation in this paper, but also refer to radical innovation as being process-, marketing- and organizational innovation, we will mention the concepts of idea generation, implementation and launch, which are not necessarily linear by nature.

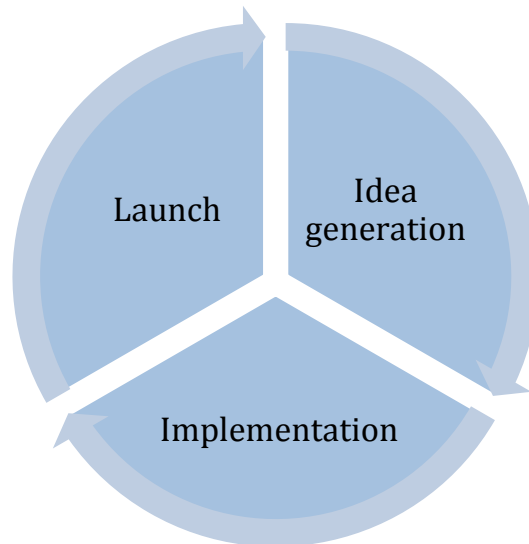


Figure 2.3 - Concepts used for the innovation process in this thesis

2.3 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION

A leader for radical innovation in this context refers to the person leading a team that works with radical innovation. Examples of such team could be a group that mainly works with radical product innovation or a temporary group put together for a specific radical innovation project, not necessarily related to products.

Zacher and Wilden (2014) found in their study about ambidextrous leadership that employees perceived their innovative performance higher when the leader engaged in both high “daily opening behavior” and “daily closing behavior”. Opening behavior refers to actions that stimulate exploration, which can be related to idea generation, whereas closing behavior refers to actions that facilitate exploitation of ideas, which can be related to the implementation phase of the innovation process. Following the results of their study, innovation is facilitated by a leader that engages in two opposing but complementary behaviors (ibid.). A key proposition according to Mumford et al. (2007) is that the ability of leaders to encourage creativity and innovation is dependent not only on the situation but also on certain *characteristics* of the leader. However, according to a study conducted by Aronson et al. (2008), successful characteristics of an innovation leader differ depending on if the team works with radical innovation or incremental innovation. Radical innovation teams operate under other conditions, and with more market and technological uncertainties. They face more challenges and have often loose methods of controlling the innovation process. Aronson et al. (2008) mean that these types of innovation must have a learning-based strategy, and experimenting is a necessary part of the process. Their study found that radical innovation benefited from a leader that is more open, to a significant higher degree than incremental innovation benefited from openness. With open, they refer to being open and willing to explore new ideas, listening to others, and being interested in unusual thought processes. They argue that openness is crucial for success, since radical innovation require much more learning about new market and technical issues (ibid.).

Tamara et al. (2010) also distinguish between radical and incremental innovation and the leader's necessary characteristics. While discussing technological and organizational expertise of the leader, the authors argue that radical innovation will benefit from a leader with expertise within both areas, in comparison to incremental innovations where those experiences may be detrimental (ibid.). Additionally, findings from several studies show that the leader's technical skills and expertise is a good predictor of creative people (Byrne et al., 2009). Byrne et al. (2009) explain this by stating that leaders need expertise to create a sort of power base for influencing others. Moreover, the expertise gives the leader a possibility to effectively represent the group, communicate with them, assess the needs of the individuals and develop the individuals that are less experienced (Byrne et al., 2009).

Additionally, Aronson et al. (2008) found in their study that conscientiousness was an even more important characteristic when leading radical innovation teams in contrast to incremental innovation teams. Conscientiousness, they argue, impacts certain leadership components such as goal setting and task-orientation. Moreover, it should be related to effectiveness and persistence of the leader. They argue that the reason to this is that radical innovation leaders must plan for more uncertainty, even though planning is essential for all innovation (ibid.).

2.4 LEADERSHIP PRACTICES

Studying earlier research about how the leader can impact radical innovation, we have found several commonalities. Using a holistic approach, the found leadership practices concern leaders on different levels within an organization, such as top-management, operational leaders and leaders within support functions. Since not much research has been focused on leadership practices for radical innovation, frequently mentioned leadership practices for innovation in general have been categorized into eight practices, which are presented and more thoroughly described below. In the end of the section, a table will summarize the eight practices and emphasize, where applicable, what specifically is related to radical innovation in comparison to innovation in general.

The found leadership practices from theory

- Provide and communicate vision and mission
- Accept risk and failure
- Structure and organize the innovation process
- Design innovation teams
- Provide time and financial resources on a daily basis
- Linking for innovation - internally and externally
- Reward and recognize innovation
- Educate and train for innovation

2.4.1 PROVIDE AND COMMUNICATE VISION AND MISSION

According to Business Dictionary, a vision is "An aspirational description of what an organization would like to achieve or accomplish in the mid-term or long-term future. It is intended to serve as a clear guide for choosing current and future courses of action" (Business Dictionary, 2015, vision statement). Vision in this context refers first to have a company

vision that supports innovation, and second to have a specific vision or strategy for innovation. Regarding the first aspect of having a company vision that supports innovation, Amabile (1998) means that the main reason to which managers undermine creativity of their employees is by continuously changing goals and interfering with processes. In fact, Engelen et al. (2014) argue that the most prominent leadership behavior that drives innovation is communicating a clear vision for the employees, so that they adopt the company's goals as their own. This idea is supported by other researches as well (De Jong & Den Hartog, 2007; Byrne et al., 2009). According to De Jong and Den Hartog's (2007) qualitative study of leadership and employees' innovative behavior, the more innovative companies provided a vision to support innovation activities in contrast to the less innovative companies. An anchored vision was believed to give a framework of what kinds of ideas that would be appreciated within the companies. Moreover, they believed it to be easier to convince employees about the value of an idea that fitted within the vision as well as to implement the idea (De Jong & Den Hartog, 2007).

Regarding the second aspect, it could also be valuable to have specific vision or strategy for innovation. Whirlpool for example created a shared innovation vision as a part of increasing the value of their innovation portfolio (Engel et al., 2015). As a first step, they defined what innovation means for the company. By doing so, they could create benefits such as clarifying the goals of the innovation strategy, avoiding time-wasting discussions about what innovation should be, and use key performance indicators (KPIs)² for their innovation portfolio. The authors stress that KPIs are common tools used by successful innovative companies, and an example of a KPI is 3M's *New Product Vitality Index*, which measures the share of revenues generated from products less than five years old (ibid.). Soken and Barnes (2014) additionally point out that the innovation strategy needs to be practiced as well as preached. The leader can do this by for example making the strategy real to the people who are under their influence, measure innovation efforts differently from other projects, map out clear customer and business needs, and communicate regularly why innovation is important by discussing external competition and business environment (ibid.).

Byrne et al. (2009) mean that missions are even more efficient considering providing a structure and being goal orientated. They explain that a mission can be more specific for example within a particular area, whilst a vision reflects the future desires of the whole organization (ibid.). According to Business Dictionary, a mission is "A written declaration of an organization's core purpose and focus that normally remains unchanged over time. Properly crafted mission statements (1) serve as filters to separate what is important from what is not, (2) clearly state which markets will be served and how, and (3) communicate a sense of intended direction to the entire organization" (Business Dictionary, 2015, mission statement). Therefore, well-defined missions provide a way of motivation and guidance when promoting creativity (Byrne et al., 2009). Tamara et al. (2010) emphasize that it is more important for radical innovations, in comparison to incremental innovations to have clearly defined missions. Russell (2014) develops this by emphasizing that mission clarity is important for a creative environment. Mission clarity is built up by first problem identification, and second to make clear strategic goals for innovation (Russell, 2014). Byrne

² Key performance indicators is defined by Business Dictionary as: "Key business statistics such as number of new orders, cash collection efficiency, and return on investment (ROI), which measure a firm's performance in critical areas. KPIs show the progress (or lack of it) toward realizing the firm's objectives or strategic plans by monitoring activities which (if not properly performed) would likely cause severe losses or outright failure." (Business Dictionary, 2015, Key Performance Indicators)

et al. (2009) suggest that external environment scanning, i.e. technological changes, potential market needs, competition etc. should build the foundation for mission definitions. Concluding, missions are even more specific than a vision and strategy for innovation.

2.4.2 ACCEPT RISK AND FAILURE

According to a SIFO (the Swedish institute for opinion surveys) study with 189 Swedish company leaders within the car and food industry, risk-taking and accepting failure is the most important factor for yielding innovation (3ds, 2014). Additionally, radical innovation is connected to higher risk than incremental innovation, since it requires substantially more investments and unsure outcomes (Alexander & van Knippenberg, 2014). Having a positive approach to risk-taking is mentioned by researchers as stimulating a creative environment (Russell, 2014). Those companies that learn from their mistakes instead of ignoring or punishing failure will have a competitive advantage (Russell, 2014). Dyer and Furr (2014) emphasize that the leaders and their ability to foster an organization that learn from mistakes faster and more efficient than competitors do are more important for sustainable advantages than any particular invention.

Soken and Barnes (2014) give examples of what a leader could do to secure a positive approach to risk. These include sharing the own personal experiences of failure, discussing challenges of innovation, and where and where not risk-taking is desired. Moreover, the leader should encourage prototyping and pilot testing as well as ask the team to do multiple prototyping to learn what works best (ibid.).

2.4.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS

Exploring the field of organizing the innovation process, the findings can be categorized into three groups related to having a structured general innovation process, organizing for radical innovation and how a leader of the innovation process should act.

To have a systematic and structured innovation process seems important according to theory. Soken and Barnes (2014) mean that if not having a good structure for the innovation process, there is a risk that many good ideas slip away. According to Engel et al's (2015) study of the most innovative companies, they do the "early work" on the innovation process, i.e. they are good at collecting ideas. It is necessary that the collection of ideas appear from close connection to customers, and that they are managed with both flexibility and control. Devotion to stage-gates and KPIs creates a structure but also creativity potential. Another important aspect to consider during the process is the innovation efficiency and speed. Best practice, according to their study is to measure the time for an idea to develop into a moneymaking product. The last best practice would be to improve innovation profitability. The study shows that senior leadership within successful innovative companies is well known with the KPIs for their innovation strategies, and common ones to use are NPVI (Net Product Vitality Index), time to market and time to profit. Moreover, the most innovative companies know early how the innovation will yield long-term profit, and have a clear idea of which market segment to target, and what competencies they will need to make it possible (ibid.).

Focusing more specifically on radical innovation, Colarelli O'Connor and DeMartino's (2006) imply that it is beneficial to have a loosely coupled group or function that work with

commercializing radical innovation. The function should be separated from the mainstream activities in order to not be pressured by the same short-term goals. If separated, it needs to be embedded in the organization in order to leverage on current competencies and build new ones (ibid.).

Looking at the leader for an innovation process, Bel (2010) mentions that important for a leader working in a bottom-up organization is to promote and defend ideas to the top management. The leader must be able to fight and compete for resources. If having a top-down innovation process, the top management would need people further down the organization who can defend the ideas and champion competition (ibid.). Additionally, von Stamm (2009) mean that since radical innovation rarely can be supported by sufficient evidence for satisfying KPIs, people need to buy the arguments not only with their heads but also with their hearts. Thus, this means that it is important to convince the greater value with the radical innovation. Moreover, Bel (2010) emphasizes that the leader needs to prioritize ideas, which requires that the leader has the courage to stop projects and is willing to sacrifice ideas when necessary. By doing this, the leaders can put more focus into the few projects that are more likely to succeed and be profitable. This behavior requires more risk taking and decision-making than starting projects, since a stopped project might had created even more value in the end than a continued project (ibid.).

2.4.4 DESIGN INNOVATION TEAMS

Researches seem to agree that teams should consist of a diverse composition of individuals (De Jong & Den Hartog, 2007; Byrne et al., 2009). Amabile (1998) stresses that important features for work-groups are that they are diverse in the sense that all members have different perspectives and backgrounds. It is however important that the member of the group share excitement for the same goal (ibid.).

When studying leadership practices at innovative companies, De Jong and Den Hartog (2007) found that team construction that emphasized dissemination of knowledge and information stimulated idea generation. Soken and Barnes (2014) suggest some practices that are specifically important while leading innovation teams. The leader must create a sense of teamwork by for example setting up informal meetings for discussions, and celebrate when things go well. They should also support the employees by encouraging constructive meetings, helping them overcome obstacles and provide resources (Soken & Barnes, 2014). Therefore, a great innovation leader must be able to construct teams that are diversified, make them work well together and make sure that they share the same kind of “language” (Bel, 2010).

Tamara et al. (2010) emphasize that especially for radical innovation, functional diversity, i.e. groups consisting of employees from different functions within the organization, is beneficial if implemented after the early development stage (ibid.), i.e. when already having a clear idea.

According to a McKinsey study, more innovative companies understand that customers should be involved in the early development process and that it is necessary to “knock down the barriers” between an idea and the consumer. Involving the customers early in the process is facilitated by a cross-functional innovation team (i.e. not only involving people from product development, but from marketing and other functions - authors’ comment). If having

an innovation project, the members should be located in the same place, and they should give at least half of their working time to the project, in order to “support a culture that puts the innovation project’s success above the success of each function” (De Jong et al., 2015).

2.4.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS

Support in terms of time and financial resources is essential for innovation (De Jong & Den Hartog, 2007; Dyer & Furr, 2014), which is why leaders must both effectively acquire and distribute resources (Byrne et al., 2009). However, the right balance between those two is disputed. What seems to be important when stimulating innovation is to plan for some flexibility in both time and budgets (Russell, 2014). Regarding financial resources, Russell (2014) states that an overabundance can lead to complacency while some limitations contribute to a more innovative environment. Engel et al. (2015) even mean that there is no correlation between budget spending on R&D and innovation, and that the most innovative companies invest more time than money into their innovation strategies, such as setting aside time to understand changes in market, technology and services.

Dyer and Furr (2014), argue that lack of time is the most common reason to prevent people in large industries to bring more ideas to the market. Successful companies within innovation such as Google, 3M and Valve are famous for their innovation strategies where for example 10-20% of employee time is set aside for innovation. Dyer and Furr (2014) shed a light on the *type* of time needed, uninterrupted time, rather than the specific amount of time. Associational thinking that leads to new insights is more likely to happen when the mind is totally engaged with a particular challenge through for example observations, conversations, or experiments (Dyer & Furr, 2014).

2.4.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY

To connect and utilize potential knowledge and ideas from different people within the company, as well as outside, in order to stimulate innovation is what in this paper is referred to as linking for innovation. According to a study of the most innovative German companies, Engel et al. (2015) found that the more innovative companies had well-established processes for generating ideas and involved a broad range of stakeholders, both internally and externally.

Other research (Bel, 2010) point towards that linking employees is important for securing that the innovation strategy is aligned and coordinated across the whole organization. Following this, leaders can for example create cross-functional³ solution groups or develop coordination processes for the different departments and functions (ibid.). Engel et al. (2015) mean that common for the best innovators are that they have cross-functional cooperation within the organization, meaning that they work according to a single vision and collaborate.

