Ambidextrous Leadership in Innovation

A multiple case study of innovation leaders on the alignment of opening and closing leader behaviors

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Abstract

The relatively new concept of ambidextrous leadership in innovation with the opposing yet complementary opening and closing leader behaviors has been proven to be positively related to fostering explorative and exploitative behaviors respectively among subordinates. The initiators of this concept propose that leaders in innovation need a ‘temporal flexibility to switch’ between opening and closing leader behaviors, which implies a sequential alignment of these behaviors. This proposition has yet remained theoretically and empirically unexplored and is initially questioned in this thesis with respect to related theoretical concepts.

Therefore, this thesis aims to explain how innovation leaders align the recently defined opening and closing leader behaviors throughout the innovation process. By following a qualitative and inductive research approach, a multiple case study of five innovation leaders in German manufacturing companies was conducted. The data were collected through in-depth semi-structured interviews. The empirical data reveal that the initiators’ proposition of a sequential alignment is not sufficient to explain the complex alignment of opening and closing leader behaviors. Accordingly, a model which illustrates a predominantly simultaneous alignment of the two leader behaviors was developed. However, this model also considers that urgent situations or specific project phases and times of the year require innovation leaders to sequentially demonstrate one behavior at a time.

Keywords: ambidextrous leadership in innovation, innovation leader, opening and closing leader behaviors
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1 Introduction

"Without opposition, there could be no creation.
All life would cease without resistance."
(Kilroy J. Oldster)

The following excerpt of the interview with Christian (personal communication, April 05, 2017) illustrates the challenges that innovation leaders encounter in ambidextrous leadership in innovation – the main topic of this thesis.

Christian is the head of acoustics in research and development at Sennheiser, a German medium-sized company that develops and produces high quality acoustic devices. He explains: “We are a very traditional, family owned company operating in a highly competitive and fast changing industry.” Christian supervises the work of 16 employees in his department: “The people in my team are mainly engineers that have done their PhD at universities. So, they have great ideas that I need to encourage to be shared and tested while constantly reminding them of our organizational processes and structures.” Christian explains that he has to deal with their demands of working creatively and independently on the one hand and his duty to keep them within certain frames at Sennheiser on the other hand. “Balancing these two strings is my daily duty but to be honest, I never thought about it consciously although it is such a big part of my role as a leader.”

The dilemma Christian finds himself in displays an interesting yet highly sophisticated issue: How can these opposite strands Christian needs to make use of be aligned? What causes these opposing forces? Do they eventually balance each other out or does it require the active involvement of innovation leaders such as Christian?

Leadership and its practices have been linked to the context of innovation as an important and highly influential factor and have gained increasing interest of researchers (e.g. Mumford & Licuanan, 2004; Aragón-Correa, García-Morales, & Cordón-Pozob, 2007; De Jong & Den Hartog, 2007). Although leaders have been proven to play a crucial role in enhancing innovations, little research has been done so far regarding the role of leaders in enhancing innovation (e.g. De Jong & Den Hartog, 2007; Latham, 2014).

Despite the great relevance of leadership for innovation, the literature on innovation leaders is dispersed and lacks clear definitions. However, the authors of this thesis have screened the literature on innovators and leadership in innovation and define innovation leaders following Gliddon (2006) as “individuals […] involved with leading the diffusion of an innovation within an organization’s social system” (p. 7). Accordingly,
innovation leaders can hold various positions within organizations, such as those of a project leader, innovation manager or R&D leader as long as they are involved throughout all stages of the innovation processes and are responsible for employees in innovation. In contrast to leaders in organizations dealing with other business functions, innovation leaders are identified as particularly interesting since they are entirely involved in the dilemmas of innovations while other leaders are often not affected by these tensions to the same extent. This thesis further argues for the necessity for innovation leaders such as Christian to actively influence and determine the opposing forces they encounter and to accordingly lead their subordinates.

To understand the dilemma of Christian, this thesis engages in the relatively new field of ambidextrous leadership in innovation. Despite its newness, this theory is rooted in widely discussed concepts and dilemmas in the literature of leadership and innovation which is briefly presented in the following section. More specifically, background information on the topics innovation and innovation process are outlined in order to enhance the understanding of challenges which innovation leaders encounter. The following section then delves into the topic of ambidexterity and the tension between exploration and exploitation which has been identified as one root cause for challenges in innovation.

1.1 Background

Scholars widely agree that an organization’s ability to innovate is a crucial success factor and ensures its ability to survive in the long run (e.g. Amabile, 1988; George, 2007). In 1994, Zahra and Covin recognized that “innovation is widely considered as the life blood of corporate survival and growth” (p. 183) and therefore is crucial for sustaining a competitive advantage. Innovation can be seen as a process (e.g. Kline & Rosenberg, 1986) and thus will be considered as such in this thesis. Accordingly, most innovation models distinct between at least two processes - idea generation and the subsequent idea implementation. In the idea generation, creativity is needed to engage in exploring opportunities as well as identifying gaps and solutions for occurring problems to come up with a new and useful idea (King & Anderson, 2002). The idea implementation focuses on converting an idea into an innovation by developing, testing and commercializing it (Amabile, 1988; West, 2002a).

Innovation, however, is not a straight-forward phenomenon and involves many challenges due to its non-linearity and uncertainties (e.g. Bledow, Frese, & Anderson, 2009; Buijs, 2007). Respectively, innovation leaders, such as Christian at Sennheiser, face numerous, complex challenges and dilemmas (Buijs, 2007). As they are involved in both idea generation and idea implementation, innovation leaders need to appropriately apply different and complementary leadership styles (Deschamps, 2008): The idea generation needs innovation leaders that ask questions, while the idea implementation needs leaders that can solve problems (Deschamps, 2008). Regarding different personalities of their subordinates, innovation leaders further encounter the
need to occupy different, often conflicting roles (Buijs, 2007). On top of this, innovation leaders have to constantly manage the balance between improving existing processes and products while not missing out on future innovations (Deschamps, 2008). Buijs (2007) sums it up as follows: “Innovation leadership is about bridging the gap between dreams and reality, past and future, certainty and risk, concrete and abstract, […] and success and failure. And all of these dualities are present at the same time.” (p. 204).

Several of these challenges, which innovation leaders face, are rooted in the widely used and discussed concept of ambidexterity. According to the Cambridge Dictionary, ambidexterity means using “both hands equally well” (Ambidexterity, n.d.). Birkinshaw and Gupta (2013) argue that the versatility of ambidexterity makes the concept popular among researchers. It has evolved from the context of organizations by Robert Duncan in 1976 and was narrowed down to the context of organizational learning by James March in 1991. March (1991; 1995) argues that an increasingly fast changing and competitive environment urges organizations to adapt to changes. In specific, he identified the tension between two opposing yet complementary types of innovation - exploitation and exploration. On the one hand, explorative innovation implies experimentation through risk-seeking and unconventional approaches. On the other hand, exploitative innovation is described as short-term improvements and elaboration of existing ideas (March, 1995).

Both, exploration and exploitation, require different approaches and competencies and thus reveal a highly relevant and widely discussed dilemma, often referred to as a paradox (Papachroni, Heracleous, & Paraoutis, 2015; Lavine, 2014; Lewis, Andriopoulos, & Smith, 2014). However, ambidexterity has primarily been studied on an organizational level so far. Therefore, Birkinshaw and Gupta (2013) encourage researchers to converge how ambidexterity is operationalized. In the context of innovation, this raises the question what the tension between exploration and exploitation implies for the generation and implementation of ideas.

Innovation leaders, such as Christian, need to manage both: the different requirements of ambidexterity and both phases of the innovation process. Rooted in the non-linearity and unpredictability of innovation, “creativity also requires exploitation, whereas idea implementation also calls for exploration” (Rosing, Frese, & Bausch, 2011, p. 965), even though the generation of ideas is closer linked to exploration and idea implementation to exploitation (March 1991). Therefore, exploration- and exploitation-related activities are interwoven and needed throughout the innovation process. In a similar vein, Bledow et al. (2009) emphasize that concurrently engaging in both exploration and exploitation throughout the whole innovation process increases the innovation performance by making use of their synergies. Considering the great relevance of leadership for the success of an innovation, one may ask: How can an innovation leader contribute to balance exploration and exploitation? Moreover, how do innovation leaders engage in these opposing poles?
The concept of ambidextrous leadership in innovation provides first answers to these questions and initial ideas to overcome the challenge of innovation leaders to deal with explorative and exploitative activities in the innovation process.

1.2 Problem discussion

Ambidextrous leadership in innovation is a relatively new concept established in 2011 by Rosing, Frese and Bausch. Ambidextrous leadership is defined as “the ability to foster both explorative and exploitative behaviors in followers by increasing and reducing variance in their behavior” (Rosing et al., 2011, p. 958). To do so, Rosing et al. (2011) established two opposing, yet complementing leader behaviors - ‘opening’ and ‘closing’. By demonstrating opening leader behaviors, leader support trial-and-error, creative experimentation and alternative thinking outside the box among their subordinates. Consequently, opening leader behaviors are described as exploration-enhancing. In contrast, closing leader behaviors enhance exploitation by stimulating subordinates to work in a structured and planned way as well as by striving for goal-attainment (Rosing et al., 2011).

Other authors have already tested and verified some hypotheses based on Rosing et al.’s (2011) theory of ambidextrous leadership in innovation with large sample sizes and the help of qualitative and quantitative research. For example, Zacher, Robinson and Rosing (2014) have empirically verified that opening leader behaviors lead to exploration, whereas closing leader behaviors enhance exploitation among subordinates. Respectively, the two contrary leader behaviors have been mainly studied independently so far. However, similar to the tension of exploration and exploitation while managing both idea generation and implementation, one might wonder, how opening and closing leader behaviors can be possibly combined considering that they are very different, yet both needed in innovation.

The initiators of the theory of ambidextrous leadership in innovation, Rosing et al. (2011), consider the interrelation of the two behaviors in their model as well. They propose that leaders need a “temporal flexibility to switch” (p. 966) between these two leader behaviors in order to adapt to situational requirements in the innovation process. Bledow, Frese and Anderson (2011) further explain that ambidextrous leaders need to dynamically and continuously adapt their behaviors and approaches to the unpredictable and changing requirements within the process of innovation.

Nevertheless, is it really that simple to explain how opening and closing leader behaviors are combined? Rosing et al. (2011) assume that switching between opening and closing leader behaviors is possible but it remains unclear, how it is applied throughout the innovation process. Apart from different other aspects of Rosing et al.’s (2011) concept of ambidextrous leadership in innovation, the temporal flexibility to switch has not been empirically verified so far. One might ask if the flexibility to switch is sufficient to describe the assumingly complex and complicated relation of the two
contrary leader behaviors opening and closing on the one hand and the not straight-forward innovation process on the other hand. Comparably, discussions in theory and practice about balancing exploration and exploitation have been going on now for more than 25 years and still bring up new dilemmas and unconsidered aspects (Birkinshaw & Gupta, 2013). Therefore, explaining ambidextrous leadership might be an equally complex issue. Accordingly, theoretical suggestions applied to deal with the tension between exploration and exploitation might be directly applicable and useful in this context. Furthermore, findings and insights from the literature on managing paradoxes and opposing leader behaviors could be taken into consideration as well.

It has now been exemplified that the hypothesis of a temporal flexibility to switch between opening and closing leader behaviors is still highly vague and leaves many questions regarding details and possible influences unanswered. The term ‘temporal flexibility to switch’ itself is highly questionable since it implies that leaders would switch between opening and closing leader behaviors sequentially. However, what about the possibility that a leader might apply these behaviors at the same time? The literature of related fields supports this suggestions that a sequential alignment might fail to describe the complexity of opposing forces. For example, concerning ambidextrous organizations, a sequential combination of exploration and exploitation activities is only one way, a simultaneous approach is another (Duncan, 1976; Tushman & O’Reilly, 2013). Poole and Van de Ven (1989) propose two different strategies to manage paradoxes, such as exploration and exploitation, which could be relevant here: Temporal separation, which is similar to the sequential alignment proposed by Rosing et al.’s (2011), as well as the synthesis of paradoxical elements which in contrast indicates a simultaneous alignment of opening and closing leader behaviors. Similarly, the concept of behavioral complexity (e.g. Denison, Hooijberg, & Quinn, 1995) also indicates the possibility of concurrently demonstrating the opposing opening and closing leader behaviors. Denison et al. (1995) argue that opposites and contradictions can be simultaneously present in a given situation as well as in the respective responding behaviors of the leader.