According to Colarelli O’Connor and DeMartino (2006) *discovery* is a core capability for yielding radical innovation, which means that the company should identify radical innovation opportunities. In their study, the majority of the innovative companies had not only internal

³ Cross-functional is defined by Oxford Dictionaries as: “Denoting or relating to a system whereby people from different areas of an organization work together as a team” (Oxford Dictionaries, 2015, Cross-functional)

activities for this, but also external programs for identifying opportunities outside the company, for example through universities, venture capital investments or strategic alliances (ibid.). This is further supported by Engel et al.'s (2015) study that shows that the best innovators collaborate with people from outside the company (ibid.). Bel (2010) additionally stresses that the most innovative leaders search for technologies and ideas that already exist outside the company and are willing to use and adapt them to their organization: "Good innovation leaders know how to mix their own ideas with outside technology and then add their own twist". They could also link with external sources to co-innovate, get new ideas and inputs (ibid.). Even though external scanning is favorable for identifying potential innovation, both regarding radical and incremental innovation Tamara et al. (2010) stress that external scanning is more critical as *information gathering* for radical innovations in comparison to incremental innovations (Tamara et al., 2010).

2.4.7 REWARD AND RECOGNIZE INNOVATION

There are many different opinions about how to best reward and recognize ideas and innovation initiatives. Bel (2010) emphasizes that rewards for innovations need to be flexible and gradual with regards to the innovation, meaning that awards could be given for small contributions, larger milestones and incremental innovation. On the other hand, Soken & Barnes (2014) state that an idea could be rewarded for good risk decisions, even if the outcome yet is unknown. Concerning other types of recognition, Büschgens et al. (2013) argue that rewards in terms of feedback and recognition from peers are essential for the performance of individuals as well as for groups

Since radical ideas are rare, a simple reward system will probably not generate many of them (Baumann & Stieglitz, 2014). When generating radical ideas, companies should rather focus on increasing the variety of ideas, which is facilitated by a company culture or organizational structure that enables play, coincidence, and random interaction (ibid.). Baumann and Stieglitz (2014) also state that larger rewards are no better than smaller rewards at producing radical innovations, meaning that they rarely result in radical concepts and instead often only create high expectations and hope (ibid.)

2.4.8 EDUCATE AND TRAIN FOR INNOVATION

The strategic value of developing human resources in relation to innovation is gaining increased emphasis (Sung & Choi, 2013) and for many Fortune 500⁴ companies, the cultural and financial benefits of investment in innovation programs are becoming increasingly visible (Ferrier, 2014). This is due to the fact that organizational investments in training and development foster knowledge, expertise, engagement and learning among employees, which is central for innovation (Sung & Choi, 2013). As Ferrier (2014) states, to train employees around innovation concepts empowers them to add value to the organization, in addition to their day-to-day activities.

⁴ Fortune 500 is defined by Business Dictionary as: "List of the largest 500 US manufacturing corporations, ranked by revenue. It is published annually in the Fortune magazine with data on the firm's assets, net earnings, earnings per share, number of employees, etc." (Business Dictionary, 2015, Fortune 500)

Specific education and training on innovation for employees should, according to Ferrier (2014), include how organizational prioritizations are made on different levels of the organization, such as corporate-, business unit- and group level, since it makes the employees feel engaged with the business. It should also aim to support different innovation activities within the organization (ibid).

Employees that feel engaged and involved are according to a study by Gallup (2013) more likely to stay or return to the company, which decreases recruitment and training costs. This further motivates the importance of education on innovation for the employees about how to be innovative and to understand the business from different perspectives, and hence increase employee engagement (ibid). This is also confirmed by Sung and Choi (2013) stating that successful development of motivated and engaged employees is a necessary condition for innovation.

The benefits from investing in education and training on how employees can be innovative are, in addition to increasing organizational learning and employee engagement, that it improves bottom line performance and facilitates networks. Additionally, it strengthens the connection to leaders and makes the employees feel closer to the leadership (Ferrier, 2014).

2.4.9 SUMMARY OF LEADERSHIP PRACTICES

LEADERSHIP PRACTICES	INNOVATION IN GENERAL	RADICAL INNOVATION
Provide and communicate vision and mission	<ul style="list-style-type: none"> • Clear vision is important to support innovation • KPI could be used for measuring • The leader should communicate regularly why innovation is important 	<ul style="list-style-type: none"> • Missions are more important for radical innovation than incremental innovation
Accept risk and failure	<ul style="list-style-type: none"> • Learning from mistakes is valuable • The leader should have a positive approach to risk and failure • The leader should discuss challenges of innovation & where risk-taking is desired • The leader should encourage multiple prototyping/pilot tests 	<ul style="list-style-type: none"> • Radical innovation requires higher risk-taking than incremental innovation
Structure and organize the innovation process	<ul style="list-style-type: none"> • A systematic innovation process including stage-gates, KPIs is beneficial • The leader should promote & defend ideas • The leader should prioritize ideas, and have the courage to stop projects 	<ul style="list-style-type: none"> • Organizing for radical innovation through a separate unit that is embedded in the organization is beneficial
Design innovation teams	<ul style="list-style-type: none"> • Diversified teams is beneficial • The leader should construct teams, make them share the same language and create a sense of teamwork 	<ul style="list-style-type: none"> • Even after the early development stage, teams with members from different functions are beneficial for radical innovation

Provide time and financial resources on a daily basis	<ul style="list-style-type: none"> • Time is more important than money • The leader should acquire and distribute resources • The leader should plan for flexibility in time & budget 	N/A
Linking for innovation - internally and externally	<ul style="list-style-type: none"> • Cross-functional solution groups & coordination processes are important for a coherent innovation strategy • Co-innovate with external sources is beneficial • Searching for external ideas and adapt to the organization is favorable 	<ul style="list-style-type: none"> • External scanning is more critical as information gathering for radical innovation than incremental
Reward and recognize innovation	<ul style="list-style-type: none"> • Innovation oriented rewards should be flexible and gradual • Ideas could be rewarded for good risk-taking 	<ul style="list-style-type: none"> • Big rewards do not necessarily generate more radical ideas
Educate and train for innovation	<ul style="list-style-type: none"> • Education for innovation could include how organization prioritizations are made on different levels and how to be innovative • Training improves bottom-line performance, facilitates networks and leads to more engaged employees 	N/A

Table 2.1 Summary of leadership practices from theory

3. METHODOLOGY

This section aims to explain the methodology used for answering the research question and sub questions. It also aims to provide an understanding of why the study has been conducted accordingly.

3.1 RESEARCH DESIGN

The research design of the study, and hence the way data was collected in order to answer the research question and sub questions, consists of three main parts: theory, a benchmarking study and a study at SKF.



Figure 3.1 – Research design

The first part of the study was a literature review of earlier research and theory. That part aimed to introduce the topics used in the study and explores the concepts of our sub-questions, i.e. to describe successful characteristics of a radical innovation leader and to investigate earlier definitions of radical innovation. Additionally, the literature review aimed to bring forward what leadership practices that favor radical innovation according to theory. From studying earlier research and theory, it was clear that the focus mostly was on innovation in general, which is why eight prominent leadership practices for innovation in general were distinguished and summarized. When finding distinct practices for radical innovation, which were not as relevant for incremental innovation, these were brought forward in each section. The eight prominent leadership practices built the foundation for the interview guide and thus the studies. Instead of only focusing the benchmarking- and SKF study on the respondents' perceived leadership practices that favor radical innovation, it added value to the study to additionally investigate predetermined concepts that earlier researchers had found successful. The reason to this was that the respondents might not think about all different aspects there are, if not being asked specifically. Additionally, we could investigate if the found leadership practices seemed successful for the studied companies, and thus relevant for SKF.

The second part of the research consisted of a benchmarking study. The selected benchmarking companies are Swedish large⁵ manufacturing companies, that operate on a global market (for a more detailed description of the companies in the benchmarking study, see section 3.4. "Selection of Firms and Respondents"). To provide a better and perhaps more relevant answer to the sub-question of how radical innovation could be defined for SKF, the

⁵ A large company is defined as a company with more than 250 people or 50 million Euros turnover (European Commission, 2014, SME-definition).

benchmarking study was used for investigating how the companies defined radical innovation. With regards to that there is no globally shared definition of “radical innovation”, it made sense to investigate the definition used by manufacturing companies who are similar to SKF, rather than only relying on theory. Moreover, to answer to the sub-question of what characterizes a successful leader for radical innovation, it was valuable to also add the benchmarking companies’ perspective in order to increase the scope. Lastly, the benchmarking study aimed to find concrete examples of how large Swedish manufacturing companies work with the eight leadership practices derived from theory. Moreover, it aimed to find out how they work with radical innovation from a leadership perspective, and get new insight into the topic of radical innovation. It also brought forward a discussion about what leadership practices that are the most prominent and useful for stimulating radical innovation within an organization.

The final part of the study was a study at SKF, which was conducted by interviews (for a more detailed description of the interviews at SKF, see section 3.4. “Selection of Firms and Respondents”). Findings from the benchmarking companies were compared and analyzed to theory and were finally concluded and used as a basis for the construction of the interviews at SKF. This order was chosen with the aim to allow for a better understanding of the topic and gain insight from real life situations, and thereafter be able to ask relevant questions when conducting the study at SKF. This study aimed first to investigate the respondents perception of the first sub-question “*how could radical innovation be defined for SKF*”. However, we did not find it necessary to include the second sub-question “*what characterizes a successful leader for radical innovation*” in the study at SKF. The aim of the second sub-question was to get an understanding of the topic rather than comparing the benchmarking study to the study at SKF, which is why we chose to exclude it from the SKF study. Additionally, we found it more fruitful for the study to focus the limited interview time on the areas that would add the most value to SKF. Lastly, the interviews at SKF aimed to investigate how SKF works today with the eight leadership practices that had been found from theory and developed by the benchmarking study. Thus, it was also a way to find out what leadership practices that could be developed more within SKF, what the respondents believed would work and what they perceived as barriers to radical innovation.

The choice of this research design was motivated by the numerous opportunities for learning, deep insight of the area, and the broad range of input that it could provide to the study, as well as to the recommendations to SKF. Figure 3.2 shows a summary of the research design, how the study proceeded and what the different parts include.

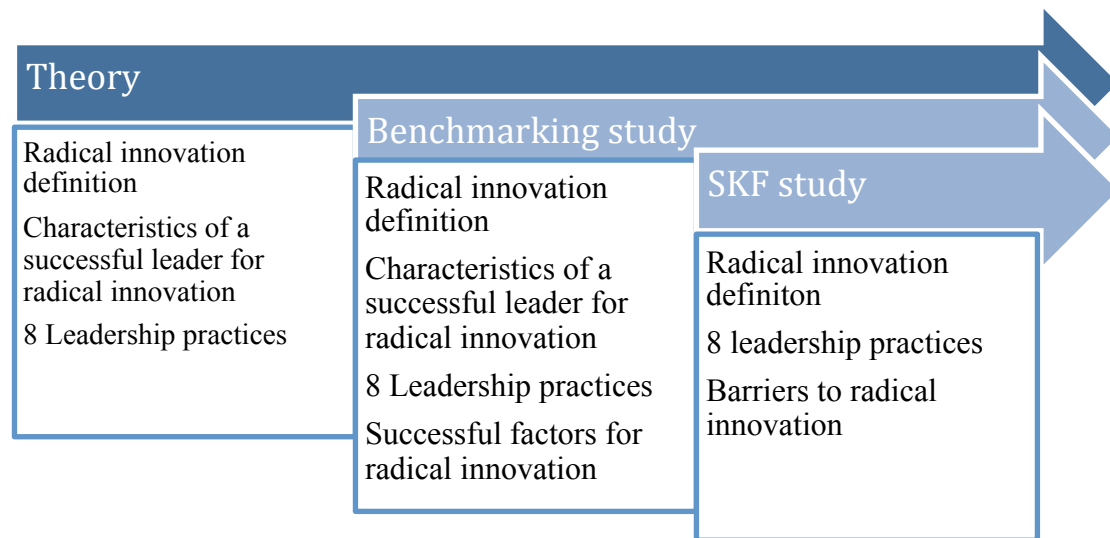


Figure 3.2 - Research design – parts included

3.2 RESEARCH STRATEGY

The research strategy chosen in order to answer the research questions was to use a *qualitative* research strategy, which refers to a research strategy that usually emphasizes words rather than quantitative in the collection and analysis of data (Bryman & Bell, 2011). The qualitative research strategy took form of in-depth interviews with key-persons within both the benchmarking companies as well as within SKF, more thoroughly described below. This choice of research strategy was motivated by the flexibility, allowance of adjustments, and opportunities for learning that this kind of research provides. Moreover, its rich data provides a broad perspective of the companies studied, and makes it possible to find valuable details about real-life practices. Since the study aimed to bring forward recommendations to SKF, we found this approach most fruitful.

With the qualitative interviews we aimed to find patterns and successful practices in order to develop theory as an outcome of the collected data. Therefore, an inductive research approach was used, in which data was collected to build theory rather than to test it (Bryman & Bell, 2011). An inductive research approach is often referred to as *iterative*, meaning that researchers are tracking back and forth between theory and data (Bryman & Bell, 2011). The choice of this research approach is motivated by the lack of earlier research of leadership practices for radical innovation specifically. Most research concerns innovation in general, which makes it hard to test theory to real-life cases concerning radical innovation specifically.

3.3 RESEARCH METHOD

As mentioned, the method used in order to gather qualitative data was by performing interviews, with both benchmarking companies and at SKF.

The structure of the interviews was *semi structured*, meaning that series of general questions were scheduled but varied in the sequence and allowed follow-up questions (Bryman & Bell, 2011). This enhanced the flexibility of the interviews and led to more detailed and rich

answers. It also made it possible to dig deeper within each respondent's area of expertise, thus find valuable inputs to the study.

The general questions of the interviews were developed with the main focus and research questions in mind, and touched upon relevant themes discovered in the literature. The main questions were very general and open-ended, in order to avoid leading questions towards desired/expected answers and prevent bias. The follow-up questions focused on significant areas of interest for the study, such as the found leadership practices from theory, and on explanations and details around concrete examples to the answers. The follow up questions also included subthemes frequently mentioned in the literature. The two interview guides can be found in Appendix 1 and 2.

All the interviews were recorded with an application called "Audionote", and notes were taken along the way. The general interview questions were sent to the interviewees by email a few days prior to the interviews. This allowed the interviewees to prepare and think through the questions and hence, increased the validity of the answers.

3.4 SELECTION OF FIRMS AND RESPONDENTS

Benchmarking study

The companies selected are all Swedish large manufacturing companies, successful and often recognized or awarded within innovation.

We chose to mainly interview people working with innovation, but also to get an insight from a human resource (HR) perspective. The reason to this is that we realized during our collection of theory that leadership practices for innovation concerned different areas within a company. Since the aim was to find practical examples rather than generalizing all our findings, we found that spreading the interviews to different areas was more suitable and fruitful for the study. The interviews were held either in person, via Skype or telephone depending on the availability and geographical location of the interviewees. Most of the interviews lasted for about one hour, and 11 interviews were conducted at 10 companies. The reason for having two interviews at one company was that after the first interview, which mainly touched upon business model innovation, we got the opportunity to additionally interview an innovation strategist at the same company, with a PhD in innovation management. Thus, we got an even broader perspective of the company, which provided valuable inputs to the study.

To add more value to the benchmarking study, we also chose to conduct two interviews at Vinnova, the Swedish innovation agency. Vinnova works with improving the conditions for innovation in Sweden (Vinnova, 2014, About Vinnova), thus have another kind of understanding and an objective perspective on the topic of innovation. The interviews at Vinnova differed slightly from the other interviews, even though we used the same interview guide as a basis for the interviews. With the interviews at Vinnova we aimed to find more objective viewpoints of how successful companies work with radical innovation, their opinion about the eight leadership practices from theory and what large companies can do even more within innovation.

Table 3.1 below shows the interviews conducted:

COMPANY	INTERVIEWEE	WORK TITLE	DATE & LENGTH
Alfa Laval	Elna Persson	HR Business Partner	7/4 – 60 min
Assa Abloy	Åsa Christiander	Direction Global Innovation Management	20/3 – 30 min
Ericsson	Karl-Magnus Möller	Innovation Leader	26/3 – 80 min
IKEA	Jan Andersson	HR Competence Manager	1/4 – 60 min
Sandvik	Olle Wijk	Executive Vice President and Head of R&D Board	31/3 – 60 min
SCA	Frida Olsson	Global Innovation Brand Manager	27/2 – 70 min
Scania	Johan Lundén	President Scania Japan Limited	9/3 – 60 min
Scania	Katarina Stetler	Vehicle ergonomist and Innovation strategist, Phd in innovation management	25/3 – 60 min
Tetra Pak	Jon Mikaelsson	Director Front End Innovation within Tetra Pak Packaging Solutions	17/4 – 60 min
Vinnova	Cassandra Marshall	Programme Manager, Industrial Technologies and Innovation Management Divisions	25/3 – 45 min
Vinnova	Marie Wall	Programme Manager, Services and ICT Division	31/3 – 70 min
Volvo Car Group	Karin André	Director Corporate Innovation Office	9/4 – 60 min
Volvo Group	Thomas Hordern, Guillaume Favreau	Business Innovation Leader(s)	5/3 – 60 min

Table 3.1 - Benchmarking Study

SKF study

The respondents at SKF are all managers from different departments. The reason for choosing these respondents was the possibility to get as broad view of the company as possible, including respondents with different perspectives. Additionally, since SKF is under reorganization, it was more fruitful for the study and the recommendations to SKF to interview people with knowledge about SKF's future strategy and where they are aiming within innovation. The chosen managers made it possible to get this kind of insight. The interviewees are presented in the table 3.2 below.

INTERVIEWEE	WORK TITLE	DATE & LENGTH
Daniel L.H. Johansson	Head of Strategic Marketing	29/4 – 60 min
Göran Lindsten	Manager Core Expertise and Training, Industrial Market, Technology & Solutions	23/4 – 70 min
Johan Ander	Global Product Manager, Self Aligning Bearings and Specialty Products	22/4 – 80 min
Kent Viitanen	Senior Vice President, Group People, Communication and Quality	28/4 – 80 min
Paolo Andolfi	Director Innovation Management	28/4 – 60 min
Victoria van Camp	Director Technology & Solutions, Industrial Market	21/4 – 60 min

Table 3.2 - SKF Study

3.5 DATA ANALYSIS

In order to be able to answer our research questions and to carry out our study, we collected empirical data and compared and analyzed these to theory. As mentioned earlier, the empirical data to the study consisted of findings from the benchmarking study, as well as findings from a study at SKF.

Grounded theory is a commonly used framework when analyzing qualitative data, and the process depends on two core features; the first being that theory is developed out of data and the second that the process is iterative (Bryman & Bell, 2011). Further explained, the main concept of grounded theory is a constant comparative analysis, where the collected material and its interpretation are conducted simultaneously (Czarniawska, 2014). Since we were looking for practices that could work in general for stimulating radical innovations, as well as examples of what could work in reality, we believed that it made sense to collect and analyze the data collecting and analyzing parts of a grounded theory framework. As Bryman & Bell (2011) describe, an iterative process means that data is analyzed as soon as it is collected, and the analysis will shape the next step in the data collection process. In the light of this, we used our findings from one company to see if others recognized and used the same practices. This way of analyzing was further on a requisite when we collected the last part of our data, thus when interviewing employees at SKF about their opinions and thoughts of our findings. However, since we learned along the way, it was easier to understand the respondents in the end of the study in comparison to the beginning, since we recognized the concepts. Thus, there was a risk that the results and interpretations of the interviews would have turned out differently if having another sequence of the interviews. To decrease this effect, we listened to the interviews both directly after each interview as well as together once again after all interviews were conducted. This made it possible to discuss the findings and adjust the interviews accordingly to secure that we had the same interpretation. Thereafter, we sent the interpretations to the respondents for approval. Additionally, we emailed follow-up questions in those cases we found it necessary. This made it possible to interpret and analyze the first interviews with more knowledge and understanding of the topic, than if only having listened to the interviews again after each interview. This affected the results of the findings and made the interpretations more fruitful.

According to Bryman & Bell (2011), *coding* is a key process in grounded theory, meaning to break down data into component parts and give them names. As the process of coding and

categorizing proceeds, it becomes easier to find *connections* among categories (Czarniawska, 2014). Since we were searching for successful leadership practices and thus concepts, this seemed like a reasonable way to do the analysis. However, to be able to reach a high inner reliability and reduce biased coding, we needed a clear structure. Therefore, we took notes during the interviews as well as recorded them, which made it possible to listen to them again when necessary. Thereafter, we categorized our findings according to the found leadership practices from theory, as well as into new categories when needed. When presenting the findings, we concluded them into a combined text, where no specific company was mentioned by name. This was motivated by our aim to prevent confusion as well as the increased quality of the data we could gather if stating that the answers would be anonymous and presented in a combined text.

However, it could be hard to reach a theoretical saturation, i.e. to get to a point where new data does not add value to the research (Bryman & Bell, 2011), which is a part of the grounded theory framework. Since we were not looking for a general phenomenon but rather practical solutions that can be useful for SKF, our aim was not to reach theoretical saturation. Therefore, we would not say that we used grounded theory to a full extent.

3.6 RESEARCH QUALITY

To achieve a high quality study, the concepts of reliability and validity are important aspects to consider (Bryman & Bell, 2011).

Reliability

Bryman & Bell (2011) describe that reliability refers to if the findings of a study are repeatable. Reliability can be divided into two groups, external reliability and internal reliability. External reliability refers to “the degree to which a study can be replicated” (Bryman & Bell, 2011, pp. 395). In qualitative research, a critique that is brought forward is the difficulty of replication. Since we are conducting a qualitative study, it can be hard to replicate since the environment and setting will very likely be different another time. However, we tried to increase the replicability by following a clear structure throughout the study and by providing an interview guideline. Moreover, many of the questions covered how the companies organize for radical innovation and what practices they have, rather than the respondents’ own opinion. This would increase the replicability if the respondents are well aware of the organization and practices there are. However, in this kind of study where the aim is to find examples from reality and recommend improvement areas for a specific company, rather than create a general theory, it could be questions how important the external reliability is.

The internal reliability depends on if the people conducting a research agree upon what they see and hear (Bryman & Bell, 2011). We tried to reduce biased and inaccurate interpretations, and thus increase the internal reliability by recording each interview, and by discussing the answers between us to make sure that we had interpreted them in the same way. Additionally, we wrote most parts together and in collaboration, which also increased the internal reliability.

Validity

The validity of a study might be an even more important criterion. The concept of validity refers to whether you are measuring what you claim to measure, and can be divided into two sub-categories; internal validity and external validity. Internal validity is reached if there is a

“good match between researchers’ observations and the theoretical ideas they develop” (Bryman & Bell, 2011, pp. 395). The potential drawback with using a qualitative research strategy is that it is highly dependent on interpretations of the researchers, which may be biased (Bryman & Bell, 2011; Silverman, 2011). In order to secure internal validity, we coded the interviews into the leadership practices from theory, and sent the interpretations to each participant so that they could clarify that we had interpreted their answers correctly. This was also necessary due to the many details we captured as well as for the approval of quotes.

External validity express if it is possible to generalize the findings. In our study, the external validity might be problematic since the interviews are highly subjective and that we only include a limited amount of interviewees and companies, which makes it hard to draw general conclusions. On the other hand, Bryman & Bell (2011) mean that the point of conducting qualitative interviews is not to be able to generalize from the interviewees to a whole population, but rather to generalize to theory. This makes more sense for our study since the intention was not to draw general conclusions for all companies but rather to explore successful ways of leading and organizing for radical innovation.

4. Empirical Findings

In this section, the empirical findings from the interviews will be presented. Where it is applicable, it will be specified what concerns and distinguish radical innovation from innovation in general. The two first parts aim to cover the two sub questions; “how can radical innovation be defined for SKF” and “what characterizes a successful leader for radical innovation”. The third part presents the findings concerning the main research question “what leadership practices favor radical innovation for large Swedish manufacturing companies”. The eight leadership practices found from theory will be presented and in the end, the benchmarking companies own suggestions of what leadership practices that favor radical innovation will be described, as well as barriers to radical innovation at SKF. Important takeaways from the findings will be summarized in tables in the end of each section.

4.1 RADICAL INNOVATION DEFINITION

Benchmarking

When asking about the concept of innovation, a shared belief by most of the respondents was that innovation is not only related to technology or product development. Therefore, innovation could happen anywhere within the company, and it is also necessary to be innovative within the whole company. For example, two respondent describe the importance of not narrow down innovation to product innovation and external growth:

“I think it’s important that you don’t always frame innovation as external growth. There is a lot that you can do within the company”

- Thomas Hordern, Volvo Group

“Innovation is not only R&D related, it could for example be a new efficient economy system, new improved routines for answering to reclamations, or a new marketing concept. Good R&D in the wrong system will not yield anything”

- Olle Wijk, Sandvik

That radical innovation differs from incremental innovation, was something that all agreed of. What was also mentioned was that it could be useful to define radical innovation if for example creating space for more radical innovation within the innovation portfolio.

When asking the respondents if they had a stated or shared definition of what radical innovation means to the company, most did not. Although, there were some exceptions. One company had categorized innovation into three different categories, depending on the level of radicalness; upgrade, new generation (new offering to an existing customer) and breakthrough (completely new products for the market or new products for new customers). The one category that was most related to radical innovation was breakthrough innovations and for already existing customers, those innovations could result in a changed customer behavior. Additionally, a few respondents mentioned that the company had defined what radical innovation means, but it was unsure of how widespread the definition was throughout the company. These definitions were related to innovation that is new to the company or new to the customers. Other examples of what radical innovation could mean were “to put together two known solutions into a new solution” or an innovation that implies significant

increases in revenue to the business. What was emphasized though was that radical innovation is subjective to the company, and as one of the respondents mentioned:

“Something that is not classified as radical on the market could be classified as radical to the company. Since we need to handle radical ideas in a different way than incremental ideas, it makes sense to distinguish between radical and incremental innovation”

- Karin André, Volvo Car Corporation

SKF

There is at the moment no shared definition of innovation in general or radical innovation in particular at SKF. The respondents described however that they believe the innovation work at SKF is mainly incremental innovation. Radical innovation is most certainly associated with new products and technology and perhaps services. Some respondents mentioned that incremental innovation builds on their existing competence areas, whereas with radical innovation, they step out of their current competence area and move into areas that require new approaches and competencies. Regarding technology development, they have a scale that measures the level of complexity of a technology. Radical innovation, would hence imply a lot if technology development.

When asking the respondents if radical innovation could be related to other parts of the business than products, most agreed that it could and should. Examples mentioned were that radical innovation could be both a new high-tech product or to outsource their payroll system. In this context, the new global SKF organization is also radical innovation, since it has significant consequences for how they do things. Moreover, it was mentioned that there was a lot of potential for radical innovation within for example purchasing. However, as it is today, most believed that they need to broaden their view, and as one respondent mentioned:

“I think that when speaking of radical innovation at SKF, we think immediately of products and technology. But of course, there is room to think differently and newly everywhere”

- David LH Johansson, SKF

RADICAL INNOVATION DEFINITION

Benchmarking	<ul style="list-style-type: none"> • Broad view on innovation was common, i.e. not only product or technology related • Radical innovation is subjective to the firm • Most common was to associate radical innovation with something new to the company or new to the customers • It is important to distinguish between incremental and radical innovation since handled differently
SKF	<ul style="list-style-type: none"> • SKF does not have a shared definition of radical innovation • Radical innovation is associated with technology or products, but most believed it should be broadened

Table 4.1 - Summary empirical findings, Radical innovation definition

4.2 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION

Benchmarking

The companies agreed that a good innovation leader in general must have broad competence, and some skills that most mentioned were that the leader should have good technological knowledge, market knowledge, as well as having business thinking. When asking the respondents about the importance of being creative and innovative, most believed that it is not important that the leader is creative or innovative. As one of the respondents stated:

“It’s not like the leaders themselves need to be extremely innovative. They are not the ones coming up with the ideas, it’s rather the people in the teams”

- Frida Olsson, SCA

What was emphasized by the respondents was rather that the leader needs to be able to lead and understand creative people. Additionally, it was clear that there were some distinct leadership characteristics that seemed more important when leading for radical innovation in comparison to incremental innovation. Leading incremental innovation requires often structure and control, working with tight time frames and keeping costs down. On the other hand, radical innovation requires being comfortable with working in uncertainty and without having predetermined solutions. This requires an ability of the leader to cope with problem solving, high risks, and to not always having an answer in the beginning of the process. As two respondents emphasized:

“A manager must dare to challenge the group to take one step back, and say: I know that you came up with one good concept, but I want to see three more”

- Katarina Stetler, Scania

“You cannot be judging as a leader. You need to be open for new ideas and not require a solution straight away because that’s not possible for radical innovation. You need to dare to say that this is worth investing x million SEK just for finding out if it could be something”

- Frida Olsson, SCA

What was also mentioned by many of the interviewees as specifically important for radical innovation was the ability to network. Since radical innovation leaders must be open for new ideas, putting together existing solutions into new ones, and utilize different competencies, networking is an important source for inspiration and also important for connecting people both internally and externally.

An interesting observation was that some of the interviewees that worked with managing more radical innovation had actually created their own professional role. They had discovered a need for increasing awareness, connecting people or educating employees about innovation and had therefore on their own initiative requested to create the role.

CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION

INNOVATION IN GENERAL

RADICAL INNOVATION

Benchmarking	<ul style="list-style-type: none"> • Technological knowledge • Market knowledge • Business thinking • Leading creativity 	<ul style="list-style-type: none"> • Comfortable with working in uncertainties • Ability to take high risks • Networking skills
SKF*	N/A	N/A

Table 4.2 – Summary empirical findings, Characteristics of a successful leader for radical innovation

* SKF was excluded from this part of the study, since the aim of this section was to find inputs from practice rather than comparing the benchmarking study to the study at SKF.

4.3 LEADERSHIP PRACTICES

4.3.1 PROVIDE AND COMMUNICATE VISION AND MISSION

Benchmarking

Providing a clear vision was viewed as an important factor for stimulating innovation. The way the companies provided and communicated a vision and mission for innovation differed slightly. It was common to set innovation goals by using specific KPIs to support innovation activities, for example to have a specific target percentage of sales that should come from products introduced within the last 5 years. In addition, one of the companies had an official strategy for more radical innovation, which included a specific budget, flexibility in time, and a set-up with an evaluation process. In some cases, innovation was a part of the companies’ business strategy or company profile, and as many of the respondents mentioned, the importance for innovation was communicated from top management:

“After the reorganization, management talked about innovation all the time just to rub it in into the company”

- Frida Olsson, SCA

“Our CEO talks about innovation in every quarterly report. Moreover, two out of three parts in our vision concern innovation. It is very clear what is important to us”

- Åsa Christiander, Assa Abloy

To focus on specific areas where the company wants to be within innovation was mentioned by some of the respondents as important. Most companies, including Vinnova, described that this also has to be communicated by top-management:

“Succeeding with innovation requires a focus on a few specific areas rather than to bet on everything. That requires that the top-management decides the direction”

- Marie Wall, Vinnova

A way to enhance a mission that stimulates radical innovation that was mentioned by some respondents was to have a specific portfolio for radical innovation, or to include radical innovation into the general innovation portfolio.