Consequently, the authors of this thesis have refrained from the term ‘temporal flexibility to switch’ since it connotes a one-sided perspective on the combination of opening and closing leader behaviors and does not take into consideration other ways to combine these behaviors. Therefore, this thesis topic is based on a more neutral yet still strongly linked term: the alignment of opening and closing leader behavior. The Cambridge Dictionary defines alignment as “an arrangement in which two or more things are positioned in a straight line or parallel to each other” (Alignment, n.d.). It thus entails both, a sequential approach as proposed by Rosing et al. (2011) and the possibility of a simultaneous alignment as suggested by the authors of this thesis.
1.3 Purpose and research question

Even though Rosing et al.'s (2011) concept of ambidextrous leadership in innovation with the two sets of opening and closing leader behaviors has been cited with high interest, it has only partly been followed up until now. Whereas opening and closing leader behaviors have been verified to foster explorative and respectively exploitative behaviors among subordinates by Zacher et al. (2014), the temporal flexibility to switch as means to align these two behaviors has not been empirically verified yet and remains unclear. This thesis therefore aims to challenge and expand the theoretical field of ambidextrous leadership in innovation with the support of empirical data. By conducting a multiple case study of five innovation leaders in German manufacturing companies, this thesis seeks to understand and explain the alignment of opening and closing leader behaviors in the innovation process, as the research objective. The respective research question is:

*How do innovation leaders align opening and closing behaviors throughout the innovation process?*

Three sub-questions have been derived from the research question. Since the research topic includes various aspects and dilemmas, the sub-questions are each concerned with partial aspects of the research question. They aim to answer the research question step by step to conclude with a holistic understanding of opening and closing leader behaviors and their alignment. The sub-questions are first concerned with the occurrence of the two leader behaviors in the process, subsequently, with how they are demonstrated and restricted and, lastly, with their alignment in specific. The first sub-question is as follows:

1. *How do opening and closing leader behaviors occur throughout the innovation process?*

This sub-question aims to gain an understanding of when the cases demonstrate opening and closing leader behaviors during both idea generation and implementation - the two phases of the defined innovation process in this thesis. One the one hand, this question is approached by taking theories dealing with the occurrence of exploration and exploitation in the innovation process into account (e.g. Bledow et al., 2009). In addition, literature about the respective leadership behaviors in both idea generation and idea implementation, the so-called front- and back-end leadership, have been considered (Deschamps, 2008). One the other hand, with the help of empirical data, this sub-question aims to reveal when the two behaviors are demonstrated by the innovation leaders in the innovation process. Hence, through this sub-question, it is examined when and how opening and closing leader behaviors predominantly occur throughout innovation process.

The second sub-question then seeks to comprehend how innovation leaders demonstrate and restrict opening and closing leader behaviors:
2. How do innovation leaders demonstrate and restrict both opening and closing leader behaviors?

This sub-question primarily focuses on the behavioral traits, which are contained in the sets of leader behaviors defined by Rosing et al. (2011), as such. The reason for examining opening and closing leader behaviors in a rather isolated way is to get an in-depth understanding of how these leader behaviors are demonstrated and restricted. The authors believe this is necessary to comprehend the alignment of these behaviors in a later step. To do so, behavioral traits of both opening and closing leader behaviors are tested by applying the critical incident technique in order to reveal situations in which the cases demonstrate and restrict the behaviors. Accordingly, this helps to get an insight how these two behaviors are applied by the cases when dealing with situations in which subordinates overdo the anticipated behavior. In the analysis, findings are then examined with regard to follow-up studies in the field of ambidextrous leaderships (e.g. Zacher et al., 2014). Even though the interaction of opening and closing leader behaviors is not directly asked for at this point, this question already revealed first indications for the critical changes in the alignment of opening and closing leader behaviors, which is specifically addressed in the third sub-question:

3. How do innovation leaders align opening and closing leader behaviors?

This sub-question is closely related to the research question of this thesis as it directly delves into the alignment of opening and closing leader behaviors. However, since the first sub-question already strives to provide answers regarding the occurrence of opening and closing leader behaviors throughout the innovation process, this sub-question solely focuses on the alignment and interaction between these behaviors and therefore neglects its occurrence in the innovation process. Due to the alleged high relevance of the alignment of opening and closing leader behaviors and since the theory so far lacks in-depth explanations, this multiple case study aims to clarify the interactions and interdependencies of these two leader behaviors. The respective findings are analyzed with respect to theories on managing paradoxes (e.g. Poole & Van de Ven, 1989), behavioral complexity (e.g. Denison et al., 1995) and contextual ambidexterity (e.g. Gibson & Birkinshaw, 2004) In doing so, the findings concerning the alignment of opening and closing leader behaviors ultimately contribute to providing answers to the main research question.

To finally answer the research question, the findings of the sub-questions are incorporated into a model that explains the alignment of opening and closing leader behaviors throughout the innovation process and can serve as a basis for further research in the field. Conducting this multiple case study led to compelling results which contribute to the current state-of-the-art in the field of ambidextrous leadership in innovation by showing that some current assumptions are possibly too one-sided and may not cover some of the complexities that were revealed in this study.
2 Theoretical background

This chapter builds upon the research problem that was presented in the introduction. It broadly elaborates on related concepts to eventually provide a framework to analyze the empirical findings of the multiple case study and ultimately answer the research question. The first two chapters (2.1 and 2.2) deal with the key concepts for the research topic, ambidexterity, innovation and leadership in innovation, and thus seek to give an in-depth understanding of the basic related concepts of ambidextrous leadership in innovation.

As a starting point, the concept of ambidexterity is presented including different types of ambidexterity as approaches to deal with the tension between the dualities of exploration and exploitation, whose understanding is central for the field of ambidextrous leadership. Subsequently, the broad fields of leadership and innovation are defined in chapter 2.2 which further contributes to the fundamentals of the research topic. One the one hand, the innovation process and its phases, idea generation and implementation, are outlined. On the other hand, relevant aspects in the field of leadership are briefly elaborated on and connected to innovation. Then, ambidexterity as a challenge for innovation leaders is explained and concepts which help to explain and to overcome this challenge are presented, i.e. behavioral complexity and strategies to manage paradoxes. The next chapter 2.3 then presents the roots and related leadership styles of the actual topic of this thesis: ambidextrous leadership in innovation. Furthermore, the central model of this thesis, namely Rosing et al.'s (2011) concept of ambidextrous leadership in innovation and opening and closing leader behaviors are presented with the respective follow-up research. Finally, the research problem is derived in 2.4 based on various concepts presented in this chapter.

2.1 Ambidexterity

Ambidexterity has been presented as a highly controversial and diverse research field in the introduction and is outlined in further details in the following sections. Hereby, an understanding of the underlying forces of the research topic, the tension between exploration and exploitation, is built.

2.1.1 Ambidextrous organization

Robert Duncan (1976) first brought up the term ambidextrous organization in his book in 1976. He describes it as a dual structure that companies use to manage actions requiring different capabilities and time horizons. In the context of organizational learning, March (1991) introduced ambidexterity as the trade-off between exploration and exploitation. His claim for balancing both traits (March, 1995) fundamentally changed the understanding of adaptation in research. Birkinshaw and Gupta (2013) analyzed the literature in the field of ambidextrous organizations ever since March (1991) brought it up and defined the following three phases. From 1995 until 2005
concepts were defined and the theoretical hook was set. Then, until 2009, the field was growing, papers were used for proliferation and different concepts were applied. From 2009 until their paper was published in 2013, Birkinshaw and Gupta (2013) saw a consolidation of the field and additional aspects were explored.

Tushman and O’Reilly (1996) describe the dilemma of organizational ambidexterity as follows: For an organization to be innovative and thus adapt to environmental changes, it needs to align its strategy and structure in the short run but destroy the alignment in the long run. Consequently, managers need to periodically destroy what they created with the intention to design an organization that is better prepared for changes (Tushman & O’Reilly, 1996). An ambidextrous organization achieves superior performance and competitive advantage by executing radical and incremental innovative activities at the same time – exploration and exploitation (Tushman & O’Reilly, 1996; Atuahene-Gima, 2005; Tushman & O’Reilly, 2013). The following section seeks to clarify both strings of innovation and the attempt to balance them.

### 2.1.2 Exploration-exploitation dilemma

Exploration is a way of innovation that requires and encourages experimentation with new ideas in order to come up with alternatives that are better than old ones (March, 1995). For explorative activities, risk-taking, flexibility and the willingness to discover and improve in uncommon ways is needed (March, 1991; March, 1995). The degree of control and discipline is rather relaxed in this mode and autonomy and chaos are stimulating path breaking improvisations (March, 1995; He & Wong, 2004). From a knowledge perspective, exploration means the pursuit of new knowledge (Levinthal & March, 1993; Gupta, Smith, & Shalley, 2006) while shifting away from the knowledge base of the organization (Lavie, Stettner, & Tushman, 2010).

In contrast to the risk-seeking and unconventional approaches of exploration, exploitation aims for short-term improvements through elaboration of existing ideas (March, 1995). March (1991) warns that exploitation is effective in the short run but self-destructive in the long run. In short-term, exploitation has immediate returns, such as refining capabilities or adopting procedures (March 1995). However, in the long-run, the path dependency, routines and bureaucracy can be harmful to disruptive innovations (He & Wong, 2004). In relation to knowledge management, exploitation seeks to develop things already known (Levinthal & March, 1993) based on an existing knowledge base (Lavie et al., 2010).

Considering the tension between exploration and exploitation, organizational dilemmas and challenges have been identified and discussed in the literature for more than 25 years. For example, the higher the scarcity of innovation resources, the higher the likelihood of the following dilemma: Exploitation reduces exploration and vice versa (March, 1991) which makes them mutually exclusive (Gupta et al., 2006). Consequently, taking on mainly one side seems compelling (Andriopoulos & Lewis, 2010) to avoid the dilemma that the balance of both entails. Here, balancing exploration
and exploitation however does not imply a ratio of 50/50 and therefore the term balance does not refer to engaging in exploration and exploitation to the same extent (Andriopoulos & Lewis, 2009).

2.1.3 Types of ambidexterity

There are three types within organizational ambidexterity that have been defined over time (Tushman & O'Reilly, 2013) and seek to give a solution to the dilemma of balancing exploration and exploitation on an organizational level: Structural ambidexterity brought up by Duncan (1976), sequential ambidexterity established by Tushman and O'Reilly (1996) and contextual ambidexterity by Gibson and Birkinshaw (2004). The following paragraphs outline their differences and argue, why this thesis is based on contextual ambidexterity.

Firstly, Duncan (1976) argues for a structural or simultaneous approach of ambidexterity of autonomous subunits of structurally separated exploration and exploitation departments that are operating fairly independently from each other (Turner, Maylor, & Swart, 2015). It is also known as architectural ambidexterity, meaning that the differentiation is based on a separated structure of the two departments (Gupta et al., 2006). Secondly, sequential ambidexterity follows an approach in which the organization moves between exploration and exploitation by shifting structures to align them with the strategy of an organization (Turner, Swart, & Maylor, 2013). This temporal shifting between exploration and exploitation makes it easier to adapt to changes quickly (Tushman & O'Reilly, 2013). A third type of organizational ambidexterity was brought up by Gibson and Birkinshaw (2004) and aims to solve the tension between exploration and exploitation at an individual level. This so called contextual ambidexterity provides processes that support individuals to use their judgment how to simultaneously pursue exploration and exploitation in one organizational setting (Gibson & Birkinshaw, 2004). Other than the structural and sequential approach, contextual ambidexterity takes the individual judgment into account in order to integrate adaption and alignment oriented activities in one organizational unit (Gibson & Birkinshaw, 2004). The organizational context, in which the individual is embedded in, plays a vital role in contextual ambidexterity. Gibson and Birkinshaw (2004) broadly define it as “systems, processes, and beliefs that shape individual-level behaviors in an organization” (p. 212). However, Turner et al. (2013) note that only few empirical studies about contextual ambidexterity on group and individual level have been conducted so far.

To sum it up, the concept of ambidexterity with the two opposing yet complementary forces exploration and exploitation were outlined above. Furthermore, potential traps and types of ambidexterity that seek to combine the two innovation strings were presented. Subsequently, the related fields of leadership and innovation as well as the challenges of ambidexterity which leaders in innovation face are defined and discussed in the following chapter.
2.2 Leadership and innovation

The influence of leadership on innovation has increasingly gained attention in research. Researchers, such as Mumford, Scott, Gaddis, and Strange (2002), claim that leadership is one of the most relevant predictors of innovation and therefore impacts and determines the success of innovation. Leaders influence the innovativeness of organizations and their subordinates in many ways. De Jong and Den Hartog (2007), for example, found that certain behaviors and actions shown by leaders impact and stimulate innovation among their subordinates. They explain: “as a leader it seems impossible not to affect employees’ innovative behaviour” (De Jong & Den Hartog, 2007, p. 57) which further stresses the significant influence of leadership on innovation. Other studies researched the impact of leadership styles (e.g. Oke, Munshi, & Walumbwa, 2009; Gumusluoglu & Ilsev, 2009) and reconfirm that leadership practices generally have a vital impact on innovation outcomes and on the organizational innovativeness. Since leadership and innovation are closely associated with each other, the following sections elaborate on both topics, draw connections between them, and link them to other relevant concepts, such as approaches to manage paradoxes and behavioral complexity.