SKF

A goal with SKF's reorganization is to change focus from being a rather centrally managed organization to become more decentralized, in order to have more sources to new ideas. They aim to have a clear vision about where the company is going, while at the same time emphasize a bottom-up approach, with more power and possibilities to influence and innovate on a local level. One respondent especially emphasized that if the ideas are not flowing, they have to raise the expectations on delivering, and one way of doing so would be through KPIs. Several of the respondents emphasized that in order to be more innovative, they will need a direction of where the company aims to be with top priority areas. The priority areas should not be too fuzzy but rather narrow, and the directions should be clear about how to drive innovation within those areas. Moreover, to have an innovation portfolio was mentioned as important in order to prioritize what they should focus on within innovation.

4.3.2 ACCEPT RISK AND FAILURE

Benchmarking

The acceptance for failure and risk taking was believed to be an important factor for innovation by the companies. Most of the respondents clearly stated that risk taking is specifically necessary when it comes to radical innovation, in contrast to incremental innovation:

“For radical innovation, we invite the risk and increase the scope. For incremental innovation, one usually tries to mitigate and decrease everything that is out of your control”

- Guillaume Favreau, Volvo Group

Many of the respondents mentioned that acceptance for failure and risk taking is a cultural question. Some mentioned that being innovative is a part of their company, and hence risk taking is something normal and necessary for the company:

“You need to be used to that projects will die along the way. It's a natural part, which requires certain risk-taking. This way of working needs to be a part of the company's DNA”

- Frida Olsson, SCA

When being asked about concrete examples of what created this culture for risk acceptance, the companies found it hard to point towards specific reasons. Some of the respondents believed that creating a culture of acceptance for risk and failure is something that comes from top management, and that it is outspoken and communicated actively. Another example of creating that type of culture was that employees are being recognized for risk taking, even if the idea is not implemented in the end. Additionally, some companies mentioned that

decisions involving more risk are seen as shared decisions by the team, rather than by one individual. As one respondent emphasized:

“We are known for that within our organization, it is okay to do mistakes and it is important to work together”

- Jan Andersson, IKEA

The practices that we found that seemed to create a culture of acceptance for failure and risk taking were mainly linked to prioritizing high risk projects on a corporate level. The majority of the companies had a separate function or group that worked with more high-risk projects, trend analysis or projects spanning over several product areas. Even though these were relatively different in the set-up, they were focused on yielding more radical innovation and therefore required higher risk taking. Below follows two examples:

One respondent, who led a team that worked with radical innovation, described that one way to accept risk was to starve innovation. In their team, they tried to reduce time by setting a time limit to when they need to take decisions, even though they did not have all information they needed. This meant that they had to take decisions that to some extent resulted in risks and uncertainties. To spread the risk, their group also used a specific portfolio for radical innovation, where they organized projects by their degree of radicalness.

Another respondent, who led an innovation team that worked with facilitating for more radical innovation, mentioned that before their team was created, risk taking was not as opened and transparent as it is now. The reason to that would be that they now have specific resources for developing more radical innovation, and they do not have the same time requirements as other product development functions.

SKF

SKF's impact on one single product innovation, in comparison to for example Volvo, is substantially smaller since SKF has a much larger product range. One respondent mentioned that this is something that they need to consider when putting resources on innovation. Historically, SKF has been very risk averse and not keen to take higher risks. Therefore, not much money has been set aside for radical innovation initiatives. A way for SKF to address this obstacle was through their so-called Innovation Board (described in section 5.3.3), where the aim was to encourage bottom-up ideas and initiatives. Most of the interviewees at SKF perceive the culture for taking risks quite supportive and that they have a climate of that failure is okay. A few of the interviewees mentioned that this is much thanks to their CEO, since he is clear with demonstrating that he supports and encourages risk-taking. Still, some of the interviewees mentioned that their innovations are more or less customer-driven, which often results in less risky projects.

4.3.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS

Benchmarking

What we noticed that most of the companies had in common was that they had some sort of structure or framework for how to handle and work actively with innovation, both in general but also with radical innovation particularly. They furthermore emphasized that having a structure was an important factor for bringing forward radical innovation.

In some cases, the companies had developed processes for innovation in general, and made space for more radical innovation within that process. For example, three of the companies had organized their product development and innovation according to smaller product- and market segments. These segments were in their turn built up by smaller teams, where one team focused on more radical innovation. The reason to this seemed to be that if not making space for radical innovation projects, it would be hard to prioritize them when a current customer needs a product development project. In general, these product segments worked very close to the end customers. Within these segments, the same people were to a great extent following the development of a product from the very beginning of the innovation process until the end, from idea generation to implementation to launch. The companies emphasized that the advantage with this type of innovation process is that knowledge about the whole process is built within the individuals. Additionally, to have been through the whole process from the early stages, makes it possible to see the result of the innovations and how it affects the end customers and also enables deep insight of how products can be improved. One of these companies had, in addition to these market specific segments, an internal “innovation consultancy” group. These innovation consultants worked with supporting innovation in the different segments across the entire organization, whenever there was a need. For example, they worked with facilitating lean innovation processes, helped out with brainstorming activities and provided education and coaching on how to be more innovative. Despite a very decentralized organization, they could create a more coherent innovation process and strategy, provide support when needed, and be able to utilize knowledge from different segments and by that cross-pollinate⁶.

There were also examples on where the process for radical innovation differed from the process for innovation within product development. Those companies that had a specific process for more radical innovation emphasized that it was just as important as the innovation process within product development, but that they needed to handle radical innovation differently. As one of the respondents mentioned:

“During the radical innovation process, it is important to not ask certain questions too early, such as what the profit will be. You cannot measure radical ideas in the same ways as product development, since you rarely can compare them to existing products”

- Karin André, Volvo Car Corporation

We saw several examples of when the companies had created small separate units or teams on a more corporate level that worked almost exclusively with radical innovation projects, increasing innovation awareness and connecting people. They mentioned that their work not only was related to products but to other kinds of innovation as well. Two significant examples of this are presented below:

One company had an “innovation office”, that was assigned two tasks: supporting ideas and innovation activities, and to inspire and support the innovation culture and processes throughout the company. In order to support ideas that were hard to develop within the product development centers, for example if spanning over different functions, the innovation office had its own budget. These ideas tended to be more radical and needed to be handled differently. When putting together a team for developing these ideas, the budget was a way to

⁶ Cross-pollination is defined as: “a sharing or interchange of knowledge, ideas, etc., as for mutual enrichment...” (Dictionary Infoplease, 2015, Cross-pollination)

give legitimacy for having a person taken away from their daily work while working with the project. The innovation process at the innovation office consisted of a few decision points, in order to bring ideas forward. Many ideas were taken to the first decision point (or first quick pitch), where around 20 hours was spent for developing the idea during this first phase. The next time they pitched, the idea should have been developed a bit more. Examples could be to investigate what has been done within the company before, do an external environment analysis, investigate if competitors had done something similar etc. In this phase the idea development could be given around 50 hours, and the pitch could be for around 10 minutes. If the idea still was relevant after this phase, they were given more time, which could imply a longer period when they tried out different options. How long the projects lasted depended a lot on the project. There were for example projects that have been going on for a few years, but not always constantly.

Another respondent was part of a team that worked both themselves with radical innovation, as well as to facilitate for innovation within the company. Their team worked mainly with the first phase of an innovation project, before handing over to a pre-study or to another stage in the process depending on project. They did not focus on what already existed within the company, but more radical innovation. Since radical innovation can be hard to work with as well as understand, they had put a lot of structure into setting meetings frequently, agendas, prototypes and specifically how they present what they do. Also, they tried to keep their development process within three months, which they called to “starve innovation”. Additionally, they helped the different departments with for example education, coaching and how to think around innovation, such as what innovation means to the different functions.

Something that many companies, including Vinnova, emphasized as important for any innovation process was the prioritization of ideas. Even though many companies are good at coming up with ideas, it can be hard to decide what you should develop. You cannot bet on everything, and that is why the management must be clear with what to prioritize. It is worse to go with all ideas at the same time, and do it mediocre. As some of the respondents mentioned:

“The ideal is not to have ten ideas. The ideal is to make one idea that kills those ten in terms of potential outcome”

- Thomas Hordern, Volvo Group

“The hard thing within research is to decide what to not do. Everything is fun and interesting, therefore it requires a leader”

- Olle Wijk, Sandvik

Many companies stated that they have portfolios for innovation. One company mentioned that they also have a specific portfolio for radical innovation, where they categorized radical innovation into highly radical and less radical. Another respondent mentioned that it would be a good idea to put a number to how much radical innovation they should do within the innovation portfolio, as a way of creating space for radical innovation and also spread the risk.

SKF

Before the reorganization, there have been innovation activities on several levels within SKF. Since SKF operates within a lot of different industries, they have had a process for developing products within each industry. The reason to this is that there often are different

requirements on their products depending on industry and customer. Except from developing existing products according to their customers' demands, a strategic marketing function has been responsible for trends and market analysis. They have been working with technology road maps in order to understand macro trends on a short-term and long-term perspective. This has also been done in collaboration with key account customers to see what they will demand in the future. They have a clear structure for the product development process, which the respondents believed worked well. The innovation that happens within the different segments is hence most concerning product development and is very demand-driven. The respondents stressed the importance of having a clear owner of the product, since they need to know who develops the product and thus who will need to prioritize the product in their daily work.

Additionally, the respondents mentioned that innovation also happens within their R&D center, that supports the whole company with new technology development. A problem that was mentioned by most respondents was that this function has been way too far away from the business and that they were more focused on having a solution in mind rather than understanding the problem. Since their market segments, thus customers are very different, it is important to know whom the customer is and how to sell the product. Even though they bring forward a good technology, the salesmen need the right competence and knowledge for selling a new more advanced development to an R&D manager at a large company. The lack of transparency from the R&D center was mentioned as a problem, which could be due to intellectual property rights. With the reorganization, they are now trying to solve these problems by moving the technology center closer to the customers, involving the technology developers in the selling processes as well and make it more business oriented. What was emphasized by the respondents was that they need to focus more on that all parts of the company that are developing products understand the customers' demands and needs, as exemplified by two respondents:

"I believe that all good innovation, no matter radical or incremental, comes from a very clear business case of why it is good for the customer. It's not about what technology content it has"

- Kent Viitanen, SKF

"In the beginning, radical innovation should be possible to be more flexible and free. However, at some point we need to make a business case out of it and find the customer"

- Johan Ander, SKF

To support more radical innovation from a bottom-up perspective, SKF had additionally an "innovation board" that could provide money and time to high-risk and cost intense ideas. A part of the selection process for the ideas that got to be an innovation board project was a "Dragon's Den"⁷ occasion. The judges in "Dragon's Den" were from the top management at SKF, and they decided which projects that could get funded. There was however several problems mentioned with this set-up. First, the projects were extremely secret, which resulted in that those who were to manufacture the products had no idea about the project until it was already a developed idea. Second, the board only supported very large and costly projects and

⁷ Dragon's Den refers to a TV show where entrepreneurs get three minutes to pitch their business idea to a panel of venture capitalists, in order to get investments for their ideas (BBC Two - Dragon's Den).

only a limited number. Smaller projects were not supported on a corporate level and needed to be funded elsewhere. Third, it appeared to be a lot of pressure for the participants, since they reported each month to top-management of how it proceeded.

It seemed to be a general opinion that SKF needs to be even more customer focused and transparent within the whole company. The respondents believed that they need to move closer not only to their direct customers but also to the users of their products, which often are not their direct customers. At the same time, all respondents believed that there is not lack of innovative people and idea generations within SKF, but as it has been until now they have found their own ways for developing their ideas. Therefore, many emphasized that a structure for how to collect and manage ideas was needed, and that they need to make sure that everyone collaborate during the whole innovation process:

“What we need to make sure is that the database and the repository system of ideas are transparent and have visibility across silos”

- Paolo Andolfi, SKF

However, it was also mentioned that too much processes and structure could lead to more bureaucracy, which rather would harm innovation. And the need for flexibility within a radical innovation process was emphasized. Regarding how to handle other kinds of innovation, except for innovation related to their products, they did not have any clear framework. However, this was mentioned as something that they need to develop.

4.3.4 DESIGN INNOVATION TEAMS

Benchmarking

To have diversified teams, involving people with different background and skills were be important for innovation. Technological skills, market understanding and business thinking were important skills for innovation in general, according to the companies. Some respondents also emphasized the importance of connecting R&D employees closer to the customers:

“It’s very good for those who work within R&D to understand the customers’ requirements, which is why they also participate in customer meetings”

- Olle Wijk, Sandvik

What also was a shared belief by most was that only because you create diversified groups it does not mean that the group automatically is innovative. It also requires a leader with a broad competence, who can make everyone cooperate and share “the same language”. The leader should also utilize the team’s differences, competencies and perspectives. As two of the respondents mentioned:

“Even though research often points towards the benefits of having a diversified teams, it requires a leader who can handle it”

- Elna Persson, Alfa Laval

“The challenge is that no one in the team is like the other. Our result depends on that we are very good at cooperating, despite our differences. A good leader needs to see and recognize the differences, but also the similarities and utilize them to bring the project forward”

- Jon Mikaelsson, Tetra Pak

When creating groups for more radical innovation, some respondents also emphasized that those teams benefited from having someone good at pitching and communicating the idea. This because they need to fight for their idea and make people understand the concept around it within a short amount of time, as one respondent described:

“You shouldn’t ask someone to try to understand your idea for half an hour. You want them to understand your idea immediately”

- Thomas Hordern, Volvo Group

One team that worked with radical innovation mentioned that they used to suffer since the management team evaluating their ideas occasionally had problems understanding the concepts. Therefore, they had developed a structure for how they presented radical ideas where they used the same models, graphs and style on the presentations. They believed that the result was that the management team now recognized the concept, and thus understood better how they should evaluate the ideas.

An input from Vinnova was that the role of an innovation leader is highly conceptualized, and so are innovation teams. However, important is that everyone in the innovation team understands how it is to work with innovation. For example, everyone should be able to build relations and network, not just the leader, and all should be aware of how it is to work with uncertainties and not having a clear goal.

SKF

It was a shared belief that more radical ideas require a team with diverse competences. While doing product development teams, they usually put together groups with people from product development, market and sales. However, many of the respondents believed that integrating people from different departments needs to be done even more and is important to have in mind when constructing teams.

4.3.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS

Benchmarking

Most of the companies agreed that giving time and resources for innovation in general is necessary, and as one of the respondents emphasized:

“All leaders must understand that it costs money to innovate”

- Frida Olsson, SCA

Except for innovation within product development or R&D, there were several examples of how the companies provided time and financial resources for innovation on a daily basis. One respondent mentioned that at their company, each employee has two jobs. First to do what they are assigned to do, and second to improve their own processes. Consequently, everyone was trained in thinking about how things could be improved and solving problems. The respondent believed that this has led to a lot of improvements and process innovation.

However, the amount of time set aside for improvement varied amongst the employees. On average, the respondent believed that each employee set aside anything from 30 minutes to several hours per week. They have meetings and follow-ups on weekly basis where improvement areas are discussed and followed up. Even though they were not evaluated strictly on this, it is a part of their performance review, as to if the employee has participated in any improvement job.