2.2.1 Innovation and the innovation process

The term innovation is defined in many ways as it is “notoriously ambiguous and lacks either a single definition or measure” (Adams, Bessant, & Phelps, 2006, p. 22). In a general definition, Kanter (1983) explains innovation as “the generation, acceptance, and implementation of new ideas, processes, products, or services” (p. 20). Another widely used definition of innovation is provided by Damanpour (1996):

“Innovation is conceived as a means of changing an organization, either as a response to changes in the external environment or as a pre-emptive action to influence the environment. Hence, innovation is here broadly defined to encompass a range of types, including new product or service, new process technology, new organization structure or administrative systems, or new plans or program pertaining to organization members”. (Damanpour, 1996, p. 694)

By conducting an extensive literature review, Baregheh, Rowley, and Sambrook (2009) came up with an integrative definition of innovation which considers distinct perspectives of this phenomena. They define innovation as a “multi-stage process whereby organizations transform ideas into new or improved products, services or processes in order to advance, compete and differentiate themselves successfully in their marketplace” (Baregheh et al., 2009, p. 1334).

As previously indicated, innovation can be characterized as a process. Many innovation models generally distinct between at least two stages or processes involved in innovation: idea generation, or creativity, as for example Amabile (1988) names it, and the subsequent idea implementation (e.g. Amabile, 1988; West, 2002a; West,
Idea generation refers to the development of novel ideas. The ideas are supposed to be useful and are usually produced by individuals or together in groups through creativity (Amabile, 1988). According to Sundström and Zika-Viktorsson (2009), creativity is defined as “a human process that enables a person to think outside the pre-assumed scope of what would be expected” (p. 746). Similarly, Rosing et al. (2011) refer to creativity as “thinking ‘outside the box’, going beyond routines and common assumptions, and experimentation” (p. 965). It involves the engagement in exploring opportunities as well as the identification of gaps and solutions for occurring problems (De Jong & Den Hartog, 2007). Therefore, creativity may be linked to rather explorative activities when considering the definition by March (1991) and is generally more important in the earlier stages of an innovation (West, 2002a). However, creativity can occur throughout the whole innovation process (West, 2002a). The idea generation ends as an outcome with the production of an idea, which needs to be new and useful (King & Anderson, 2002).

Since “ideas are useless unless used” (Levitt, 1963, p. 79) the conversion of the generated idea into an innovation, which can be a new or improved product service or process, subsequently takes place during the idea implementation (e.g. Amabile, 1988; West, 2002b). According to Amabile (1988), implementation encompasses putting the ideas to use and this process involves development, testing, and possibly activities related to the commercialization of the idea and requires rather “application oriented behavior” (De Jong & Den Hartog, 2007, p. 43). Further requirements are efficiency, the execution of routines, and goal orientation (Rosing et al., 2011) which closely links implementation processes to exploitation according to March’s (1991) definition. Therefore, the idea implementation ends with the finished implementation of the innovation (King & Anderson, 2002).

Innovation processes however are characterized by a high degree of complexity and non-linearity (e.g. Bledow et al., 2009; Van de Ven, 1986). Especially the non-linearity challenges the two-phased model of innovation and the strict separation between idea generation and implementation and argues for a rather circular and open model, such as proposed by West (1990). Nevertheless, in this thesis, such a two-phased model is applied because it serves as a logical and superficially structured framework and the activities in both phases are part of most innovation processes.

Now that the innovation and the respective innovation process are defined, the concept of leadership is briefly introduced in the following sections. Subsequently, connections are drawn to the field of innovation by describing the role of an innovation leader.
2.2.2 Leadership in the context of innovation

Leadership as a complex phenomenon has been defined in many ways involving several dimensions (DePree, 1989). Drucker (1999) defines leaders as individuals who have followers or subordinates. In line with that, Bass (1990) claims that “leadership consists of influencing the attitudes and behaviors of individuals and the interaction within and between groups for the purpose of achieving goals” (p. 19). This interaction is emphasized by Allio (2012) reifying the leader-subordinate relationship by stating that there is a common reason which unites both, subordinates and leaders. This results in a collaboration towards certain goals. Algahtani (2014) therefore defines leadership as “the process of influencing a group of individuals to obtain a common goal” (p. 75). In specific, leaders are dependent on their subordinates in order to implement their plans (Allio, 2012), which highlights that leadership is not one-way and linear but rather an interaction between leaders and subordinates (Northouse, 2004). Northouse (2015) emphasizes that “influence is central to the process of leadership because leaders affect followers. Leaders direct their energies toward influencing individuals” (p. 7).

Now that leadership has been defined in various ways, the question of how behaviors in the context of leadership are defined arises as certain leader behaviors are the focus of this thesis. Behaviors are often named along with knowledge, skills and abilities - all subcategories of competencies. However, Blaga (2014) explains that behaviors build an own category aside from competencies although they strongly influence each other. Behaviors include beliefs regarding the outside environment, attitudes as a position towards something and actions that display those beliefs and attitudes (Blaga, 2014).

As previously indicated, leadership and innovation are strongly interlinked. Deschamps (2008) defines two continuums of leadership of the innovation process: leading the front- and respective back-end of innovations. In the front-end, which can be related to the idea generation, leaders need to sense new trends and opportunities also for developing existing products further. This divergent process requires leaders that can attract and motivate creative employees by creating a respective open atmosphere (Deschamps, 2008). De Jong and Den Hartog (2007) stress that supporting employees to come up with ideas that solve current problems is required by the leader. By granting operational autonomy and responsibilities, creativity is encouraged. In contrast, the back-end leadership is related to the idea implementation and requires the leaders to oversee the actual convergent development process. In these stages, planning and finding efficient solutions for arising problems is more important than giving room for creativity. Ensuring that the staff is reliable and committed to fulfill the tasks in time is crucial in the back-end (Deschamps, 2008). De Jong and Den Hartog (2007) add that leaders need to oversee the shaping and execution of ideas in these later stages of the innovation process. Nevertheless, the challenge of managing the different

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1 To make the study and illustration of findings more comprehensible, the so called ‘followers’ are referred to as subordinates in this thesis indicating that they are subject to their respective leader.
demands during the idea generation and implementation are only one side. Ambidexterity is another challenge leaders in innovation encounter and must deal with as outlined in the following chapter.

2.2.3 Ambidexterity as a challenge faced by leaders in innovation

As outlined in the introduction, innovation leaders have been defined as individuals that lead innovations in organizations (Gliddon, 2006) and are the research subjects of this thesis. As an important predecessor of innovation, leaders in innovation face several challenges, such as those caused by the non-linearity, uncertainty, and unpredictability of innovation (e.g. Bledow et al., 2009; Buijs, 2007). One of these challenges is the tension between exploration and exploitation in innovation. Even though the idea generation can be closer linked to exploration and the idea implementation is closer related to exploitation (March 1991), idea generation also needs exploitation while exploration can also be useful during the idea implementation (Rosing et al., 2011). This is because creative activities in idea generation often lack structure and therefore might require direction, goal-attainment, as well as the exploitation of existing knowledge (Bain, Mann, & Pirola-Merlo, 2001).

Vice versa, authors such as Rosing et al. (2011) claim that one cannot solely rely on the execution of already existing routines when it comes to the implementation of ideas, which in return means that the implementation also requires exploration. Mumford, Connelly, and Gaddis (2003) emphasize to pay attention to the involvement of creativity during the implementation. These authors state that shaping and executing ideas - as activities related to implementation - represent “another important component[s] of creative work” (Mumford et al., 2003, p. 116). In addition, the non-linearity of innovation advocates that both exploration- and exploitation-related activities are interwoven and needed throughout the innovation process. Bledow et al. (2009) stress this as they note that engaging in both exploration and exploitation throughout the innovation process enables to make use of their respective synergies. According to these authors, this results in an increased innovativeness compared to a strict separation of exploration and exploitation. Moreover, it highlights the importance and concurrent challenge of ambidexterity which innovation leaders are confronted with during the idea generation and implementation. Nevertheless, these two poles of ambidexterity are interdependent and might occur to different degrees at different times.

As a consequence, innovation leaders cannot “rely on one fixed set of [their] behavior that is consistently performed across time” (Bledow et al., 2011, p. 44). Therefore, leaders in innovation need to adapt and alternate their behaviors flexibly according to task-related and situational demands, which are unpredictable and dynamically changing in innovation (Bledow et al., 2011). Mumford et al. (2002) exemplify this by stating that unexpected disturbances may require creativity in late stages of an innovation project, which in turn urges the leader to take circumstantially appropriate
actions. Such challenges raise questions concerning possible approaches and ways which may be applied by innovation leaders to overcome these problems. The management of paradoxes and the concept of behavioral complexity might offer such approaches and are presented in the next section.

2.2.4 Managing paradoxes and the concept of behavioral complexity

What March (1991) calls a trade-off or balance between exploration and exploitation (see chapter 2.1.2) has been increasingly viewed as a paradox (Papachroni et al., 2014; Lewis et al., 2014). Smith and Lewis (2011) define paradox as “contradictory yet interrelated elements that exist simultaneously and persist over time” (p. 382). Consequently, paradoxes are based on tensions that can be embraced at the same time (Lewis, 2000). In a case study of five organizations, Andriopoulos and Lewis (2009) discovered that the leaders described their daily tensions between exploration and exploitation as a paradox of “synergistic and interwoven polarities” (p. 697).

Considering the tension rooted in ambidexterity seen as a paradox has implications on leadership practices as they have become increasingly regarded as a way to manage this tension (e.g. Cunha, Fortes, Gormes, Rego, & Rodrigues, 2016; Andriopoulos & Lewis, 2010).

Accordingly, the theory offers different ways and approaches which leaders may utilize to deal with paradoxes. For example, Smith and Lewis (2011) advocate two general ways to manage paradoxes which are often interrelated. One way is to accept the paradox which implies the separation of tensions and the appreciation of their differences. Another possibility is to resolutely resolve the paradox (Smith & Lewis, 2011). Whereas the literature widely agrees upon the means to accept a paradox, the ideas for the resolution of a paradox widely differ (Martini, Laugen, Gastaldi, & Corso, 2013). Poole and Van de Ven (1989), for example, suggest three different strategies to do so. The first strategy is to undertake a spatial separation which entails that opposing forces are split up and allocated to different organizational departments or units (Poole & Van de Ven, 1989). Secondly, temporally separation is a strategy which means “choosing one pole of a tension at one point in time and then switching” (Smith & Lewis, 2011, p. 385). Here, the role of time is taken into consideration and the contradicting elements are separately exerted and “each may influence the other through its prior action” (Poole & Van de Ven, 1989, p. 566). The last strategy is to synthesize and seeks to accommodate and integrate the poles opposing each other (Smith & Lewis, 2011; Poole & Van de Ven, 1989). These three strategies to manage paradoxes are closely related and similar to the different types of ambidexterity, namely structural, sequential, and contextual ambidexterity, which were presented in chapter 2.1.3. Finally, this similarity, in turn, argues for considering the tension between exploration and exploitation as a paradox.

Behavioral complexity is another concept, which relates to paradoxes and situational demands and therefore may help to explain and eventually solve such problems.
innovation leaders face. Behavioral complexity implies that leaders have the ability to perform a wide range of different behaviors or roles in order to cope with situational demands of the context or environment which can be complex, ambiguous, and even paradoxical (Denison et al., 1995). Thus, an effective leader responds through his or her behavior or function to the environmental and organizational context, and "if paradox exists in the environment, then it must be reflected in behavior" (Denison et al., 1995, p. 526). That implies that opposites and contradictions can be simultaneously present in the given situation as well as in the respectively responding behaviors of the leader (Denison et al., 1995).

The concept of behavioral complexity integrates two different dimensions: behavioral repertoire and behavioral differentiation (Hooijberg, 1996). According to Hooijberg (1996), the behavioral repertoire can be defined as a "portfolio of leadership functions" (p. 919) or range of behaviors a leader can perform. "The breadth and depth of a leader's behavioral repertoire thus become the leader's distinctive competence. Effective leaders must be loose and tight, creative and routine, and formal and informal" (Denison et al., 1995, p. 526). Behavioral differentiation, however, describes the degree of variations in the application of the behavioral repertoire in accordance to situational requirements. Alternatively, it is described as the degree to "which a manager varies the performance of the leadership functions depending on the demands of the organizational situation" (Hooijberg, 1996, p. 919-920). In other words, behavioral differentiation refers to the way how a leader applies and matches the elements of his or her behavioral repertoire to the requirements of a given situation, which can indeed be simultaneous despite given contradictions, as mentioned before.