Many also agreed that it could be hard to develop radical innovation within specific restrictions and time limits, since the solution often is unsure in the beginning. Additionally, some respondents believed that time-limitations might harm an innovative person:

“I think that an innovative person might be choked by a too strict time frame”

- Elna Persson, Alfa Laval

There were examples of when the companies provided time and financial resources for more radical innovation. Three of the companies had a group who worked with developing and facilitating for radical innovation cross-functionally. While the companies were organized according to departments that were responsible for specific products, services or support functions, these radical ideas were normally spanning over different areas or included external actors, which made it hard to develop the idea within a specific function. These innovation groups could provide resources, such as time and money to help employees develop their ideas into innovation projects. It became therefore possible to let employees do projects that were outside their normal job:

“You get rewarded with time and money to work with your own idea, even if the idea is outside your current responsibility area”

- Jon Mikaelsson, Tetra Pak

To justify having someone taken away from their normal job, one of the respondents mentioned that they sometimes talk to the concerned person's manager, and provide resources, to let the person participate in the project for a while.

Another way to arrange a similar set-up that was mentioned where that the employees could pitch ideas to a management board. If the idea was approved, they were given coaching and time to investigate the idea for about a week.

SKF

At SKF, they have not decided on a corporate level that specific time or financial resources should be provided to be innovative on a daily basis. As it is now, it is up to each manager to set aside that time. One of the respondents mentioned that it would be a good idea that each manager is given some extra money for flexibility, thus can provide the team with some money to try out an idea:

“It's not always 500,000 SEK you need, sometimes you only need 5,000 SEK to buy some nuts and bolts, and you need Friday afternoon for working on it. This is nothing we have had this far”

- Victoria Van Camp, SKF

To support smaller bottom-up initiatives, a suggestion was to have a “Kindling fund” (here the respondent refers to lighting a fire with small sticks, which is a metaphor for stimulating

innovation from a bottom-up perspective) that can give smaller amounts of money for more radical innovation, in addition to the Dragon's Den where larger projects were supported.

4.3.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY

Benchmarking

Most of the respondents were aware of several methods used within the company for linking innovation internally. However none of the methods was specifically used to target radical innovation but rather for innovation in general.

More than half of the respondents mentioned that they had at least one group that was put together for linking people at different departments. Often, they met regularly and the purpose was to share experiences, discuss problems, utilize different knowledge and to learn from each other. Additionally, one respondent, who worked more with business model innovation, mentioned that an important thing that they shared was how to explain new concepts to customers. We found several examples of how these groups were constellated, three examples were; group experts from different R&D units that formed a “group R&D board”; an “internal innovation network” for people who worked with or were interested in innovation and; a “reference group” with people from different units that frequently talked about how they work with innovation and discussed their innovation projects. Additionally, we found examples of how the companies linked and connected employees at different departments more occasionally. Below are three examples:

One respondent who worked with innovation invited all innovation leaders for informal meeting nights that included mingling, workshops and exercises. The respondent mentioned that the goal was, besides for exchanging ideas and connecting people, that everyone should meet at least one new person from another part of the organization.

Another example was to arrange an innovation garage. The purposes were to allow for bottom-up ideas and for other parts of the company to connect and cross-pollinate that were not in the top-management team. During the innovation garage, they had a workshop and invited a person from an external company to talk about innovation.

Another company, that had many R&D departments, arranged shared development seminars for all R&D departments, where they discussed for example a specific problem they were facing. They invited people from the different departments to participate, as well as from universities. The respondent mentioned that except for exchanging ideas, the purpose was to connect people so that they should be able to call each other without being too formal.

Some of the companies had an idea generation challenge where all employees could contribute with ideas. The companies had themes for the challenges where they looked for innovation within specific areas, and it was also common to have the challenge during a limited time. Often, the challenge took place on an internal forum, and all ideas that were posted were transparent meaning that everyone could see and comment on all ideas. One of the respondents described that during their evaluation process, they took help from small “evaluation teams”, and they used relatively open and simple questions during this initial stage such as “can we learn something new”. When having high potential ideas, they brought them to a specific management team for them to discuss and evaluate. For all the companies, the challenges yielded more incremental innovation than radical. However, one respondent

mentioned that the outcome not was only to generate new ideas, but also to provide insight about opportunities for improvement and existing problem areas within the organization.

In addition to linking people internally, there were some examples of how the companies linked with external actors in order to be innovative. Many emphasized that they collaborated with universities, and two of the companies had an open innovation⁸ portal. Additionally, some of the respondents who worked within a more corporate innovation function also helped connecting employees with both internal and external partners.

An input from Vinnova was that radical innovation often comes from small start-up companies. The more innovative companies therefore scan the surrounding and try to stay close to those small companies. When they do well, they might acquire the companies to gain the knowledge and competence. Moreover, smart companies realize that to be able to get as much out of the start-ups as possible, the start-ups need to build upon the company's own products. This stresses a necessity for being transparent, as emphasized by one respondent:

“Many large companies would be more successful if being more transparent, and open up for collaboration with small startups and entrepreneurs”

- Marie Wall, Vinnova

SKF

When asking the respondents at SKF about what activities or processes they have for linking innovation internally and what they do to cross-pollinate the different functions, they had no clear corporate system. Some of the respondents believed that they managed to cooperate across functions when needed, while others emphasized that they need to work more with linking people and their ideas. One respondent stated:

“There must be a way to compare an apple with an apple, to look at ideas from other functions and how one can copy and borrow these ideas for other units. Very often good ideas come from people from other functions that have a new perspective”

- Paolo Andolfi, SKF

What two respondents also emphasized was that it is better to have cross-pollinating activities as a normal and standard way of working, rather than paying too much attention to occasional solutions.

SKF has on one occasion had a “mobility JAM”, where people could come up with ideas to applications. It was not clear if this challenge had been a success or not, and one respondent mentioned that they should have had better follow-up and information about the results. When asking them about having a more regular challenge or competition with specific themes, most of the respondents thought it would be a good idea.

Two of the respondents emphasized that SKF has focused too much internally and would benefit from increasing their external collaboration. One of them mentioned that they

⁸ Open innovation is defined as “ the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively. [This paradigm] assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as they look to advance their technology.” (Chesbrough, 2006, cited in Open Innovation Community, 2015, Open innovation definition)

probably would benefit a lot from providing space within existing businesses where small start-ups could try out innovations. Even though this would require a lot more transparency than they are used to, the respondent believed that this would imply stimulation and exchange from small start-up companies, as well as improving the image of the company and increase the awareness of SKF.

4.3.7 REWARD AND RECOGNIZE INNOVATION

Benchmarking

The companies differed in their ways of rewarding innovation, other than approved patents. Several of the respondents mentioned that it is important to give recognition for innovation and that rewards could be good, provided that they are given for the right purpose, as three respondents exemplify:

“We want innovation to be a part of the culture, rather than that people innovate only because of monetary incentives”

- Karin André, Volvo Car Corporation

“Something I would like to see a reward for is an Epic Failure, things that really went crazy but at least you dared to take the risk”

- Karl-Magnus Möller, Ericsson

“I don’t believe that you should have a prize just for the sake of having a prize. I believe that you as an individual are very sensitive to if it really means something”

- Marie Wall, Vinnova

Three examples were given of innovation awards where the companies emphasized that the award was given for the best idea, no matter if the outcome was successful or not. For one of these companies, the prize was not to receive a great sum of money. Instead, the winner got to present the idea for an audience and receive a symbolic prize such as cinema tickets or flowers. Another respondent believed that it was not good to reward employees for good ideas. The respondent believed that rewards rather should be given for innovation experiments or risk-taking. For example, you could get rewarded for best “experiment week” (here the respondent refers to when time was given for developing an employee’s own idea), which could be judged upon if you got surprised or got a new insight that you did not have before. Another suggestion was to recognize managers who had set aside time for innovation. Except for rewards, there were other examples of how the companies gave recognition for innovation. Two respondents mentioned that their companies used monetary compensation if achieving personal goals. The personal goals were to some extent related to innovation activities such as to come up with new solutions or to think of improvements. Another company had a large digital screen in the entrance where they presented new innovations of the month. To give recognition, they sometimes added pictures and names of those who came up with the innovation. Moreover, several respondents mentioned that a way to reward and recognize employees was that the company provided coaching and support for developing potential ideas, or that you had the possibility to present your idea to a top management team.

SKF

SKF have a group wide “Excellence Award” that is distributed each year and that aims to shed light on ideas or improvements that has resulted in success. One branch of the award is “innovation”, which according to the respondents is mainly technology related innovation. In addition to the Excellence Award, they have some country specific reward systems where the countries drive their own reward system, but nothing that is more standardized. Each country has to decide what works within their structure and country, as one respondent emphasized:

“To take a reward system that seems essential for one country, and force it onto another country that finds it unnecessary would be crazy. If the local management doesn’t think it’s good, then it won’t be any good”

- Kent Viitanen, SKF

Furthermore, it was mentioned that the symbolic effect of the reward is much more important than the size of the reward, to really show that innovation is encouraged. Even if the Excellence Award is very admired within the company, all respondents emphasized the importance of feedback and recognition even for general innovation work:

“There is nothing worse for me as an employee than to see that what I do is useless. Employees need to know when their ideas are brought forward”

- Göran Lindsten, SKF

“We need to be even better at collecting ideas and respecting, valuing and rewarding the inventors and most creative people. This comes down to the right leadership culture”

- Paolo Andolfi, SKF

Many of the respondents believed that important for recognition is to have the possibility to present the idea to people within the same expertise area. A manager does not necessarily have all the competence to decide whether the idea is good or not, but feedback from an expert is more valuable. Additionally, many of the respondents described how they are driven by intrinsic motivation, the willingness to make an impact and especially when they are able to follow or work with a greater part of the innovation process:

“To be part of realizing the own idea is the largest recognition”

- Johan Ander, SKF

4.3.8 EDUCATE AND TRAIN FOR INNOVATION

Benchmarking

Most companies agreed that education and training for innovation is substantial for the organization and its innovative culture, and the importance only seems to increase as emphasized by one respondent:

“We have focused a lot more on coaching and training for innovation in the last two years. The amount of workshops, training sessions, education, coaching on one to one, but also on a management level, has been substantial”

- Thomas Hordern, Volvo Group

In fact, 8 out of 10 companies have specific education for innovation, although the found examples were not related to radical innovation particularly but to innovation in general.

Many of the companies differ between innovation education for leaders and for all employees. To clarify what innovation is, what the company's strategy for innovation looks like and what is expected from the employees when it comes to innovation seem to be important subjects to include in an innovation education for all employees. When it comes to innovation education for leaders, subjects like how to coach and encourage people to be creative and innovative, different innovation tools, how to create and communicate innovation strategies and supporting individuals in bringing ideas forward seem to be popular and successful subjects to cover. Following are examples of how three companies had arranged their education and training:

One company has undergone a major reorganization just a few years ago. After the reorganization they developed an educational program, in cooperation with external consultants, in which all employees participated. The program is called "Innovation Academy" and includes education on what innovation is, how it is defined at the company, how ideas are selected, the innovation process, what innovation channels there are at the company etc. This has generated greater awareness, interest and contribution for innovation throughout the company.

Another company has a learning offer, for managers exclusively, that includes change management, mentorship, coaching, situational leadership etc. What is special about this learning offer is that the education is *customized* for each manager according to his or her own needs.

Another example was to have a more "organic" approach and provide education and coaching when a need was discovered. One company had an internal "consulting group" specialized in innovation, that helped out with coaching and implementing new concepts around innovation. The company was very decentralized, and this set-up was a way to support the different departments on demand.

Apart from traditional education and training, we saw several examples of how the companies tried to increase innovation awareness and transparency within the organization. One respondent mentioned that a way to inform and update employees on innovation was to distribute newsletters of what happened within innovation and in which direction they were going.

Additionally, several of the companies mentioned that they actively tried to re-formulate innovation for the different departments and help them understand what innovation means to them, not only within the product development functions. To enhance this, one company worked with foresights in order to find strategies for how the different functions could relate to the future and what innovative strategy they should have.

SKF

Managing, leading and coaching are at the moment what is included in the leadership education at SKF. No education has been given on innovation specifically. All of the respondents believed that an education on how to think about innovation could be a good idea in order to increase awareness so that everyone knows how the process works, that there exists money that can be spent, which people are the decision-makers etc. When asking, most

confirmed that there is a need of spreading the idea about innovation and that it seems like a good timing now to remind the organization and the leaders about what innovation means to SKF and how all departments can contribute to innovation. For example, accounting has limited direct impact on the business, which is why their goal should be to become more efficient, i.e. faster, zero defects and lower costs. Two respondents additionally relate this to that everyone must understand the value they can contribute with:

“To broaden the concept of innovation and focus on internal innovation and processes throughout the company, as well as to think bigger and make everyone understand how their part of the business adds value would stimulate innovation at our company”

- David LH Johansson, SKF

“Leaders need to understand the value they create within SKF, no matter if they work with accounting or product development”

- Kent Viitanen, SKF

4.3.9 SUMMARY – IMPORTANT TAKEAWAYS FROM EMPIRICAL FINDINGS

The following table 4.3 summarizes important takeaways from the benchmarking study and SKF study. It aims to give a simple and easily read overlook of the findings from the two studies. Where it is possible, it separates between the findings related to innovation in general and radical innovation specifically.

LEADERSHIP PRACTICE	EMPIRICAL FINDINGS	INNOVATION IN GENERAL	RADICAL INNOVATION
Provide and communicate vision and mission	Benchmarking	<ul style="list-style-type: none"> • Clear vision communicated from top-management was important • Focus on specific innovation areas was beneficial • It was common to set innovation goals by using KPIs 	<ul style="list-style-type: none"> • Mission for radical innovation could be enhanced by a portfolio for radical innovation
	SKF	<ul style="list-style-type: none"> • The respondents emphasized the need of a clear direction for innovation 	N/A
Accept risk and failure	Benchmarking	<ul style="list-style-type: none"> • Recognize people for taking risks could be beneficial • Risk seen as a shared decision by the team was preferable 	<ul style="list-style-type: none"> • Prioritizing high risk projects on a corporate level was common
	SKF	<ul style="list-style-type: none"> • Much innovation was customer-driven and implied low risk 	<ul style="list-style-type: none"> • SKF conducts high risk projects through their innovation board

Structure and organize the innovation process	Benchmarking	<ul style="list-style-type: none"> • Common to use a structure for working with innovation • Clear prioritization of ideas is important for any innovation process 	<ul style="list-style-type: none"> • Space for radical innovation was sometimes created within the general innovation process, close to customers • Radical innovation was sometimes supported by a corporate group
	SKF	<ul style="list-style-type: none"> • No clear framework for how to handle ideas that are not product related • The reorganization will result in more decentralization 	<ul style="list-style-type: none"> • Their system for handling radical innovation was related to technology and high-cost projects
Design innovation teams	Benchmarking	<ul style="list-style-type: none"> • Diversified teams with people with different backgrounds and expertise was successful for innovation • An innovation team requires a skilled innovation leader • The team should understand what it means to work with innovation 	<ul style="list-style-type: none"> • It is successful to include someone who is good at pitching and communicating ideas
	SKF	<ul style="list-style-type: none"> • Integrating people from different departments could be done even more when designing innovation teams 	N/A
Provide time and financial resources on a daily basis	Benchmarking	<ul style="list-style-type: none"> • An example was to set aside time for improvement thinking for all employees every week 	<ul style="list-style-type: none"> • Time and money for radical innovation were sometimes given by a funding function
	SKF	<ul style="list-style-type: none"> • Some financial flexibility at each function was suggested as beneficial for innovation 	<ul style="list-style-type: none"> • A “kindling fund” was suggested to give smaller amounts of money to radical innovation projects
Linking for innovation – internally and externally	Benchmarking	<ul style="list-style-type: none"> • Innovation related cross-functional groups that meet regularly were common • Occasional activities to connect employees for innovation reasons was popular • Idea generation challenges was one way to cross-pollinate, create employee engagement and gain insight for improvement areas 	<ul style="list-style-type: none"> • Radical innovation would benefit from external collaboration with small start-ups

	SKF	<ul style="list-style-type: none"> No clear structure for innovation related cross-pollination groups A regular idea generation challenge that is transparent could be a good idea 	<ul style="list-style-type: none"> Some respondents believed SKF would benefit from collaborating more with small companies and start-ups
Reward and recognize innovation	Benchmarking	<ul style="list-style-type: none"> All companies recognize innovation, however on different criteria Employees were recognized with different prizes: monetary, non-monetary and coaching 	N/A
	SKF	<ul style="list-style-type: none"> They have a reward for innovation, which is technology related The respondents believed that other kinds of innovation should be recognized 	N/A
Educate and train for innovation	Benchmarking	<ul style="list-style-type: none"> Innovation education and training was common and important To re-formulate innovation to the different departments was successful 	N/A
	SKF	<ul style="list-style-type: none"> SKF does not have specific education for innovation 	N/A

Table 4.3 – Summary empirical findings, Leadership practices

4.3.10 SUCCESS FACTORS FOR RADICAL INNOVATION – BENCHMARKING

When asking the companies specifically about what they believed were the reasons to why they are successful within radical innovation, there were four reasons that were stated by several companies. The most common reason, which the great majority mentioned, was their vision, which often seemed closely connected to having a strong customer focus. Some of them emphasized that they had a spirit within the company that they really wanted to make a difference for the customers, and that their core values were highly inspiring to be innovative. Connected to this was also a strong support from top-management. One respondent mentioned that many in the top management had been working within the company for many years and had good technological knowledge, which probably resulted in customer understanding and a feeling for what would work within innovation.