2.3 Ambidextrous leadership

Now that the concepts of managing paradoxes and behavioral complexity are outlined as possible approaches for leaders to overcome challenges arising in the process of innovation, this chapter directly relates to dealing with the challenge of ambidexterity. More precisely, the field of ambidextrous leadership is introduced and connected to the context of innovation, which is the focus of this thesis.

2.3.1 Roots of ambidextrous leadership

The role of leadership has arisen as an important factor to manage general paradoxes and tensions in organizations (Smith & Lewis, 2011). Even though management and leadership\(^2\) have been identified as a crucial mechanism to promote ambidexterity (Turner et al., 2013; Havermans, Den Hartog, Keegan, & Uhl-Bien, 2015), besides some exceptions (e.g. Gibson & Birkinshaw, 2004; Nemanich & Vera, 2009; Rosing et al., 2011), limited attention has been paid so far to the leadership role in achieving ambidexterity (Tushman & O'Reilly, 2013; Havermans et al., 2015).

\(^2\) The strict distinction between the terms 'leadership' and 'management', which was for example coined by the work of Kotter (1990), is not followed in this thesis. Rather, these two terms are used interchangeably and considered as having a similar meaning.
The concept of ambidextrous leadership originated in the context of organizational learning on the strategic level (e.g. Vera & Crossan, 2004). Vera and Crossan (2004) proposed the need for combined leadership styles by claiming that learning processes flourish under transactional leadership during some times. At other times, transformational leadership is more beneficial to enhance organizational learning (Vera & Crossan, 2004; see more details in chapter 2.3.3). This conditional perspective of leadership helps organizations to react to the pressure of being able to both explore and exploit to keep up with environmental changes and competition (Tushman & O'Reilly, 1997). More specifically, Tushman and O'Reilly (1997) stress that the “real test of leadership, then, is to be able to compete successfully by both increasing the alignment or fit among strategy, structure, culture, and processes, while simultaneously preparing for the inevitable revolutions required by discontinuous environmental change” (p. 11). To fulfill this addressed need for ambidexterity, Jansen, Vera, and Crossan (2009) propose that strategic leaders can support exploitation and exploration by contradicting leadership styles and respectively actions for managing a broad range of learning processes on multiple levels.

However, Hunter, Thoroughgood, and Meyer (2011) argue that leaders face the paradox of simultaneously motivating employees to explore and be creative while enforcing the subordinates to adhere to standards and to engage in high levels of exploitation and efficiency. Likewise, Bledow et al. (2009) assert that leaders need to foster creativity among their subordinates and streamline the business to reach efficiency at the same time. This being said indicates and leads to ambidextrous leadership in innovation and away from its association with organizational learning.

2.3.2 Ambidextrous leadership in the context of innovation

As indicated in the previous sections, the concept of ambidextrous leadership can be directly applied to the context of the dualities in innovation - exploration and exploitation (Bledow et al., 2011). This is urged by the fact that ambidexterity has been widely accepted as an important antecedent of innovation at the individual, team, and organizational level since all participants involved are exposed to the tension between exploration and exploitation (Bledow et al., 2009; Gibson & Birkinshaw, 2004; Zacher et al., 2014). Additionally, this is highlighted by the need for ambidexterity in innovation and the need for exploration and exploitation in both phases of the innovation process as outlined above (see chapter 2.2.3).

According to Bledow et al. (2011) ambidextrous leadership in innovation can be defined as leadership “that is based on an understanding of the dualities of innovation and that acts on this understanding” (p. 46.) to ensure that each part of the duality is supported. This complies with engaging in opposing but complementary action strategies to facilitate innovation (Geber, Boerner, & Kearney, 2010). By leading ambidextrously, leaders in innovation foster ambidexterity and thus the engagement in exploration and exploitation, among their subordinates (e.g. Rosing et al., 2011).
Other authors, such as Havermans et al. (2015), go further by proposing that ambidextrous leaders strive to concurrently achieve high levels of both exploration and exploitation among their subordinates. Leaders’ actions, practices, and behaviors and their dynamic alignment play a key role in doing so (Havermans et al., 2015). A similar proposition is outlined by Bledow et al. (2011) stating that ambidextrous leaders in innovation apply different sets of behaviors depending on the context and situation. Here, the aim is to achieve an equilibrium of the opposing but complementary notions of exploration and exploitation (Bledow et al., 2011). Concluding, it can be said that ambidextrous leaders “need to be able to support and encourage both exploration and exploitation behaviors on part of their subordinates as these are the essential activities in the innovation process” (Zacher & Rosing, 2015, p. 57).

2.3.3 Related leadership styles

Various studies relate the transformational and transactional leadership styles to innovation and ambidexterity (e.g. Jansen et al., 2009; Keller, 2006; Baškarada, Watson, & Cromarty, 2016; Keller & Weibler, 2015). Vera and Crossan’s (2004) study presented above is one example showing that the contingent combination of distinct leadership styles is a possible way for leaders to become ambidextrous. Having said this, it is outlined and evaluated in the following, how and if the contrasting transformational and transactional leadership styles can be applied to the concept of ambidextrous leadership by reviewing related studies.

Transformational leadership style

Transformational or charismatic leaders are characterized by idealized influence or charisma, a high level of inspirational motivation, individual consideration, and intellectual stimulation (Bass, 1985; 1999). These characteristics drive the subordinates beyond their self-interests while enhancing their motivation and performance as well as their encouragement to initiate changes (Bass, 1999). Jansen et al. (2009) were among the first who empirically studied the relationship between both transformational and transactional leadership styles and ambidexterity in innovation as outputs of organizational learning. The authors found out that transformational leadership is positively associated with exploration in innovation, because it motivates to “adopt generative and exploratory thinking processes” (Jansen et al., 2009, p. 15). Similarly, Keller (2006) proposes that transformational leadership tends to enhance exploration as it fosters new and unconventional approaches to thinking combined with developing solutions which go beyond knowledge that already exists.

Baškarada et al. (2016) identified five leadership characteristics, vision, commitment, inclusivity, risk comfort, and empowerment, which may be used by leaders to enhance exploration. These attributes are similar to the characteristics that transformational leaders bear (Baškarada et al., 2016), which in turn means that this study identifies a
positive relation of transformational leadership and exploration. Extending the previously outlined results, Keller and Weibler (2015) found that transformational leadership stimulates not only exploration among subordinates on the individual level but the subordinate’s ambidextrous behaviors and therefore both explorative and exploitative elements in their behaviors.

**Transactional leadership style**

Even though Lee (2008) proposes a negative correlation between transactional leadership style and innovation in general, the relationship between transactional leadership and different types of innovation, such as exploration and exploitation, has been studied by a rather small number of researchers.

Transactional leadership style is based on an exchange relationship between leaders and subordinates (e.g. Bass, 1999; 1985). In contrast to transformational leadership, a central element is that subordinates and leaders strive to meet their self-interests (Bass, 1999). Therefore, the leader clarifies expectations and offers recognition, for example, through rewards when objectives are achieved. Bass (1985) claims that subordinates achieve the desired performance through this exchange relationship. Another result of Jansen et al.’s (2009) study is a positive association of transactional leadership and exploitation whereas the effect of the transactional leadership style on exploration in the context of innovation is negative. These results are supported by the claim that this style exerts "a maintenance role and support[s] the refinement, improvement and routinization of existing competences, products, and services" (Jansen et al., 2009, p. 15), which is related to the exploitation of existing knowledge.

Baškarada et al. (2016) identified three mechanisms which leaders can apply to enhance exploitation. These mechanisms have a focus on performance management as well as training and knowledge management, which are for example applied to reinforce routines (Baškarada et al., 2016). According to these authors, the mechanisms are closely associated with the transactional leadership style outlined by Bass (1985), which indirectly confirms that the transactional leadership style rather fosters exploitation.

**Evaluation of leadership styles for the concept of ambidextrous leadership**

Overall, the studies described above indicate a positive correlation of transformational leadership style and exploration whereas the transactional style rather fosters exploitative behavior among subordinates. However, several authors and arguments oppose these proposed correlations. As one example, Rosing et al. (2011) claim that “traditionally studied leadership styles are too broad in nature to specifically promote innovation as they might both foster and hinder innovation” (p. 957). High variations in results can be found which suggest that the relationship is also dependent on other variables (Rosing et al., 2011). This is underlined by Van Knippenberg and Sitkin (2013) who identified general problems with the theory of transformational leadership. They claim that it lacks a clear definition and fails to clearly specify involved causal
relationships of the different dimensions and their impacts. In other words, the concept of transformational leadership style is too broad and not precise enough (Van Knippenberg & Sitkin, 2013), which certainly raises questions regarding the credibility of this concept for being the foundation for leadership research in the field of innovation.

The findings of Keller and Weibler (2015) presented above additionally highlights that leadership styles are not sufficient when studying ambidexterity in innovation as transformational leadership can help leaders to enhance both exploration and exploitation among subordinates. Finally, this claim is consistent with Rosing et al. (2011) and Zacher et al. (2014) suggesting that certain leadership behaviors which are “summarized under the umbrellas of transformational and transactional leadership” (Zacher et al., 2014, p. 39) foster exploitative and explorative behavior among subordinates in innovation. To support this proposition, Zacher et al. (2014) provide the example of the vision as one antecedent of transformational leadership. A vision, however, can enhance both traits of innovation depending on the leader’s articulation. The vision may be considered rather exploration-enhancing when it focuses on development and learning whereas a vision striving for efficiency is likely to rather foster subordinates’ exploitative behavior (Zacher et al., 2014).

After having the roots of ambidextrous leadership in innovations outlined and having evaluated the transactional and transformational leadership styles as not applicable for ambidextrous leadership in innovation, the model of ambidextrous leadership initiated by Rosing et al. (2011) is presented in the following chapter. It is the core model in this thesis and a major component of the research problem.

2.3.4 Ambidextrous leadership in innovation - opening and closing leader behaviors

Rosing et al. (2011) accentuate that ambidextrous leadership is necessary for an effective innovation process in which exploration and exploitation both are fostered and integrated. According to these authors, ambidextrous leadership is defined as “the ability to foster both explorative and exploitative behaviors in followers by increasing and reducing variance in their behavior” (p. 958). In particular, the increase of variance relates to exploration whereas the reduction of variance refers to exploitation (March, 1991; Gupta et al., 2006). Consequently, ambidextrous leaders must be able to support both exploration and exploitation in their subordinates’ behaviors by demonstrating certain behaviors respectively (Rosing et al., 2011).

According to Rosing et al. (2011) and Rosing, Rosenbusch and Frese (2010), an effective innovation leader applies two sets of behaviors in order to foster explorative and exploitative behaviors among his or her subordinates. The authors suggest the term ‘opening’ for behaviors, which increase the variance and lead to exploration by adopting new directions of thinking and terminating the execution of routines (Rosing
et al., 2011). Furthermore, Rosing et al. (2010) suggest that opening leader behaviors encourage subordinates to “search for solutions outside the safe ground” (p. 198) and to experiment with new ideas while critically questioning established ways and approaches. Hereby, the leader creates an open atmosphere in which thinking and acting independently is appreciated (Rosing et al., 2010). By demonstrating such behaviors, leaders eventually aim to increase explorative behaviors among their subordinates (Rosing et al., 2011). Hence, Rosing et al. (2011; 2010) propose leaders to demonstrate opening behaviors when a situation in the innovation process requires exploration and therefore requires subordinates to act in an explorative and creative way. Referring back to the innovation process (see chapter 2.2.1), Rosing et al. (2011) mention that situations which require exploration and thus opening leader behaviors predominantly occur in the beginning of the innovation process where ideas are generated.

In contrast, ‘closing’ leader behaviors make subordinates move towards exploitation by decreasing the variance of their behaviors (Rosing et al., 2011; 2010). In other words, the reduction of variance implies that something is narrowed down or streamlined (Gupta et al., 2006; Rosing et al., 2011) - in this case the subordinates’ behaviors. In particular, Rosing et al. (2011) define closing leader behaviors as “a set of leader behaviors that includes taking corrective action, setting specific guidelines and monitoring goal achievement” (p. 967). Rosing et al. (2010) additionally explain that closing leader behaviors aim to keep the subordinates in line and adhere to instructions and rules to avoid, for example, mistakes and errors. Furthermore, this set of behaviors stresses the reliance on established routines and directs subordinates to act efficiently (Rosing et al., 2011). It is further stressed that closing leader behaviors entail to give subordinates specific instructions how to work on a task as well as setting predefined structures and goals which subordinates are subject to follow (Rosing et al., 2010). In case of situations or tasks in the innovation process, which demand subordinates to exploit and work efficiently primarily in the later stages of an innovation, Rosing et al. (2010; 2011) recommend leaders to apply closing leader behaviors to stimulate their subordinates to act accordingly.