The second most mentioned reason was to have a framework for radical innovation. However, the process should not be as structured as for incremental innovation. A success factor seemed to be to work close to the end-customers by doing for example observations and ethnographic research. The respondents emphasized that the process should be flexible, and that it is important to not limit or try to reduce risk too early in the process. One respondent described that:

“Radical innovation is not about reducing uncertainty. It is about benefitting from it and find successful ways forward, in a possible and often lean way”

- Jon Mikaelsson, Tetra Pak

Support for innovation was also related to this, in terms of specific teams who either helped the different functions with innovation, or connected people working at separate functions.

The third most mentioned reason was related to the people within the organization. Some of the respondents mentioned that they had managed to attract skilled and intelligent people, with a diverse background. One respondent exemplified by saying that you need people who can make it possible to think outside the box without judging, as well as people who want to think outside the box. One believed that it was related to an entrepreneurial spirit within the company. Another respondent mentioned that they not only talked about innovation, but also provided the employees with tools for how to develop, build a concept around an idea and evaluate projects.

The fourth reason that was mentioned by three companies was that they had a flat organization. For example, one of the respondents who worked in a matrix organization mentioned that they probably had less bureaucracy in comparison to other companies. Another of the respondents mentioned that they had a very humble company culture that prevented hierarchy.

When asking the two respondents from Vinnova what they believed were reasons to why some companies are more successful within radical innovation, they emphasized four things; to have an expectation for innovation as a part of the culture; to create a structure and systematically way of working with innovation; to have a diversified portfolio with both short-term and long-term strategies for innovation; and to focus on few areas rather than betting on everything. One of the respondents also believed that too much hierarchy was devastating for innovation.

“To organize for innovation and use systematic processes can also mean to create freedom and space for creativity and learning”

- Cassandra Marshall, Vinnova

“Succeeding with innovation requires a focus on few specific areas rather than to bet on everything. That requires that the top-management decides the direction”

- Marie Wall, Vinnova

SUMMARY: SUCCESS FACTORS FOR RADICAL INNOVATION - BENCHMARKING

- Clear vision and customer focus
- Framework and structure for radical innovation
- Attract skilled people and empower them
- Flat organizational structure with limited bureaucracy
- Diversified innovation portfolio (Vinnova)

4.3.11 BARRIERS TO RADICAL INNOVATION – SKF

When asking the respondents at SKF what they believed was barriers to radical innovation within the company, the answers were similar. The great majority mentioned that they do not have a corporate structure for collecting and executing ideas. What was mentioned was the necessity to find ways of collecting ideas that are not only related to products, and that the structure for the radical innovation process should be flexible. Since SKF has a broad range of products and customers with different requirements, they need a clear business case for who the customer is. When developing products and technologies that are more radical, it was mentioned that in the past, the innovation resources have been too far away from the customers. According to the respondents, SKF has mainly had two sources for developing innovation that are more radical; their corporate R&D center and the innovation board projects. The corporate R&D center has been working too isolated, separated from the product development centers; however, this is something they are trying to solve by reorganizing the R&D center closer to the product development centers, and thus the customers. Additionally, it was mentioned that the innovation board projects, that was an attempt to provide resources for more radical innovation, have been very secret, and that there was a lack of transparency to the product development centers, even though they were the ones who needed to develop the products. Finally, what was mentioned as a barrier was the lack of clear direction of where innovation is desired. Some respondents mentioned that this probably would benefit SKF's innovativeness.

SUMMARY: BARRIERS TO RADICAL INNOVATION – SKF

- Lack of structure for collecting and executing radical innovation
- Lack of transparency and targeting the customer during the innovation process
- Lack of clear direction where innovation is desired

5. ANALYSIS

This section provides a discussion where theory is compared to the empirical findings. The chapter follows the same structure as the theoretical framework and empirical findings, thus involves radical innovation definition, characteristics of a successful leader for radical innovation and the investigated leadership practices. The discussion in each section aims to analyze the empirical findings from both the benchmarking companies and SKF, find patterns and bring forward successful practices, as well as build a foundation for conclusions.

5.1 RADICAL INNOVATION DEFINITION

When studying radical innovation and its definition at the different companies, a subjective and firm-specific approach has been used, since as according to Hurmelinna-Laukkanen et al. (2008) the radical part of innovation is highly conceptualized, and we aimed to find inputs from real-life cases of how radical innovation could be defined for SKF. Even though not many companies had a shared and spread definition about innovation and/or radical innovation, they agreed that it is important to classify between different kinds of innovation, and a reason to that mentioned was that they need to handle the two types of innovation differently.

In common for most of the benchmarking companies was that they had a broad definition of what innovation is, and that it could be applied in all parts of the business. This was in line with OECD's categorization of innovation as being related to products, processes, marketing and/or organization (OECD, 2015, Defining innovation). Moreover, what seemed to be the most common opinion about radical innovation was that it was something new either to the company or to the customers, which was similar to Oke et al's (2009) viewpoint that radical innovation is "the discovery of something completely new". However, what might have impacted the broad view on innovation could be that the majority of the respondents work with innovation, and that their job not always was related to products. In those companies that did not have a shared definition, which was the great majority, it is hard to know if other employees would define innovation as broadly. In the one company that had categorized innovation into three groups, that definition was related to customers and markets, thus excluding the organizational aspect mentioned by OECD.

SKF, as most of the benchmarking companies, did not have a shared definition of innovation. The respondents all indicated that innovation in general, and especially radical innovation, is today almost exclusively associated with technology development. However, the respondents confirmed that it would be a good idea to broaden the concept and spread the definition throughout the company.

Analyzing the definition of radical innovation and its impact on SKF, both the benchmarking study and OECD view innovation as a broad concept, and the respondents at SKF found this viewpoint beneficial. The benchmarking additionally showed that it is important to distinguish between types of innovation, and theory (Büschgens et al., 2013), the benchmarking study and the study at SKF imply that radical innovation is related to higher risks. With this in mind, it is reasonable to believe that defining radical innovation would be beneficial for SKF in order to create a space for radical innovation, broaden the organization's perspective of what radical innovation is, engage a greater part of the business

in radical innovation initiatives and facilitate for improving processes for handling radical innovations.

Important Takeaways

- A broad definition of radical innovation engages larger parts of the business
- To classify innovation is necessary since different kinds of innovation often needs to be handled differently

5.2 CHARACTERISTICS OF A SUCCESSFUL LEADER FOR RADICAL INNOVATION

What most of the companies agreed on was that radical and incremental innovation requires different leadership. Some emphasized that it probably requires different leaders as well, since the different leadership styles does not suit every personality. They also emphasized that it is even more important to be able to understand and lead people with creative thinking skills, rather than necessarily being creative themselves. When asking the companies about what characterizes a successful leader for radical innovation, most mentioned characteristics such as open, encouraging, inspiring and to have good listening skills, similar to what Aronson et al. (2008) referred to as openness. These are leadership characteristics that are beneficial for innovation in general, but following Aronson et al's (2008) findings, openness is even more important when leading radical innovation. Many of the benchmarking companies also emphasized the ability to network as important. It makes sense to believe that networking might be even more important for radical innovation in comparison to incremental, since radical innovation often require cooperation across internal functions and external partners.

Leading radical innovation requires, according to benchmarking and theory, more risk-taking and leading in uncertainty (Tamara et al., 2010) in comparison to incremental innovation. When leading in uncertainty, Aronson et al. (2008) stated that conscientiousness is specifically important since they need to plan for uncertainty, which might be hard. Even though the benchmarking companies rather emphasized that a leader for incremental innovation needs to have structure and being organized, we saw several examples of when radical innovation leaders had created a structured way of working due to the difficulty and complexity of coping with radical innovation. With both Aronson et al's (2008) study and our own observation, it makes sense to believe that conscientiousness is a beneficial characteristic.

Tamara et al. (2010) also emphasize that technical expertise in the area is necessary when leading radical innovation, and Byrne et al. (2009) explain this by stating that leaders need expertise to create a sort of power base for influencing others, and that expertise gives the leader a possibility to effectively represent the group. Many of the benchmarking companies, especially those acting in technology intensive industries, confirmed that many of the leaders had deep knowledge and experience in the area, often also technology backgrounds from academia. However, technical expertise would likely be related to a more narrow scope of innovation within high technology products or processes, in comparison to for example marketing innovation, where the expertise could concern product pricing. Therefore, we rather conclude professional expertise as a relevant characteristic for radical innovation. The benchmarking companies did also emphasize that broad competence is important, not only

skills within one specific area, which makes sense to believe since radical innovation often span over different areas and concerns working with a diversity of people.

Important Takeaways

- Radical innovation is favored by different characteristics of a leader in comparison to incremental innovation, sometimes meaning different leaders.
- Characteristics specifically important for radical innovation: comfortable working with uncertainty, openness, the ability to network, professional expertise and broad competence.

5.3 LEADERSHIP PRACTICES

5.3.1 PROVIDE AND COMMUNICATE VISION AND MISSION

Communicating a clear vision was emphasized in theory as the most prominent leadership behavior that drives innovation (Engelen et al., 2014; Byrne et al., 2009; Den Jong & Den Hartog, 2007), and earlier research has shown that more innovative companies provided a clear vision, rather than changing goals, in order to support innovation activities (De Jong & Den Hartog, 2007). This was confirmed by the benchmarking companies, stating that having a clear vision is a very important factor for stimulating innovation. In practice, there were different ways of having and communicating a clear vision to support innovation activities. What most companies agreed on was the importance of having the vision closely tied to the customers. Many of the benchmarking companies also mentioned that a part of their business strategy is to be innovative and that the top management both communicates the importance of innovation as well as gives mandate for employees to be innovative. At one of the companies, two out of three parts of their company vision concerned innovation, which can be compared to providing a clear vision of where the company aims to be and what ideas that are appreciated (De Jong & Den Hartog, 2007). At SKF, they have a vision of where they aim to be, however, the problems that were mentioned were that the company has not succeeded in working coherent as much as they would need.

Regarding having a specific vision or strategy for innovation, some of the benchmarking companies had focus areas of where they wanted to be in the future, even though these seemed to be relatively broad, such as trends. However, many used specific innovation related KPIs, for example regarding new products introduced within the last years, which could be a way of measuring and sticking to innovation goals (Engel et al., 2015). In addition, one of the benchmarking companies had an official strategy for radical innovation.

To have well defined missions that are more specific was mentioned in theory as even more efficient for creating an innovative environment (Byrne et al., 2009), especially for radical innovation (Tamara et al., 2010). At SKF, the respondents believed that they lacked a clear direction of where they want to be in the future, and that their missions have been too broad. The respondents emphasized that it is something that the company would need for the company's innovativeness.

Important Takeaways

- Clear direction of where the company aims to be is important for creating a coherent innovation mindset

- When working towards clear innovation goals it can be valuable to have specific KPIs for innovation
- To have narrow mission could be a part of enhancing a radical innovation mindset

5.3.2 ACCEPT RISK AND FAILURE

All of the benchmarking companies confirmed that risk-taking was a necessary factor for innovation. This is in line with result of the study by the Swedish institute for opinion surveys in 2014 where risk-taking and acceptance for failure was seen to be the most important factor for yielding innovation. What all of the companies also agreed on was that radical innovation implies higher risk than incremental innovation, which according to theory makes sense since radical innovation often requires more investments and unsure outcomes (Alexander & van Knippenberg, 2014)

As Russell (2014) stated, having a positive approach to risk-taking is mentioned by researchers as stimulating a creative environment. This was clearly practiced by many of the benchmarking companies. Some examples of how this was that risk taking and acceptance for failure is spoken and articulated by top management, that employees were recognized for taking risks, not only when good or successful ideas were generated, or how risk was seen as a shared decision by the team rather than by one individual. This all comes down to company culture and attitudes from leaders. Additionally, examples from the theory of what a leader could do to secure a positive approach to risk were to share their own personal experiences of failure or communicating where and where not risk-taking is desired (Soken and Barnes, 2014).

When asking the companies what else one can do to stimulate a creative environment where risk-taking and acceptance for failure is a part of the culture, many of them emphasized the importance of transparency within the company. When being transparent one probably learn from mistakes to a greater extent and as Russel (2014) argues, those companies that learn from their mistakes instead of ignoring or punishing failure will have a competitive advantage.

Other practices that were found that seemed to create a culture of acceptance for risk and failure was to prioritize high-risk projects on a corporate level. The majority of the companies had a separate function or group who worked with more high-risk projects, trend analysis or projects spanning over several product areas. Even though these were relatively different in the set-up, they were focused on yielding more radical innovation and required higher risk taking. To spread the risk by portfolio management and to have certain people working with high-risk projects was seen to be successful since not everyone is comfortable with the way of working when dealing with high-risk projects.

At SKF, several of the respondents perceived their company culture as supportive for risk-taking. An example of this was that their CEO had clearly articulated that he supported their risk-taking and shared the responsibility for the outcome. The current structure for handling high-risk projects did however not seem to have resulted in many projects nor encouraged the employees. Some respondents mentioned that they had felt discouraged to contribute and participate again since only multimillion projects were developed and top-management were strict in the selection. Many respondents at SKF also emphasized the lack of transparency,

which if improved could lead to more risk-taking, learning from mistakes and better innovation culture.

Important Takeaways

- Radical innovation requires more risk-taking
- Attitude from managers and transparency favor a culture of accepting risk and failure

5.3.3 STRUCTURE AND ORGANIZE THE INNOVATION PROCESS

Theory has mentioned that a structured and systematic innovation process is necessary for innovation (Soken and Barnes, 2014). Examples of achieving this could be by using stage-gates and KPIs, and the collection of ideas should appear from close connection to customers (Engel et al., 2015). In practice, we found examples of companies that worked according to a systematic innovation process, but created space for more radical innovation within the process. The companies were often organized by smaller teams that worked with narrow product groups. Often, they worked with the whole process from idea generation to launch, close to the customers and end-users. The innovation processes seemed to be quick, and they used stage-gates to facilitate the process. It also appeared that they had specific teams who worked with more radical innovation within those product groups, and teams who worked with developing existing products. This way of creating a structure would be in line with the way Engel et al. (2015) mentioned. Having separate smaller teams within each segment that focused on different things made it possible to create space for radical innovation without harming the product development and incremental innovation process. This kind of structure might be beneficial for a company that has many different markets and customers, and where specific customer needs must be addressed.

However, we also found benchmarking companies who had organized for working specifically with more radical innovation on a corporate level, which was similar to Colarelli O'Connor and DeMartino's (2006) suggestion of having a loosely coupled group working with radical innovation. What they had in common was that the groups were not connected specifically to R&D, they had more freedom in terms of resources and they supported people who had an idea by helping them developing the idea. These groups often supported different functions with education and training regarding innovation.

Analyzing the two different set-ups, we observed that the spread of products manufactured might have impacted the structure. The first companies, who arranged their radical innovation process close to the customers, had a broad variety of products that were very different from each other. The second group of companies manufactured to a greater extent more similar products. By that sense, the first group of companies would very likely need to be specific about what customers to target when working with radical innovation, and could probably not utilize one radical innovation within a specific product to the same extent as the companies who had more similar products. Concluding this, the financial impact from one radical innovation in a company with more similar products would likely be much higher since affecting a larger part of the business.

At SKF, their organization was arranged in the same manner as the first group of companies. Comparing SKF's set-up to theory, they did have a systematic innovation process and worked with stage-gates, KPIs and closeness to customers (Soken and Barnes, 2014). They had narrower product groups, and intended to move their corporate R&D center closer to the

customers. However, they did not have a separate team who works with radical innovation within the product groups. Additionally, what differed SKF's set-up from some of the benchmarking companies' was that SKF's teams were categorized more according to idea generation, implementation and launching groups. The benchmarking companies tended to have the same people involved in the whole process to a much greater extent. According to Engel et al's (2015) study the most innovative companies had a clear idea of which market segment to target, which seemed to be a problem when developing radical innovation at SKF. Creating space for radical innovation within each market- and product segment, as some of the benchmarking companies did, could probably address this issue to some extent.

To facilitate for more radical innovation from a bottom-up perspective, SKF also allowed for high-risk projects that often did not have a clear product owner. Employees could pitch their ideas to a top management team "the Dragon's Den", and if approved they turned into an "innovation board project", and they got a lot of resources for developing the idea. What seemed to be different from the benchmarking companies having a similar set-up was that the projects always were very cost intense, and more related to technology and product innovation. In the benchmarking companies, ideas that were not as large could get funding as well as projects that were not related to products or technology.

According to earlier research (Engel et al., 2015), an important aspect of the innovation process is to be efficient and have speed, and according to their study, it is best practice to measure the time for an idea to develop into a moneymaking product. In reality, this was valid for incremental innovation but harder for radical innovation. Many mentioned that for radical innovation, they often had a problem in mind, rather than a solution. When having an idea it was hard to speculate in the outcome since there was hard to compare it to existing products, as well as estimating a time-plan.

Regarding prioritizing ideas as a part of the innovation process, both theory (Bel, 2010) and the benchmarking companies found this important. However, what we found distinct in reality was that it could be a good idea to have a specific portfolio for radical innovation. The reason would be to diversified and spread the risk. An example of how a company did was to categorize according to more radical and less radical projects. Another input was to put a number to how much radical innovation that should be done within the innovation portfolio. The reason would be to create space for more radical innovation. SKF did not have a specific portfolio for radical innovation; they did however use technology road maps where they prioritized ideas within their product development process.

Important Takeaways

- A framework for radical innovation is important, however if benefiting from a decentralized or centralized process could depend on product distribution.
- If choosing to decentralize the radical innovation process, it can be beneficial to have a supporting function that helps the company having a coherent but customized way of working with innovation.
- To measure innovation speed according to KPIs was valuable for incremental innovation but not for radical innovation.
- To prioritize innovation in general and radical innovation in particular, an innovation portfolio can be developed. Either it could be good to include radical innovation as a part of the portfolio, with clear goals of how the share should be, or to have a separate portfolio for radical innovation.

5.3.4 DESIGN INNOVATION TEAMS

The benchmarking study emphasized that the people in the organization are of great importance for radical innovation success, and both earlier research (De Jong & Den Hartog, 2007; Byrne et al., 2009) as well as the empirical findings show that it is important to create innovation teams that are diversified. Many of the benchmarking companies mentioned that skills such as technological, market knowledge, as well as having business thinking were important to include in an innovation team. However, the right composition of competencies is highly conceptualized depending on type of innovation and project. What many of the benchmarking companies emphasized though was that a part of their success within innovation was their close connection to customers. Therefore, it seemed to be important to not only have technological knowledge within an innovation team, but to integrate people working with product development or R&D with the users of the products. A way was to have specialized innovation teams that worked very close to the customers by for example doing observations and market analysis. Another way was to invite R&D people into customer meetings.

When specifically creating teams for *radical innovation*, Tamara et al. (2010) suggest that functional diversity is important if implemented after the early development stage. In reality, this was not confirmed, nor denied. What instead was emphasized was to involve someone in the idea generation stage that was good at pitching and communicating the idea. The reason to that was that a radical idea often is hard to capture. If having an idea that cannot be compared with existing products, processes or services, it is necessary to visualize the idea and to make the decision makers understand the idea within a short amount of time.

Additionally, what both theory (Bel, 2010) and the benchmarking companies brought forward was the role of the leader in an innovation team. An innovation team is not automatically innovative only because it consists of diversified members, it requires a leader who can make everyone cooperate and “share the same language”.

What Vinnova mentioned was that everyone in an innovation team should understand how it is to work with innovation, such as how to work with uncertainties or not having a clear goal. Connecting this to the leader, it could be a part of the role to communicate what distinguish working with innovation from other projects. For example, discuss how to work without having clear goals and how to handle risk-taking and uncertainties.

For SKF, they seemed to focus on creating diversified teams, however many of the respondents mentioned that they could be even better at integrating people from different departments. If creating a structure for more radical innovation, it could probably be valuable for SKF to keep in mind that it is not only the ideas per se that are important, but also the ability to evaluate them fair. Therefore, they could create a framework for presenting, or make sure that they always involved someone good at pitching and presenting into the teams.

Important Takeaways

- Diversified innovation teams are important, however the competencies that seemed more important were to always involve were technological knowledge, market knowledge and business thinking.
- For *radical innovation teams* specifically, it was also important to involve someone good at pitching and communicating ideas.

- The leader of an innovation team should have the capabilities to make the group cooperate and “share the same language”. Additionally, the leader should communicate what distinguish working with innovation from other projects.

5.3.5 PROVIDE TIME AND FINANCIAL RESOURCES ON A DAILY BASIS

Many of the companies studied argued that it is important to plan for some flexibility in both time and budgets in order to stimulate innovation, which is supported by Russel (2014) in theory. Several examples were given on how the companies actively plan and make room for innovation both in terms of time and financial resources. One company had innovation activities included in the job of each employee, in addition to what they normally did, in order for them to improve their own processes and contribute to innovation. This concept of giving everyone time to innovate and improve the business has been successful, which probably has to do with the fact that lack of time might be one of the most preventing factors for innovation according to theory (Dyer and Furr, 2014), and also emphasized by Vinnova.

The companies studied seem to agree that time is the most important resource in order to stimulate innovation. Even though theory states that there is no correlation between R&D spending and innovation outcome (Engel et al. 2015), some companies still emphasized that they would like some money set aside to experiment within innovation. Some companies did have specific budgets for innovation or radical innovation exclusively.

Since SKF has not yet decided on a corporate level that specific time or financial resources should be provided to be innovative on a daily basis, this could be an idea to consider for their future innovation strategy. Some employees clearly emphasized that since their current channels for innovation or idea generation event only applies for very large projects, there is a need for more flexibility and resources to experiment with new ideas. Ideas that were discussed were for example a “kindling fund” for smaller innovation projects or some extra money for each manager in order to allow flexibility.

Important Takeaways

- Lack of time is a preventing factor for innovation
- Many of the companies had specific set-ups for allocating resources for innovation
- Time seems to be more important than money. Not always is much money needed to experiment.

5.3.6 LINKING FOR INNOVATION – INTERNALLY AND EXTERNALLY

Earlier research points towards a value in securing a coherent and coordinated innovation strategy, and that linking people within the company by arranging cross-functional solution groups is a good idea (Bel, 2010). The majority of the benchmarking companies had cross-functional solution groups. The purpose with the groups was often to cross-pollinate knowledge and ideas of ways of working, as well as to create potential for collaboration across functions. In many cases, they had regular meetings. However, it is hard to say if all of these groups were corporate strategic decisions, even though some of them seemed to have been created from top management initiatives. At SKF, they did not have a corporate strategy for cross-functional solution groups, even though there were some examples of bottom-up initiatives. Some of the respondents believed that it would be beneficial to create such groups

in order to secure more cross-pollination. However, what was emphasized was to make it a part of the daily work, rather than having occasional solutions.

What was mentioned as best practice by theory was to have cross-functional cooperation, and to work with the same vision (Engel et al., 2015). In practice, there were examples from the benchmarking companies of how to arrange for this. Three companies had a regular idea generation challenge with specific themes of where innovation ideas were appreciated. The challenges were held during a limited time, and employees could normally comment on each other's ideas. This way of creating a forum where innovation can be discussed, where employees can bring forward their ideas and get inputs, and at the same time make sure that the whole company thinks of innovation in the same direction, could be a way to complement the ordinary day-to-day innovation processes. What seemed to be important with the challenges was not only to generate ideas, but also to identify development areas within the companies. At SKF, they had tried out a similar set-up once, looking for ideas to new applications. However there seemed to be a shortage of follow-up the ideas and the results, and the idea generation challenge was not something that had been redone.

What was stressed in theory as being best practice for innovative companies was to also collaborate with external partners (Engel et al., 2015; Colarelli O'Connor & DeMartino, 2006), and that external scanning is favorable for innovation, specifically radical innovation (Tamara et al., 2010). Some of the benchmarking companies emphasized the importance of collaborating with universities, and two had open innovation platforms where external actors can contribute with ideas for the companies to develop. What was also mentioned, as ways of connecting with external people, was to invite external companies for seminars and workshops. Some respondents who worked with supporting innovation activities also mentioned that a part of their job was to find external partners for collaboration while supporting the innovation activities. An input from Vinnova was that large companies would benefit from collaborating more with small start-ups, as well as acquire those companies to gain new competencies. At SKF, two of the respondents specifically mentioned that they have focused too much internally and would benefit from increasing their external collaboration. Collaboration with small start-ups was mentioned as something that would be beneficial for the company.

Important Takeaways

- Cross-functional solution groups is a good way to cross-pollinate, however it should rather be a part of the daily work than occasional solutions.
- To create cross-functional cooperation and work according to the same vision, repeated innovation challenges with specific themes could be introduced.
- Collaboration with external partners is important for innovation, specifically radical innovation, and valuable could be to collaborate with small start-ups.

5.3.7 REWARD AND RECOGNIZE INNOVATION

The benchmarking companies had different ways of giving rewards and recognition. Some companies had one specific award for a successful innovation on the market, and one specific award for the potential of an idea no matter launched. In some cases, the latter could be in line with Soken & Barnes' (2014) belief of rewarding ideas for good risk decisions no matter outcome. Even if an idea is rewarded for having high potential, it does not necessarily mean that it requires risky decisions, but it could in some cases.

However, many emphasized that they did not believe that monetary awards stimulated an innovative behavior. Even though there were examples of larger sums of money for innovation prizes, some had chosen to instead give a symbolic reward such as cinema tickets and flowers. Most respondents believed that it was more rewarding to get support and resources to realize the idea and to present it to peers within the same expertise area, rather than receiving an innovation prize, which also was supported by theory (Büschgens et al., 2013). What seemed to be a better monetary reward for stimulating innovation was to give bonuses for achieving personal goals related to innovation. A few companies had already implemented this, while others thought it would be a good idea. According to theory, this would rather be incentive for incremental innovation than for radical innovation (Büschgens et al., 2013), which also seemed to be the case for the benchmarking companies since the goals often were related to improvement efforts.

A way that one company gave recognition was to have a digital screen by the entrance, presenting innovations of the month. Sometimes a picture and name of the persons coming up with the idea was presented. This way of giving recognition might not be a driver itself for innovation, and it was nothing that the respondent mentioned but rather something we observed. However, it could be a good way to recognize someone's good job, and show that the company really prioritize innovation and appreciate the people behind the idea.

At SKF, their innovation prize seemed to be more technology related, and given for an innovation that has succeeded on the market. Even though the prize was appreciated within the company, it could be a good idea to add another type of reward that is not as focused on the output of the innovation. As a way of permeate the whole company with an innovative mindset, it would likely be better to not focus too much on technology-related innovation, but rather pay attention to for example process- or market innovation. Even if a prize does not work as a driver for innovation, it could be a way to show appreciation to innovative employees. However, what seemed to be more important for SKF was to have the potential to realize the own ideas, and to get recognition from people within the same expertise area. Therefore, a prerequisite and first step for would be to create an innovation framework that makes it possible to realize and follow the own idea, encourage a culture for risk-acceptance, which is a driver for radical innovation (Baumann & Stieglitz, 2014) and provide feedback even if the idea is not realized.

Important Takeaways

- A prize per se is not a driver for innovation but could be a way of showing appreciation to innovative people
- A rewarding driver for incremental innovation would be to get monetary compensation if achieving personal goals related to innovation
- A rewarding driver for both radical and incremental innovation would be support to realize the own idea and the ability to present the idea to people within the same area of expertise

5.3.8 EDUCATE AND TRAIN FOR INNOVATION

Education and training for innovation is according to theory very efficient for innovation facilitation and increases innovation capability, since it both creates an environment for constant learning and improves the skills and expertise of employees (Sung & Choi, 2013).

This was a shared belief by most of the benchmarking companies and out of the 10 companies interviewed, 8 provided specific education for innovation at their company. The education differed in terms of content, focus or audience but all aimed to improve the innovativeness of the company or its people.

Some examples that were seen as successful were to educate *all* employees on what innovation is to the company, such as how the company handles it and what innovation channels there are; to provide customized education for managers about how they can handle change or coach for innovation or; to have an internal consulting group that provides education or coaching on innovation when needed.

Another central part of the theory about education for innovation is how it motivates and encourages employees to participate and make them feel engaged in the organization (Ferrier, 2014). A way that some of the benchmarking companies did this was to broaden the concept of innovation by educating each department or function within the organization about how they add value to the organization and how they can contribute to innovation. This could suggestively be done either by educating all managers about the innovation strategy and how to coach employees on how to be more innovative or by creating a support function for innovation as for example an internal consultant group that can educate and coach on innovation.

Today, SKF have no education on innovation specifically. However, when asking the respondents, they all believed that there is a need of spreading the idea about innovation and that it could be a good idea and ultimate timing now after the reorganization to provide education in order to increase awareness, knowledge and focus on innovation.

Important Takeaways

- 8 out of 10 benchmarking companies provided specific education and training for innovation, which indicates its importance for stimulating innovation
- It was valuable to reformulate the concept of innovation for different parts of the business, in order to increasing understanding of how everyone can add value

6. CONCLUSION

This chapter will summarize and discuss our conclusions drawn from the study and answer to our main research question and sub questions. The answer to the third sub question contains recommendations and suggestions to SKF developed throughout the project. Finally, a suggestion for future research opportunities is presented.