Table 1. Behavioral traits for opening and closing leader behaviors

<table>
<thead>
<tr>
<th>Opening leader behaviors</th>
<th>Closing leader behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Allowing different ways of accomplishing a task</td>
<td>● Monitoring and controlling goal attainment</td>
</tr>
<tr>
<td>● Encouraging experimentation with different ideas</td>
<td>● Establishing routines</td>
</tr>
<tr>
<td>● Motivating to take risks</td>
<td>● Taking corrective action</td>
</tr>
<tr>
<td>● Giving possibilities for independent thinking and acting</td>
<td>● Controlling adherence to rules</td>
</tr>
<tr>
<td>● Giving room for own ideas</td>
<td>● Paying attention to uniform task accomplishment</td>
</tr>
<tr>
<td>● Allowing errors</td>
<td>● Sanctioning errors</td>
</tr>
<tr>
<td>● Encouraging error learning</td>
<td>● Sticking to plans</td>
</tr>
</tbody>
</table>

Note. Own figure following Rosing et al., 2011, p. 967.
The specific behavioral traits defined for the sets of opening and closing leader behaviors initiated by Rosing et al. (2011) are visualized in Table 1. It demonstrates the differences between these two sets of behaviors that ambidextrous leaders in innovation supposedly show.

However, solely executing opening and closing leader behaviors is not sufficient for leaders to be ambidextrous. Instead, the two distinct but complementary sets of behaviors “need to be carried out […] in a well-balanced and integrated way” (Rosing et al., 2011, p. 967). In a similar vein, Rosing et al. (2011) highlight that leaders in innovation are required to be able to switch between opening and closing leader behaviors. Therefore, besides the two traits of opening and closing leader behaviors, the so-called “temporal flexibility to switch” (p. 966) is the third component in the model of ambidextrous leadership in innovation initiated by Rosing et al. (2011). The uncertainty involved in innovation and the lack of systematic models that predict when exactly to explore and when to exploit (e.g. Bledow et al., 2009) underline Rosing et al.’s (2011) statement that it is difficult to anticipate when opening and closing leader behaviors are required. Consequently, Rosing et al. (2011) mention “it is the temporal flexibility to adapt these behaviors to the requirements of the innovation tasks that is essential for ambidextrous leadership” (p. 967). In other words, it is crucial that the alignment of opening and closing leader behaviors is undertaken by the innovation leader in accordance to and matching the concurrent situation and its requirements.

Summing up, Rosing et al.’s (2011) model of ambidextrous leadership in innovation consists of three different components, namely opening and closing leader behaviors as well as the temporal flexibility to switch between these behaviors. Figure 1 provides a comprehensive view on this model and illustrates how these components of ambidextrous leaders can be related to the innovation process (referred to as ‘innovation task’ in the figure) and ambidextrous behaviors (exploration and exploitation).

Figure 1. Theoretical model of ambidextrous leadership

![Theoretical model of ambidextrous leadership](image)

*Note.* From Rosing et al., 2011, p. 966.
Accordingly, the temporal flexibility to switch is visualized by the wavy line in the center of this visualization. In this figure, some of the challenges of an innovation leader become visible: the engagement in idea generation, called creativity in this figure, and implementation with their different requirements as well as the tension between exploration and exploitation in the innovation process and the respective opening and closing leader behaviors. As visualized, all these elements are related to each other and interdependent.

2.3.5 Follow-up research on the theory of ambidextrous leadership in innovation

Following up Rosing et al.'s (2011) relatively new model of ambidextrous leadership, only few published studies have been conducted so far. Through a daily diary study on the individual level, Zacher and Wilden (2014) empirically confirm that ambidextrous leadership (Rosing et al., 2011), i.e. the interaction between opening and closing leader behaviors, impact employee’s self-reported innovative performance. In specific, in their study of 113 employees, the employee’s innovative performance peaks when opening and closing leader behaviors both were high, which in turn confirms that leaders need to “engage in opposing but complementary behaviors to facilitate employee innovation” (Zacher & Wilden, 2014, p. 818). Consequently, Zacher and Wilden’s (2014) results suggest that not only opening leader behaviors can be positively associated with the employee’s innovative performance but also a high engagement in closing leader behaviors further increases this performance. For the first time, Rosing et al.’s (2011) proposed model of ambidextrous leadership and its impact on employees were empirically validated by this study.

The need for leaders to engage in high levels of opening and closing leader behaviors is further stressed by the results of Zacher et al. (2014). According to these authors, the self-reported employees’ innovative performance climaxes when the degree of their exploitation and exploration behaviors is both high. In consequence, their self-report survey of 388 employees revealed that a high innovative performance among employees stems from their engagement in a combination of both explorative and exploitative behaviors on a high level (Zacher et al., 2014). Furthermore, Zacher et al. (2014) empirically confirm that opening leader behaviors lead to exploration-enhancing behavior among subordinates, whereas the engagement in closing leader behaviors fosters subordinates’ exploitation behaviors. Moreover, this study verifies that there is neither a positive relation between opening leader behaviors and subordinates’ exploitation, nor between closing leader behaviors and exploration (Zacher et al., 2014). Thus, through this study the desired impact of the different sets of leader behaviors on subordinates is positively validated for the first time.

Zacher and Rosing (2015) present findings similar to Zacher and Wilden (2014), but on the team and not the individual level in their multi-source surveys of 33 team leaders and 90 employees. Hereby, these authors reconfirm the ambidextrous leadership
theory introduced by Rosing et al. (2011). The results of this study prove that the level of team innovation is the highest, when leaders show a high degree of both opening and closing leader behaviors, whereas the level of team innovation is lower when either both or even only one of these two distinct leader behaviors are low (Zacher & Rosing, 2015). Therefore, this study reconfirms Zacher and Wilden’s (2014) proposition that innovation leaders should engage in a combination of both opening and closing leader behaviors in order to enhance the level of the team’s innovativeness.

Briefly summarizing the follow-up studies on Rosing et al.’s (2011) model of ambidextrous leadership, it has been empirically proven by Zacher et al. (2014) that opening and closing leader behaviors impact the subordinates’ behavior accordingly to their aim of fostering explorative and respectively exploitative behaviors among subordinates. Additionally, it has been confirmed that leaders should combine high levels of engagement in both sets of leader behaviors to achieve a high innovation performance among the subordinates on the individual level (Zacher & Wilden, 2014) as well as on the team level (Zacher & Rosing, 2015).

2.4 Deriving the research problem

The review of the follow-up research on the concept of ambidextrous leadership in innovation shows that research has so far primarily dealt with the two sets of leader behaviors, opening and closing. However, the third component, the temporal flexibility to switch (Rosing et al., 2011) between these behaviors has - to the best of the authors’ knowledge - neither been empirically researched nor confirmed so far. This raises questions that have remained unanswered. Through their proposition of flexibly switching between these behaviors, Rosing et al. (2011) imply a sequential approach applied by innovation leaders to align opening and closing leader behaviors in the idea generation and implementation of the innovation process. However, other concepts, which stem from different but related fields in the literature, question and challenge such proposition and urge to research the alignment of opening and closing leader behaviors in depth.

The related fields initiating this research endeavor include, for example, leadership and the concept of behavioral complexity (Denison et al., 1995) as outlined in chapter 2.2.4. Behavioral complexity implies that leaders need to adjust their behaviors according to the situation. In addition, it involves that contradicting roles and behaviors, such as opening and closing leader behaviors, can occur at the same time, if it is required by the situation (Denison et al., 1995). In addition, researchers such as Poole and Van de Ven (1989) as well as Smith and Lewis (2011) researched the management of paradoxes, which exploration and exploitation have increasingly become considered as (e.g. Papachroni et al., 2015). One could argue that these concepts can be transferred to the respective opening and closing leader behaviors. Poole and Van de Ven (1989) propose two different strategies to manage paradoxes which are relevant here: Temporal separation which is similar to the sequential alignment proposed by
Rosing et al.’s (2011) as well as the synthesis of paradoxical elements which in contrast indicates a simultaneous alignment of opening and closing leader behaviors.

Other indications for the possibility of a simultaneous alignment of opening and closing leader behaviors can be found on the organizational level and with regard to the tension between exploration and exploitation. Whereas Gupta et al. (2006) advocate the mutual exclusiveness of exploration and exploitation, the types of contextual ambidexterity (Gibson & Birkinshaw, 2004) and structural ambidexterity (Duncan, 1976) should be taken into consideration (see chapter 2.1.3). These notions imply a simultaneous presence of exploration and exploitation. However, it should be noted that structural ambidexterity suggests such a simultaneous approach by structurally separated units (Duncan, 1976). Considering exploration and exploitation as closely related to and as vital aspects of the origin of opening and closing leader behaviors indicates that these two leader behaviors might be aligned in a simultaneous way and thus occur at the same time.

Finally, Zacher et al. (2014) summarize the necessity to conduct research that explains the alignment of opening and closing leader behaviors:

“Opening and closing behaviors require very different or even partly contradictory cognitions and actions that they may be quite difficult to align. Thus, more knowledge about what helps leaders integrate opening and closing behaviors is necessary to promote ambidextrous leadership.” (Zacher et al., 2014, p. 42)

Several indications are outlined above and question or even challenge Rosing et al.’s (2011) proposition that ambidextrous leaders in innovation must have a temporal flexibility to switch – an assumption that has not been empirically verified yet. Therefore, the research topic of this thesis focusses on the alignment of opening and closing leader behaviors (Rosing et al., 2011) visualized in Figure 2.

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Figure 2. Illustration of the research problem following Rosing et al. (2011)

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3 The term alignment was chosen in order to formulate the research question more neutrally as outlined in chapter 1.2.
More specifically, it is illustrated that the research problem combines two disciplines: the innovation process which consists of the two phases idea generation and implementation and the theory of ambidextrous leadership in innovation (Rosing et al., 2011) with the respective opening and closing leader behaviors. Both disciplines entail opposing parts that seem to be highly complex and difficult to combine. Accordingly, the research question is:

*How do innovation leaders align these two sets of leader behaviors throughout the innovation process?*

The research question is split up in derived sub-questions (see chapter 1.3 for details) in order to approach the research problem step-by-step. More precisely, the sub-questions are concerned with partial aspects of the research question and are put in place to enhance the understandability of the study to be conducted and the research objectives. Finally, the sub-questions aim to answer the research question of this thesis. The sub-questions are as follows:

- *How do opening and closing leader behaviors occur throughout the innovation process?*
- *How do innovation leaders demonstrate and restrict both opening and closing leader behaviors?*
- *How do innovation leaders align opening and closing leader behaviors?*
3 Methodology

The following chapter presents the methodological approach applied in this thesis. It describes the process and intentions of designing the study in order to answer the research question and reach the research objectives of this thesis. Therefore, the research approach, nature of the study, and the sources of data are outlined. Furthermore, this chapter elaborates on the collection methods, research strategy and methods of data analysis. It concludes with the assessment of the research quality of this study.

3.1 Research approach, research method, and nature of study

This thesis follows a primarily inductive approach (see next paragraph) with deductive elements. These deductive elements are used to derive the research gap and the respective questions by reviewing and understanding existing theory in the field of ambidextrous leadership in innovation as well as related areas (Saunders, Lewis, & Thornhill, 2012; Bryman & Bell, 2007). Hereby, the authors’ attention was drawn towards the theory of ambidextrous leadership in innovation initiated by Rosing et al. in 2011 and, in specific, the yet unexplored alignment of opening and closing leader behaviors to foster explorative and exploitative behaviors among their subordinates. Regarding Rosing et al.’s (2011) proposition that ambidextrous leaders in innovation pursue this alignment by flexibly switching between these leader behaviors, the deductive literature review in the beginning of the research process has shown that no research has been done yet to support this claim. However, due to theoretical indications found in other fields in the literature, such as behavioral complexity, the management of paradoxes, and organizational ambidexterity, the authors of this thesis initially questioned whether innovation leaders in fact flexibly switch between the two leader behaviors or if they might be demonstrated at the same time. Hence, the research question of how innovation leaders align opening and closing behaviors throughout the innovation process and its respective three sub-questions arose.

Even though this research question and sub-questions were found deductively, this research is primarily inductive since ambidextrous leadership in innovation as a relatively new field is empirically explored with the aim to generate new theoretical insights (Babbie, 2013; Bryman & Bell, 2007). More specifically, conclusions for behaviors in ambidextrous leadership are drawn based on empirical findings, which goes in line with the procedures in an inductive research approach (Babbie, 2013; Ghauri & Grønhaug, 2005; Saunders et al., 2012).