6.1 WHAT LEADERSHIP PRACTICES FAVOR RADICAL INNOVATION FOR LARGE SWEDISH MANUFACTURING COMPANIES?

This study has showed that radical innovation not happen by chance, but rather that there exist factors that increase the likeliness for radical innovation success. Moreover, the study showed that it is possible for leaders on different levels within an organization to take on specific practices in order to create a more innovative environment, where radical innovation can thrive. When answering to the question of what leadership practices that favor radical innovation for large Swedish manufacturing companies, the eight leadership practices investigated seemed all to favor innovation in general, some more important than others. Depending on type of organization and circumstances, some practices need to be adapted and conceptual, since what will work in one company might not work in another. This was specifically valid when structuring and organizing the radical innovation process. Additionally, it is very likely the *combination* of leadership practices that stimulates an innovative environment, which requires that many factors are in place. However, during our study we have found some general inputs of what likely favor radical innovation for the companies participating. Even though the theory used has not distinguished remarkably between leadership practices for incremental and radical innovation, the empirical findings showed some valuable differences. Therefore, when applicable, this part will highlight the most distinct differences in how to handle radical innovation differently from incremental innovation.

Having a clear vision and clear direction of where the company aims to be in the future was a very important factor for creating a coherent innovative mindset. According to the benchmarking study, many implied that to genuinely want to make a difference for the customers was the main driver for innovation. What was brought forward for yielding radical innovation was to have more narrow missions in order to emphasize where innovation is desired. It makes sense that this is important for radical innovation in order to create some sort of starting point, similar to that incremental innovation already has a basis in already existing products. To support and create space for radical innovation, it was valuable to either create a radical innovation portfolio or to have a specific share of the general innovation portfolio that should be dedicated to radical innovation. This could further be supported by specific KPIs for radical innovation.

We found from the benchmarking study that a great benefit and almost a prerequisite when developing radical innovation was to create a framework and structure for the radical innovation process. The framework should provide more flexibility in terms of time and financial resources, if comparing to the process for incremental innovation. There were several examples of what the framework could look like. Regarding product innovation, it was beneficial for some companies to create space for radical innovation within their product development process, for example by having separate groups who focused more on radical innovation within each product development centers. A key success factor was to have

transparency within the whole process, which makes sense due to that the radical innovation process might be iterative and require expertise from many areas. For other companies, it was beneficial to implement specific corporate processes for radical innovation, where the process was completely separated from product development and R&D. However, what might have impacted their set-up was the organizational structure, and what type of products the company had. In those cases the companies manufactured a great amount of different products with very different customers, there was a tendency to have a more decentralized structure and create a space for radical innovation within the product development process. A reason to that could be that since their products and customers were extremely different, they needed specific expertise to understand the different customer requirements. Therefore, they might have benefited from organizing their radical product innovation process closer to the customers. To be able to still cross-pollinate and capture the knowledge from different product development centers, it would be valuable to have a company-wide support function.

The companies that had arranged more corporate processes for radical innovation were mainly companies that manufacture products, which were more cost-intense and large, with more similar customers. If the whole company is aware of who the customers are, it makes more sense that radical innovation ideas could come from all around the company. However, the benchmarking study also showed that it was common and important to have a framework for capturing radical innovation that is not only product related. This, on the other hand, seemed to be beneficial to have on a corporate level, in order to capture ideas that would span over many areas and functions. Even though many companies had a specific set-up for allocating time and financial resources for radical innovation; time was a more important factor than money. However, time was nothing exclusively important for radical innovation, but for innovation in general.

Moreover, to accept risk and failure was a prerequisite when yielding radical innovation, whilst reducing uncertainties and be risk aware was important when leading for incremental innovation. To create a culture of risk and failure acceptance could be enhanced by an allowing attitude from managers, transparency and to handle risk-taking as a shared decision by the team.

What also was mentioned as an important factor for radical innovation according to the benchmarking study was related to the people within the organization. It was not only important to attract skilled employees, but also to provide them with tools for developing radical innovation, empower them, and prevent a bureaucratic organization. Except for providing a framework for radical innovation, an important factor was education regarding innovation, which both touched upon incremental innovation and radical innovation. To communicate where innovation happens, where it is appreciated (related to having a clear direction mentioned earlier), what differs incremental from radical innovation and how the company handle the processes differently were important factors to include. To stimulate other kinds of innovation than product innovation, reformulating the concept of innovation for different parts of the business would increase the understanding on how everyone within the company can add value.

When designing innovation teams, diversified teams were a common success factors for both incremental and radical innovation. However, what was important for radical innovation teams specifically was to involve someone good at pitching and communicating ideas. The reason to that is that radical innovation ideas often cannot be compared to something that already exists within the company, in contrast to incremental innovation. Therefore, it is even

more necessary to be able to explain the concept and convince the decision-makers of why it is a good idea.

To cross-pollinate and create cross-functional solution groups was important both for utilizing knowledge within the company and for stimulating innovation. When people integrate and share knowledge, the company will likely be more transparent, which was mentioned as important for radical innovation. Additionally, what was beneficial for radical innovation was to cooperate with external partners, both regarding developing radical innovation, but also in terms of acquiring companies with new knowledge and competence.

To reward and recognize radical innovation was not seen as a driver per se for innovation, but rather a way for the company to show appreciation. What seemed more important as a driver for innovation was to get support to realize the own idea, and the ability to present the idea to peers within the same area of expertise. In the end, this all comes down to empowering the people, and implement a good process for radical innovation.

6.2 HOW COULD RADICAL INNOVATION BE DEFINED FOR SKF?

Defining innovation in general may seem hard or irrelevant. What was discovered in this study and what truly motivates having definitions of innovation is that since different kinds of innovation needs to be handled differently, with different practices and different leadership, it make sense to distinguish between incremental and radical innovation. Moreover, an appropriate balance between the two is essential to stay competitive on the market, which supports the necessity for separating the concepts and create space for both types within an innovation portfolio.

Common for many of the benchmarking companies was that radical innovation often is interpreted as something new to the company or new to the customers. Additionally, many companies had a broad view of what innovation is, and that it is something that can be applied in all parts of the business. Hence, not only related to new technology or product development. Having a broader definition of innovation could therefore engage a greater part of the business and encourage improvement work and completely new, better ways of working everywhere. Moreover, spreading the definition and customizing the concept of innovation to different parts of the business could increase the awareness of how the whole company can add value.

The findings from SKF indicated that innovation in general, and especially radical innovation, is today almost exclusively associated with technology development at the company. Therefore, the main message with defining and categorizing innovation at SKF would be to reframe and defocus the current perception of the concept from being limited to technology- and product development, to concern all part of the business. Combining the benchmarking study's perception with our own definition (defined in section 3.2), a potential definition for SKF would be:

“Radical Innovation is completely new product-, process-, marketing- or organizational innovation that has high impact on SKF’s activities or SKF’s customers”

- By authors

6.3 WHAT CHARACTERIZES A SUCCESSFUL LEADER FOR RADICAL INNOVATION?

Even though there are many characteristics that build up a good leader, we found in this study that radical and incremental innovation require very different leadership and are often favored by different characteristics of the leader. While incremental innovation benefits from a leader that is structured, able to stick to time frames and aiming to reduce costs, a successful leader for radical innovation is comfortable with leading through uncertainty, taking risks and being open and transparent. This is specifically important with regards to the nature of radical innovation as often being comprised of an iterative innovation process, with unsure outcome. The leader should also be encouraging and inspiring, in order to bring out the best in creative people. Moreover, the ability to network was highlighted by the companies as important for leaders for radical innovation. This since it allows for connecting different people both internally and externally and applying ideas into new concepts, which often is more important for radical innovation than incremental. The study also brought forward that professional expertise and broad competence makes it easier to understand and develop radical ideas, as well as effectively represent and influence the group.

Successful characteristics for leaders of radical innovation:

- Comfortable with leading through uncertainty and taking risks
- Open and transparent
- Encouraging and inspiring
- Ability to network
- Professional expertise in the area
- Broad competence

With this in mind, it will be valuable for organizations that create radical innovation teams to recognize beneficial characteristics of a successful leader. Further on, it will be valuable to keep in mind when employing leaders for radical innovation, as well as when develop and coach radical innovation leaders.

6.5 RECOMMENDATIONS – HOW COULD THE FOUND LEADERSHIP PRACTICES BE APPLIED TO SKF?

Considering that SKF is reorganizing, they should take the opportunity to clarify which direction they are aiming for. This could be done by setting up missions in more narrow areas in which they appreciate innovation, and set clear goals with KPIs. A part of that could be related to more radical innovation, and they could implement a radical innovation portfolio, or create space for radical innovation within a general innovation portfolio.

To increase the expectations on innovation, as well as show the importance with radical innovation for SKF's future competitiveness, they should define innovation for SKF and classify the concept into separate definitions. To increase the expectation on innovation within the whole company, it would likely be beneficial to expand the scope of innovation, and clearly specify that SKF finds it as important to be innovative within product, processes, marketing and organization.

Since SKF aims to be a more decentralized organization, and they have a wide range of products and different customers, they should take the opportunity to also create space within

each market segment for more radical product innovation. A suggestion could be to let a part of each market segment only work with radical innovation, similar to what some of the benchmarking companies had done. In that case, they could arrange groups with diversified competencies of technological expertise, market knowledge, business thinking and good pitching skills. What also could be valuable is to increase the flexibility of time and financial resources, which can be made by managers getting some extra money for trying out upcoming ideas, as well as set aside regular time for improvement thinking.

Considering that SKF aims for more decentralization, they need to make sure that they still capture and utilize as much knowledge within the company as possible and create a coherent innovation strategy. A way could be to follow the example of one of the benchmarking companies by implementing an internal innovation consultancy function. By doing so, they could help the different segments on demand with for example developing their innovation processes and how to perform brainstorming activities. It could also be a way of capturing and spreading successful ways of working with innovation. To additionally increase the cross-pollination, they could arrange cross-functional solution groups on different levels that on a regular basis meet and share experiences, such as a “group R&D board” or an “innovation board”.

A problem that was mentioned was the lack of transparency. To increase the transparency within the innovation processes they should increase the communication between functions. Even though they now put R&D closer to customers, which probably will increase the transparency, they should also increase the transparency within the rest of the company. By providing regular information about what the company does within innovation at the moment, and where they aim to be in the future, they could not only show transparency but also strengthen a coherent innovation mindset. Examples of ways to do this could be to have a monthly innovation newsletter, and to arrange cross-functional innovation groups that meet regularly and discuss how SKF proceed within innovation. This is something that other companies have found beneficial and valuable for innovation.

To capture radical ideas that are not easy to develop within one specific function, they could develop the concept of Dragon’s Den. An idea could be to have a separate fund for radical innovation, however, it should also be possible to fund smaller ideas that are not as cost-intense, as well as ideas that are not only related to technology or products. Therefore, we believe it also would be beneficial if the decision-makers are diversified and possess as wide range of expertise as possible.

To create an innovative climate, awareness and mindset, their innovation strategy should be consistent and known within the whole company. We suggest that SKF creates an educational program, which could be for managers of different functions, but even better for all employees. Topics to include in the education program could be; what does innovation mean to SKF; what direction is SKF aiming in terms of innovation; how does the innovation process look like for incremental versus radical innovation; Who to contact if having an idea; who are the decision-makers and how they evaluate an idea and; how to pitch an idea successfully.

To cross-pollinate innovation, they should in addition to the cross-functional solutions groups mentioned earlier, create bottom-up networks and initiatives. An example that was successful according to the benchmarking study was to arrange a time-limited challenge each year, with clear direction of where innovation is desired. To facilitate for collaboration within the

company, the challenge should be transparent and it should be possible for anyone to comment on others' ideas. Additionally, since a problem described was the lack of follow-up during the mobility JAM, they should also give feedback to everyone involved, and communicate which ideas that proceeded. To get new inspiration and inputs, an idea could be to let external partners participate in the challenge, such as university students, partner companies or small start-ups. In order to capture knowledge externally, and thus become more innovative, they could additionally collaborate more with start-up companies or other external companies. Even though this might be a big step for SKF, and require transparency, they should at least investigate the opportunities and the potential value it could provide to SKF.

6.6 SUGGESTIONS TO FUTURE RESEARCH

Since our main objective concerned the investigation area of radical innovation, future research may potentially examine how to specifically lead and organize for incremental innovation.

The benchmarking study was due to constraints in time limited to a number of 10 companies. A greater number of companies studied would most certainly add more value to the study and enable more general conclusions. The benchmarking study was also limited to large, Swedish, manufacturing companies (except for Vinnova). A suggestion for future research in order to investigate best practice examples of how to lead and organize for radical innovation could be to target another industry or a national perspective. The results from studying small or medium sized companies would most probably differ from the results of our study and could hence also be an interesting area to study. Radical innovation probably has another meaning to smaller companies and should therefore be handled in other ways. Moreover, since a suggested practice from our study is to increase external collaboration with for example small companies and startups, mutual benefits of collaboration for innovation between large and small companies could be an interesting area to study.

An additional number of respondents at both the benchmarking study and SKF could also have complemented and added more value to our study. The respondents of the interviews at the benchmarking companies were mainly people working with innovation, but also included people working within HR. A potential suggestion to further research could be to develop and dig deeper into the HR perspective exclusively or to target another function and its connection to innovation.

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Leadership for Radical Innovation

Thank you for participating in our study! The project is briefly described below followed by the main questions that we aim to cover during the interview.

Researches agree that the current rapidly changing society has resulted in that companies, now more than ever, have to focus on being innovative to survive in the long run. The need for radical innovation in organizations has resulted in a new focus on the role of leaders and leadership. A question that is brought forwards is therefore, what can leaders do to stimulate radical innovation?

The aim with the interview is to learn about your perception of the relation between leadership and innovation, more specifically radical innovation. We mainly wish to find out what leadership behavior you believe stimulates innovation and how you actively work with leadership within your organization.

Interview questions

- 1) What does radical innovation mean to your company?
- 2) How do you communicate your innovation strategy throughout the organization?
- 3) What do you believe are the reasons to your success within radical innovation?
- 4) What characterizes a successful innovation leader/manager?
- 5) How do your leaders support innovation?
- 6) In what way do you believe the leadership differs when it comes to yielding radical vs. incremental innovation?
- 7) Do you believe that the different parts of an innovation process (idea generation and implementation) require different types of leadership?
- 8) How do you coach and/or support leaders in order to fulfill your innovation strategy?
- 9) Do you have any specific tools or practices in order to yield radical innovation?

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This study aims to bring forward how SKF can work with leadership to stimulate innovation, and more specifically radical innovation. We have this far interviewed 10 of the most innovative large Swedish companies, and have gained insight into how they actively work with leadership to stimulate innovation. We are now in the phase of applying our findings to SKF. The aim with the interview is therefore to find out how you work with leadership to stimulate innovation and to hear your thoughts and opinions about our findings. As a result, we will bring forward ideas and recommendations to SKF.

Interview questions

- 1) What does radical innovation mean to your company?
- 2) Do you have a corporate strategy/vision for innovation? In that case, how is it communicated throughout the company?
- 3) How do you work with incremental versus radical innovation at SKF?
- 4) How do you construct groups for radical innovation?
- 5) Do you have a reward and recognition system for innovation?
- 6) Are you given time and money to be innovative/generate ideas?
- 7) How is risk and failure accepted within SKF?
- 8) How do you coach and/or support leaders in order to fulfill your innovation strategy?
- 9) Do you use specific idea generation tools in order to yield ideas for innovation (such as competitions, workshops or cross-functional reference groups)?
- 10) Do you provide specific education and training for innovation?
- 11) What do you believe would be needed for you to be more innovative at SKF?