The inductive approach is linked to the exploratory nature of this thesis. The study is exploratory since this research endeavor aims to “discover what is happening and gain insights about a topic of interest” (Saunders et al., 2012, p. 171). Accordingly, the topic
ambidextrous leadership in innovation and the alignment of opening and closing leader behaviors (Rosing et al., 2011) is relatively new and yet unexplored (Babbie, 2013).

In consonance with the nature and approach of this study, the research method employed in the inquiry is qualitative. According to Bryman and Bell (2007) as well as Ghauri and Grønhaug (2005), qualitative research enables to construct theory from empirics and to gain an initial understanding of the topic being studied. Therefore, the empirical findings from this study strive for building the basis for initial theoretical advances with regards to the alignment of opening and closing leader behaviors throughout the innovation process. Babbie (2013) highlights that exploratory studies are likely to be subject to unforeseen changes and therefore require a higher degree of flexibility which additionally argues for applying a qualitative research method in this thesis.

### 3.2 Research strategy

Regarding the research strategy, which serves as a plan to answer the research question and achieve the research objectives (Saunders et al., 2012), the authors chose to conduct a case study because it allows to explore a research topic in its respective context and backgrounds (Saunders et al., 2012; Eisenhardt & Graebner, 2007). Furthermore, case studies suit well to research areas in early stages, such as the relatively new area of ambidextrous leadership in innovation, and are “highly complementary to incremental theory building” (Eisenhardt, 1989, p. 549). In specific, a case study in combination with an inductive approach is used when the theoretical knowledge is yet limited and theory thus emerges from the collected data in the cases (Siggelkow, 2007). All this can be directly applied to the field of ambidextrous leadership in innovation established in 2011 by Rosing, Frese and Bausch, in which this thesis aims to contribute to theory based on empirical data. Since the research question aims to get insights into the behavioral alignment of innovation leaders, such leaders have been defined as case subjects while the organizations they are embedded in play a crucial role in understanding the context of the leaders’ behaviors.

Within the field of business research, multiple case studies have gained growing importance and are increasingly used according to Bryman and Bell (2007). The authors of this thesis decided to follow this trend and conducted a multiple case study involving five innovation leaders as case subjects in order to exploit the following advantages. Eisenhardt and Graebner (2007) claim that while single case studies prove that a certain phenomenon exists, multiple case studies are a more robust base for building theory. One reason for this is that multiple case studies allow comparisons which clarify whether a finding is distinctive for a certain single case or can be replicated to and consistently found in other cases (Eisenhardt, 1991). Furthermore, the empirical evidence in multiple case studies has a higher variation leading to better grounded propositions than in single ones (Eisenhardt & Graebner, 2007). Consequently, this helps to produce “general findings with little regard for the unique
context of each of the cases” (Brymann & Bell, 2007, p. 65). Due to these reasons and because this thesis aims to develop generalizable implications for theory and practice, the multiple case study approach was chosen. When it comes to the number of cases, Eisenhardt (1989) argues for ideally four up to ten cases because “with fewer than 4, it is often difficult to generate theory with much complexity, and its empirical grounding is likely to be unconvincing” (p. 545). In compliance with this suggestion, the authors of this study collected data from five cases which is further presented in the next chapter.

3.3 Sample selection

The authors applied a judgmental or purposive sampling technique in which they use their own judgment to select appropriate innovation leaders as cases according to the research objectives and question (Saunders et al., 2012). This non-probability technique is frequently used in case studies with a comparably small sample size and enables the authors to select certain cases which are highly informative and useful for the research question (Babbie, 2013; Neuman, 2005). The requirements and criteria applied for the sampling, the innovation leaders as the basis for the cases as well as their respective companies, are presented in the following paragraphs.

Appropriate companies, by which the individual innovation leaders are employed, were selected based on the criteria named in the following. Since the companies and their environments significantly shape the context of each innovation leader, these criteria increase the comparability of the findings across the cases while ensuring that findings can be consistently verified and are not unique in a certain case. Furthermore, this enhances the transferability (see chapter 3.6.2) and quality of this research (Bryman & Bell, 2007). The first criterion is that the company actively innovates to attain its competitive advantage in its branch because innovation is the context of this thesis. The second criterion is that all companies are manufacturing ones and engaged in the innovation of products regardless of their specific branch. Thirdly, the authors decided to select companies solely located in Germany to eliminate possible cultural differences, which are likely to occur in the field of leadership (e.g. Dorfman & Howell, 1988). The reason for deciding on companies based in Germany refers to this thesis’ focus on leadership in innovation. Germany provides adequate conditions for this study due to its high number of innovative companies and the overall importance of innovation for its economy.

Within the companies fulfilling the above-mentioned criteria, the actual case subjects - innovation leaders - were selected. Here, the following criteria were applied to ensure that the cases are representative and suitable to answer the research question (Babbie, 2013) while enhancing the ability to compare findings across cases. The first criterion is that the cases are in a leading position in innovation with major responsibilities throughout the innovation process of the company. Respectively, they are involved in both innovation phases - idea generation and implementation - and
either bear personnel responsibility or are responsible for subordinates reporting to them in innovation projects. Secondly, the cases fulfil the premise of having worked in such positions for a minimum of five years to ensure an adequate level of experience as an innovation leader.

Applying these criteria, cases of five innovation leaders working for five different companies have been selected. This sample size thus can be considered as a sufficient number to generate convincing theory, according to Eisenhardt (1989). The main information regarding the position and experience of the selected cases is presented in Table 2. Since the cases wished to stay anonymous with regard to the sensitive information they revealed, they were randomly given neutral male names corresponding to their gender.

Table 2. Summary of relevant case information

<table>
<thead>
<tr>
<th>Case Name</th>
<th>Position</th>
<th>Experience</th>
<th>Company Name</th>
<th>Branch</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas</td>
<td>Senior Project Coordinator</td>
<td>15 years</td>
<td>CLAAS E-Systems KGaA mbH &amp; Co KG</td>
<td>Electronic agriculture systems</td>
</tr>
<tr>
<td>Stefan</td>
<td>Innovation Manager</td>
<td>8 years</td>
<td>Continental Reifen Deutschland GmbH</td>
<td>Tire manufacturing</td>
</tr>
<tr>
<td>Andreas</td>
<td>Divisional Director Research and Development</td>
<td>14 years</td>
<td>CEWE Stiftung &amp; Co. KGaA</td>
<td>Photo finishing</td>
</tr>
<tr>
<td>Christian</td>
<td>Head of Acoustics in Research &amp; Innovation</td>
<td>8 years</td>
<td>Sennheiser electronic GmbH &amp; Co. KG</td>
<td>Audio technology</td>
</tr>
<tr>
<td>Michael</td>
<td>Head of Product Development</td>
<td>10 years</td>
<td>Maschinenfabrik Bernard Krone GmbH &amp; Co. KG</td>
<td>Agriculture vehicles and machines</td>
</tr>
</tbody>
</table>

3.4 Data collection

The primary data used in this study was collected through interviews within the addressed framework of a multiple case study, because interviews as a method of data collection are suitable for this kind of research question and approach according to Saunders et al. (2012). More specifically, the authors decided to conduct semi-structured interviews which is described in detail in the following.

3.4.1 Designing the interviews

Considering the importance of coherence between research design and purpose (Saunders et al., 2012), the authors used semi-structured interviews for the collection of primary data. Generally, this kind of interviews have been proven to work well in qualitative, explorative and inductive studies (Babbie, 2013; Saunders et al., 2012; Cooper & Schindler, 2008) as in this thesis. Moreover, semi-structured interviews imply a flexible interview process (Saunders et al., 2012; Bryman & Bell, 2007). This flexibility was the main reason for choosing this type of interview since this thesis aims to achieve

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4 Experience as an innovation leader in years.
first insights into the alignment of opening and closing leader behaviors in the field of ambidextrous leadership in innovation, which in particular has not been researched yet. Due to the uncertainty, which comes along with a yet rather unexplored topic, and the need to be prepared for unforeseeably arising information during the interviews, this type of interview was applied. In addition, semi-structured interviews support open discussions and allow interviewers to follow up on given responses and aspects of interest, which makes it possible to gather a broad set of data (Bryman & Bell, 2007). Since, for example, related conditions, such as personal backgrounds and company structures, may influence the way the cases demonstrate opening and closing leader behaviors, open and flexible discussions on thoughts and experiences of interviewees vitally contributed to the results of this study. Another advantage of semi-structured interviews is that they address specific issues by following an interview guideline that provides a basic framework (Saunders et al., 2012; Bryman & Bell, 2007). Because the authors found the research problem deductively, this helped them to design the interview respectively. Accordingly, the authors designed a semi-structured interview with a certain structure and logic of questions for the interview guideline (see 3.4.2 and Table 3). The comprehensible structure of the interview guideline makes comparisons across cases easier when conducting a multiple case study (Bryman & Bell, 2007), which was another argument the authors considered when choosing a semi-structured interview over an open-interview.

3.4.2 Preparing the interviews

After having decided on the interview design, the authors set up the interview guideline (see Appendix 2) which directs the interview towards answering the research question and reaching the objectives of this research (Bryman & Bell, 2007). Subsequently, this guideline was translated from English into German (see Appendix 2), the native language of the authors and all cases. This ensured that the case subjects were able to fully understand all questions and concepts and speak more freely about their experience and without possible barriers of a foreign language. To further increase the comprehensibility and to make sure that the interviewees understood the questions in the same way as intended, the authors avoided using complex theoretical concepts and terminology (Bryman & Bell 2007; Ghauri & Grønhaug, 2010).

As indicated in chapter 3.4.1, the interview guideline was flexibly structured for several reasons: It allowed possible follow-up questions during the interview for further in-depth understanding of a topic while creating a flow through a given topic structure (Bryman & Bell, 2007). However, keeping the specificities of semi-structured interviews in mind, this guideline served as a basis and left the opportunity open to be situationally adapted since the interview might not follow the outlined order and additional questions may arise throughout the interview (Bryman & Bell, 2007).

The interview guideline covers different types of questions that aim to reveal the cases’ work-related contexts and retrospective views on behavioral situations. It is structured
related to different topic areas and goes from broad questions regarding the background to rather personal questions aiming to reveal details regarding their leader behaviors in the later parts. This helped the interviewers to get to know the case subjects and their work context as well as building up a relation with the interviewee before asking behavioral questions.

Table 3. Structure of the interview guideline (see Appendix 2)

<table>
<thead>
<tr>
<th>Part</th>
<th>Question Topic</th>
<th>Primarily related Research Question</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A1</td>
<td>Experience in innovation</td>
<td>Not directly related to the research question; aimed to enhance the understanding of the background and context of the cases.</td>
</tr>
<tr>
<td>A2</td>
<td>Current position</td>
<td></td>
</tr>
<tr>
<td>A3</td>
<td>Leadership responsibilities</td>
<td></td>
</tr>
<tr>
<td>B</td>
<td></td>
<td></td>
</tr>
<tr>
<td>B1</td>
<td>Innovation projects</td>
<td></td>
</tr>
<tr>
<td>B2</td>
<td>Innovation process</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>C1a Opening leader behaviors - general usage &amp; occurrence</td>
<td>1) How do opening leader behaviors occur throughout the innovation process?</td>
</tr>
<tr>
<td>1</td>
<td>C1b Opening leader behaviors - usage &amp; restriction of behaviors (CIT)</td>
<td>2) How do innovation leaders demonstrate and restrict opening leader behaviors?</td>
</tr>
<tr>
<td>C2</td>
<td>C2a Closing leader behaviors - general usage &amp; occurrence</td>
<td>1) How do closing leader behaviors occur throughout the innovation process?</td>
</tr>
<tr>
<td>2</td>
<td>C2b Closing leader behaviors - usage &amp; restriction of behaviors (CIT)</td>
<td>2) How do innovation leaders demonstrate and restrict closing leader behaviors?</td>
</tr>
<tr>
<td>D</td>
<td>Combining (opening &amp; closing) leader behaviors</td>
<td>3) How do innovation leaders align opening and closing leader behaviors?</td>
</tr>
</tbody>
</table>

Table 3 provides an overview of the parts of the interview guideline, their topic and question type as well as their relation to the respective sub-questions of the research question they seek to answer. The first two topic areas (A and B) include questions related to general information about the interviewee’s background and the innovation processes and projects of the department in order to contextualize the given answers (Bryman & Bell, 2007).

The third set of questions (C) refers to the concepts and related behavioral traits of opening and closing leader behaviors presented by Rosing et al. (2011). The section presents a brief description of opening and respectively closing leader behaviors and asks the cases with the help of open and descriptive questions about their experience regarding these leader behaviors. In particular, as part of this section in the interview guideline, the interviewees are asked when and how they make use of these two behaviors as well as regarding potential problems and their solutions. In doing so, the authors primarily aimed to answer the first sub-question regarding the occurrence of these two behaviors throughout the innovation process.

Additionally, the so-called critical incident technique (CIT) is applied in part C to assess in which situations the cases pursue these leader behaviors and how they demonstrated and restricted the respective traits in the past. The CIT can be defined as “open-ended retrospective method of finding out how the people concerned situate
themselves with regard to the field being explored” (Hettlage & Steinlin, 2006, p. 6). Several authors add that the CIT discovers problem solving behavior through narratives (Burns, Williams, & Maxham, 2000; Andrews, Hull, & Donahue, 2009; Helkkula & Pihlström, 2010). In the given study, the interviewers seek to find out how leaders behaved in the past by asking them for concrete examples based on the given behavioral traits. There are several advantages of the CIT, such as its flexibility, comprehensibility and honesty of answers (Hettlage & Steinlin, 2006), which the authors took into consideration. Hettlage and Steinlin (2006) further argue that the CIT is especially suitable when the interview can only be conducted once, which is the case in this study. This additionally argued for applying this method in order to primarily answer the second sub-question of this thesis, namely how innovation leaders demonstrate and restrict both opening and closing leader behaviors.

With the help of the CIT, the authors asked for specific situations in which the cases used opening and closing leader behaviors. As displayed in Figure 3, the authors tested four out of seven behavioral traits of each opening and closing leader behavior presented by Rosing et al. (2011) due to the limited amount of time and partially overlap of some patterns (e.g. ‘giving possibilities for independent thinking and acting’ and ‘giving room for ideas’ is similar). The idea to do so was adopted from another follow-up study on Rosing et al.’s (2011) opening and closing leader behaviors conducted by Zacher and Wilden (2014). Even though these authors conducted a diary study and no interviews with the CIT as in this study, the idea to lower the number of behavioral traits for both opening and closing leader behaviors to four seemed legitimate with respect to this study of Zacher and Wilden (2014) that also left out certain behavioral traits.

In order to ensure that the findings obtained through the CIT also contribute to the latter part of the second sub-question concerning how leaders take corrective action to restrict opening and closing leader behaviors, the authors defined situations that assumingly lead the cases to change their leader behaviors. These situations were derived from the behavioral traits defined by Rosing et al. (2011, see Figure 3) and possible consequences, in case their subordinates excessively demonstrate the anticipated behavior of their leaders (e.g. ‘leader allows mistakes’ can lead to ‘subordinates are making too many mistakes’). Here, the authors also considered the findings of Zacher et al. (2014) who empirically confirmed that opening leader behaviors foster explorative behaviors among subordinates whereas closing leader behaviors make subordinates act more exploitatively.

Lastly, section D of the interview guideline contains open and follow-up questions concerning the interaction of opening and closing leader behaviors. Here, the interviewees are asked regarding the alignment or combination of opening and closing leader behaviors and, in specific, how and why they do so. These questions are linked to the third sub-question and are intentionally placed in the end of the interview to give room to the interviewee to summarize and reflect on the alignment of the two opposing leader behaviors that were discussed before in part C.
Subsequently to creating the interview guide, the authors verified that the interview guideline did not contain any flaws that could have been avoided, such as misunderstandings of the used terminology, by performing a pilot test (Turner, 2010). Conducting this pilot interview with a person that had been working in a leading position in innovation departments in the past had made it possible to revise and refine questions in the interview guideline before the actual interviews were conducted (Kvale, 2007).

Before the interviews took place, the authors took into account ethical considerations that could be relevant for the interviews with the focus on the well-being and the rights of the interviewees. The authors explicitly addressed these issues in an informed consent agreement (see Appendix 1) which was sent to and signed by the interviewees prior to the interview. Besides a briefing on the purpose and topics, the informed consent agreement addressed the following points and resulting obligations for the authors. Firstly, the authors made sure that the interviewees voluntarily participated in the study by asking them for permission and agreement beforehand (Babbie, 2013; Saunders et al., 2012) including the interviewee’s right to withdraw from the interview at any time. Secondly, to not harm the interviewees in any way, for example regarding the current or future employment (Bryman & Bell, 2007), the names of the cases were anonymized. Thirdly, the authors ensured confidentiality (Babbie, 2013) especially regarding secret company data possibly related to ongoing innovation projects.

3.4.3 Conducting the interviews

Based on the interview guideline, the interviews were separately conducted with the interviewees in accordance to the sampling. Table 4 outlines details about the interviews.

The interviews were held in person and in German due to the reasons mentioned above. They were conducted on the premises of the case companies located across Germany, a familiar setting for the interviewee which ultimately leads to a more open
atmosphere. By conducting the interviews face to face, the authors were synchronously communicating with the interviewee (Opdenakker, 2006) and able to directly react to what has been said. In addition, the answers given by the interviewees were spontaneous and not influenced by long reflections (Opdenakker, 2006) which makes them more authentic. Both authors were present during the interviews. While one author was primarily responsible for asking questions and guiding the conversation, the other focused on taking notes and observing the interviewee. These notes serve as an additional source of data.

Table 4. Summary of interview details

<table>
<thead>
<tr>
<th>Case Name</th>
<th>Company Name</th>
<th>Date</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas</td>
<td>CLAAS E-Systems KGaA mbH &amp; Co KG</td>
<td>March 30, 2017</td>
<td>1:44:47</td>
</tr>
<tr>
<td>Stefan</td>
<td>Continental Reifen Deutschland GmbH</td>
<td>April 03, 2017</td>
<td>1:14:06</td>
</tr>
<tr>
<td>Andreas</td>
<td>CEWE Stiftung &amp; Co. KGaA</td>
<td>April 04, 2017</td>
<td>1:28:41</td>
</tr>
<tr>
<td>Christian</td>
<td>Sennheiser electronic GmbH &amp; Co. KG</td>
<td>April 05, 2017</td>
<td>1:27:45</td>
</tr>
<tr>
<td>Michael</td>
<td>Maschinenfabrik Bernard Krone GmbH &amp; Co. KG</td>
<td>April 06, 2017</td>
<td>1:27:26</td>
</tr>
</tbody>
</table>

When conducting the interviews, the authors followed Merriam’s (1998) suggestion to record and subsequently transcribe the interviews, which has several advantages, such as overcoming the limitations of memories (Bryman & Bell, 2007). Moreover, Heritage (1984) points out that it allows to examine what the interviewees have said more thoroughly and repeatedly. Additionally, recording and transcribing provides the opportunity to use direct quotes in case of significance (Ghauri & Grønhaug, 2005; Easterby-Smith, Thorpe, & Jackson, 2008). Finally, it may help to increase the objectivity and to oppose possible accusations that the analysis was influenced by the authors’ biases or was done inaccurately (Bryman & Bell, 2007; Saunders et al., 2012). Therefore, recorded interviews were transcribed shortly after the interviews took place to avoid “a build-up of audio-recordings and associated transcription work” (Saunders et al., 2012, p. 550) and to better link the notes taken with the transcript. Hereby, the authors aimed to maximize the understanding of what was said and to achieve a high level of quality in the data collection and analysis process.

### 3.5 Data analysis

After having conducted and transcribed the interviews, the authors undertook the subsequent data analysis which was not straight-forward because the given answers sometimes lacked a clear structure and were non-standardized due to the semi-structured style of the interview. The large volume of data gathered in the interviews and from the notes taken additionally increased the complexity (Bryman & Bell, 2007; Saunders et al., 2012). At this point it should be mentioned that the data analysis was carried out in German because the interviews were held and transcribed in German. For the sake of accuracy and the risk of possible flaws arising from translating the transcripts prior to the analysis, the authors decided to stick to their and the interviewees’ native language when analyzing the data and translated the relevant
empirical findings afterwards. Further details regarding the translation are presented at the end of this chapter.

Generally, the authors followed Eisenhardt’s (1989) recommendations regarding the data analysis in the process of theory building in case study research. Accordingly, a within-case analysis was conducted for each case and sub-question at first (Eisenhardt, 1989). Subsequently, the cross-case analysis was carried out for each sub-question and respective section which helped to identify recurring patterns across the cases (Eisenhardt, 1989). This was done differently for each section (A-D) of the interview guideline due to the differences in the nature of the questions used in each section. The procedures applied in the analysis are more specifically outlined in the following.

Since the answers in the first two sections (A and B) of the interview guideline provide rather general information about the cases and their contexts, these information served as a basis for the analysis of the later sections (C and D). More specifically, the commonalities found across the cases in these first sections display the background and context of the cases. Due to the mainly closed questions in parts A and B, the answers were easily comparable. Unexpectedly, the answers to these questions were quite long since the cases elaborated on their work in a very detailed way. The key points thus were summarized in bullet points because some in-depth details were not considered relevant for describing the embedding contexts of the cases.

In contrast to the analysis of the answers given in the first two parts (A and B), the analysis of the data gathered in section C of the interview was more complex. The analysis of this section aimed to answer the first and second sub-questions and was conducted as follows. As a first step, the answers were sorted regarding how and when the cases generally apply opening and closing leader behaviors and copied into a Microsoft Excel spreadsheet accordingly. A similar approach was applied for the answers identified with the help of the CIT. Here, answers regarding how the cases demonstrate and restrict opening and closing leader behaviors were also copied into the Microsoft Excel spreadsheet separately for each case and behavioral trait. At this point, statements that did not answer the intended question were either sorted out or moved to other parts. The second step involved that the remaining quotes were directly compared across cases regarding opening and closing leader behaviors in general and for each element of the CIT. The quotes were screened for commonalities, repeating patterns and significant differences across the cases (Eisenhardt, 1989). Hereby, categories arose and respective quotes were matched and rearranged accordingly as a third step.

Lastly, the data collected in part D of the interview were analyzed with the aim of answering the third sub-question of this thesis. Similar to the analysis of the data from section C, categories regarding evolving patterns, commonalities, and differences were identified and displayed by using Microsoft Excel spreadsheets. However, since the
questions of section D were less specific than in section C and were answered very freely by the interviewees, the analysis was undertaken differently here. At first, the authors mainly relied on theoretical propositions which were rooted in the research question and objectives that in turn were derived from existing research (Yin, 2009). Theoretical concepts dealing with ambidexterity and ambidextrous leadership, which the authors screened during their literature search prior to conducting this case study, helped to find patterns directly linked to the theoretical foundation. After these patterns had been identified this way, further subcategories and commonalities were identified in an in-depth analysis of the data. The authors not only considered the data collected in section D but also took into account relevant data from the other parts. Therefore, the analysis of the third sub-question and respective data was highly complex, however, crucial for answering the underlying research question.

Once the authors had finished the analysis of the empirical findings, they started to translate the relevant quotes from German into English. To avoid flaws and mistakes caused by the translation, the authors undertook the following precautions. At first, each author independently checked the accuracy of the translations. Subsequently, both authors collaborated to discuss and incorporate possible changes and enhancements. Thereafter, the translated quotes used in this thesis were sent to the interviewees to get their approval. In accordance with their feedback, final adjustments were made.

3.6 Quality in research

The quality of research can be assessed by applying different criteria (Saunders et al., 2012). As this thesis is qualitative, the criterion of trustworthiness introduced by Lincoln and Guba (1985) with the sub-criteria credibility, transferability, dependability and confirmability were applied to assess the quality of this research.

3.6.1 Credibility

The criterion of credibility demands that research findings are congruent and believable and show a correct understanding of reality (Bryman & Bell, 2007; Lincoln & Guba, 1985). The degree of credibility therefore determines the acceptability of the findings and results for others (Bryman & Bell, 2007). Credibility addresses the issue of fitting the interviewees’ views with their representation by the researcher (Schwandt, 2001). To ensure credibility in this thesis, the authors followed the code of good practices in research and undertook respondent validations (Bryman & Bell, 2007) which is “the most crucial technique for establishing credibility” according to Lincoln and Guba (1985, p. 314). The respondent validation was done by sending the translated quotes used in this thesis to the interviewees to be checked regarding the adequacy of data. Besides the correctness of the translations, the interviewees were asked to approve the congruence between the quotes used and the interviewees’ experiences and perspectives (Bryman & Bell, 2007; Lincoln & Guba, 1985). Hereby, the researchers
got confirmed that their representations fit to the reality and correctly reflect what the interviewees had said and meant which helped to prevent accidental misinterpretations by the authors.

3.6.2 Transferability

Transferability refers to the interpretative generalizability of the findings (Bitsch, 2005). Since qualitative studies like this thesis usually go rather deep than broad, their "qualitative findings tend to be oriented to the contextual uniqueness and significance" (Bryman & Bell, p. 413). To be able to transfer findings to another context or to hold them in the same context, for example, at a different point in time, Lincoln and Guba (1985) recommend providing "thick descriptions" (p. 316). This means that descriptions should be as detailed as possible when elaborating on the context and background information of the cases studied. By doing so, the authors aim to support the reader's judgment to decide whether it is possible to transfer or compare the findings to other contexts (Lincoln & Guba, 1985). Here, the authors provide a detailed description of each case referring to their backgrounds, such as the company and the industry they are embedded in. Furthermore, these descriptions include information regarding the context, such as their responsibilities, number of subordinates, and involvement in the innovation process and innovation projects. In addition to that, Lincoln and Guba (1985) as well as Bitsch (2005) claim that purposive sampling, which was applied through clear and transparent criteria in this thesis, is another useful method. This aims to enhance the data base and allows the readers to better judge about this thesis' transferability.

Referring back to chapters 3.2 and 3.3, the choice of using a multiple case study approach and judgmentally selecting five cases in five companies lead to a higher transferability of the thesis’ results. Gathering data from multiple cases enabled the authors to conduct inter-case comparisons that allowed to analyze similarities and differences in the findings across cases in order to reach conclusions. By doing so, the authors provide an insight into the innovation leaders' alignment of behaviors in five cases while considering their particularities and different contexts, which in turn increases the transferability.

3.6.3 Dependability

Another criterion the authors used to assess the quality of their research is dependability which is defined as "the stability of findings over time" (Bitsch, 2005, p. 86). Dependability involves critical evaluation of findings, recommendations, interpretations, the research process and supporting data (Tobin & Begley, 2004). To do so, the authors of this thesis critically reviewed and reflected on their work continuously. Finally, the authors show critical self-assessment of their study by clearly presenting limitations in chapter 6.3. Therefore, the authors partially followed the "audit trail" approach of inquiry suggested by Lincoln and Guba (1985, p. 319). In compliance with Lincoln and Guba (1985), the authors thoroughly documented the applied
research process and described the design of how this study is implemented in a detailed manner. Complying with Bryman and Bell (2007) who urge that records should be taken and accessibly kept, the authors stored the problem formulation, notes, audio recordings and transcripts of the conducted interviews as well as their documentation of the data analysis. Therefore, the authors ensured dependability in this thesis by constantly and critically examining both the results and the process of the inquiry (Lincoln & Guba, 1985).

3.6.4 Confirmability

The fourth quality criterion, confirmability, is analogous to neutrality or objectivity (Tobin & Begley, 2004) and assesses, if the authors conducted their research in “good faith” (Bryman & Bell, 2007, p. 414). In the case of this thesis, the authors conform to this criterion by, for example, mitigating bias through certain precautions, such as avoiding leading or proposing questions in the interviews (Saunders et al., 2012). Regarding interviewees biases, the authors tried to quickly establish trust in order to avoid that the interviewees reveal only a partial and to them favorable picture by holding back information (Saunders et al., 2012). To increase the dependability, the authors applied elements of the audit trail outlined by Lincoln and Guba (1985). Respective elements are the thorough and transparent documentation of the research process and the critical reflection of the findings addressed in the limitations. By taking these actions, the authors aimed to avoid any “personal values or theoretical inclinations manifestly to sway the conduct of the research and finding deriving from it” (Bryman & Bell, 2007, p. 414).
4 Empirical findings

Based on the interviews, which were conducted as presented in chapter 3, this chapter displays the empirical findings of the case study following the structure of the research questions and interview guideline respectively. At first, the background of each case is described briefly by referring to answers of part A and B in the interview guide (see appendix 2). Next, the occurrence of the two main leader behaviors analyzed in this thesis, opening and closing, in the innovation process are outlined as part of section C in the interview guide. Furthermore, the findings that have been conducted with the help of a CIT in the same part give insights into how the cases demonstrate and restrict opening and closing leader behaviors. Finally, the alignment of opening and closing leader behaviors is displayed in the last section and specifically refers to part D and also to the answers given in part C of the interview guide.

4.1 Background of the cases

The following paragraphs contain brief descriptions of the background of the five cases. They contain information on the company and context each case is embedded in, the cases’ positions and responsibilities, as well as their involvement in the respective innovation process of the company.

Thomas, senior project coordinator at CLAAS E-Systems
Thomas works at CLAAS E-Systems (CES), an affiliate of the mother company CLAAS Group that operates in the sector of agriculture vehicles and machines. CES develops IT-solutions for the agriculture sector, such as process automation, big data and decentralization projects (CLAAS E-Systems, n.d.). Thomas has worked with innovations at CLAAS since 1994 and is about to receive his PhD in agricultural science. By having this experience and background, Thomas has become a vital part in his project development department which consists of six members from various disciplines. They come up with ideas and respectively evaluate them as well as develop respective concepts with other departments and research institutes. Thomas explains: “my job is to look for innovations in the technical field and guide innovation projects“ (personal communication, March 30, 2017). The innovation process at CES consists of two main phases, pre- and series development, with several sub-phases. However, Thomas’ department is mainly involved in the pre-development but also supervises the processes of the series development.

Stefan, innovation manager at Continental
Stefan has worked as innovation manager of the tire division in the research and development department at Continental Reifen Deutschland GmbH (Continental) since 2009. Prior to this he had studied mechanical engineering and worked in a technical department before starting his current position. The division he currently works for develops, improves and produces tires for cars, trucks, motorbikes and cycles and
exports worldwide (Continental, n.d.). Besides improving the performance of existing tire products, Continental develops new products that have only partly to do with tires, for instance electronic systems that improve the performance of tires. Besides being actively involved in innovation projects, Stefan is responsible for advising and training other managers in the research and development department in terms of innovation management skills. Furthermore, Stefan knows the innovation process at Continental very well since he is part of steering committees and supervises and monitors up to ten projects at a time. The innovation management system at Continental follows the phases scanning, ideation, innovation and the division’s product life cycle. Especially in the last phases, SCRUM processes ensure that projects are completed as planned. However, Stefan is primarily involved in the front-end of the innovation process where ideas and concepts are developed.

**Andreas, divisional director R&D at CEWE**
Andreas has been the head of development and operations since 2002 and is responsible for 60 employees at CEWE Stiftung & Co. KGaA (CEWE). The company develops and produces high quality photo finishing products, for example wall arts, invitations and photo books (CEWE, n.d.) and sells most of its products during Christmas time. This seasonal business influences the innovation process and therefore Andreas’ work. Most of the innovation projects are improvements of already existing products, such as additional formats, paper qualities and applications for CEWE’s products. However, some projects went beyond what CEWE had been used to do. For example, one unconventional innovation was to implement a cloud solution for the pictures of CEWE customers. Furthermore, Andreas himself lead a project that focused on the development of an app from which customers can send a personalized postcard. Once ideas are evaluated and approved by the top management, they become part of the company’s road map. Andreas’ department then sets up a plan guided by SCRUM processes that aims to develop and implement the product with the help of related departments.

**Christian, head of acoustics in research and innovation at Sennheiser**
Christian has worked 13 years for research and innovation departments at Sennheiser electronic GmbH & Co. KG (Sennheiser). He oversees two departments with in total 16 employees. In his position, Christian is responsible for screening the market for new technologies and technological changes that might be an inspiration for Sennheiser as well. Consequently, his department is concerned with the research and development of acoustic tools and platforms as well as new designs. Another department, the product development, also deals with product improvements by using SCRUM processes. This department is partly guided by Christian and his team as well since they often initiate and follow up on product improvements which, according to Christian, has been proven to be efficient since “they do not have to start all over to think about what makes sense but can benefit from the thoughts of the initiator” (personal communication, April 05, 2017). At the headquarters of Sennheiser, the newly built ‘innovation campus’ entails several collaborative spaces and flexible working places.
where Christian’s team also gathers for meetings every now and then to discuss ideas outside their working routine.

**Michael, head of product management at KRONE**

Michael has been the head of product management at Maschinenfabrik Bernard Krone GmbH & Co. KG (KRONE) for ten years and is responsible for the product innovations and functions as an interface between sales and development. Most of the innovation projects at KRONE are dealing with technical improvements of existing agriculture machines initiated by customer services, technicians or other market players. However, one project that Michael manages is the development of the pallet harvester ‘Premos’ (KRONE, n.d.), which was new to the market when KRONE introduced it. Since the agricultural machines are complex, the development of a new product usually takes five to seven years and needs to be constantly adapted to the situation on the market. The innovation process at KRONE is divided into two main parts and several sub-phases: At first, in the strategy development, ideas are screened and monitored which eventually will be further developed in a second step, the five-stage product development process called ‘PEP’ with the respective phases strategy, functional model, prototype, pilot series and small-scale production. Michael’s team in the product development consists of eight members. Their offices are in the ‘innovation center’ of KRONE – a new and openly designed office with various possibilities to gather and exchange ideas.

**4.2 Occurrence of opening and closing leader behaviors in the innovation process**

The backgrounds of the cases were introduced in the previous chapter. In this chapter, the empirical findings gathered through the first sub-question concerning the occurrence of opening and closing leader behaviors throughout the innovation process are presented.

**Early stages of the innovation process**

All cases indicated that they rather make use of opening leader behaviors in the early stages of the innovation process. Stefan said: “This is, of course, clearly more important in the beginning, and when we eradicate flaws in the product development. [...] Afterwards, when we work in a more structured way, we need to work on it step by step“ (personal communication, April 03, 2017). He explained that especially in product innovations at Continental, it is very important for him to motivate and inspire his team to think unconventionally since so much has already been done in this field and it therefore needs novel ideas. Allowing trial-and-error and being tolerant is therefore essential to Stefan in these stages. Furthermore, Michael stated: “This (opening leader behaviors) is especially important in first periods, because we always encounter unpredictable things” (personal communication, April 06, 2017). Thomas supported this view, because, as he puts it, the contents and approaches of the early stages at
CES require it. Andreas reported that at CEWE, the conception of an innovation takes place in the early stages and require him to motivate his team to be creative.

However, closing leader behaviors were described by Thomas, Stefan and Michael as being relevant in the first stages of the innovation process as well. Thomas outlined that enforcing structures and plans also play a vital role in the earlier stages, the so-called pre-development at CES. Here, he needs to supervise his subordinates to document their actions and make use of existing tools when working on possible ideas for future innovation projects. However, Thomas admitted that “most of the things in our pre-development are simply not controllable” (personal communication, March 30, 2017). Stefan also explained that he expects his subordinates to follow certain structures in the beginning despite the limited predictability at these stages. This is why he insists on risk estimations that at least narrow down potential errors. Accordingly, Michael reported that at KRONE, committees and working groups who monitor the progresses are involved throughout the whole innovation process. Michael himself needs to supervise the actions of his team members accordingly.

**Later stages of the innovation process**

Respectively, Thomas, Stefan, Andreas and Christian reported that they would use closing leader behaviors more often than opening leader behaviors in the later phases of the innovation process. Thomas explained: “the closer we work towards the customer in the series development, the more regulations I have to enforce in my team” (personal communication, March 30, 2017). Similarly, Stefan said that the closer the innovation projects are to the production, the tighter the schedules and cost controls are and thus the need for him to follow up and partly control the work of his subordinates. Andreas added: “And then everyone is glad that they can finally implement the things and do not have to experiment all the time. So, it is not necessarily a bad thing that I enforce plans” (personal communication, April 04, 2017). Especially when an innovation project has been approved and should be developed and implemented with the help of SCRUM processes, Andreas said that he needs to enforce structures and plans to track the progress. Christian outlined that he wants to limit the uncertainties as much as possible once the development of innovation projects starts and therefore makes sure that time frames are adhered to by his team members.

However, Thomas and Michael also mentioned situations in which they made use of opening leader behaviors in the later phases. Thomas described that creativity is needed if a supplier cancels a delivery on short notice: “In such unexpected situations, I need to encourage my team to be creative in order to solve problems” (personal communication, March 30, 2017). Similarly, he said that taking risks and experimenting are also needed in the later phases of the process in which innovation projects are tested and improved. Accordingly, Michael reported that if machines do not work or a competitor comes up with similar products that endanger the success of an innovation at KRONE, he needs to encourage his team members to come up with unconventional solutions to deal with such problems.
Nevertheless, Andreas summed up that due to many unforeseeable changes throughout the whole innovation process, both opening and closing leader behaviors need to be applied depending on what the situation requires. The respective illustrating quotes for the occurrence of opening and closing leader behaviors in the innovation process are listed in Table 5.

Table 5. Illustrating quotes on occurrence of opening and closing leader behaviors in the innovation process

<table>
<thead>
<tr>
<th>Occurrence in the innovation process</th>
<th>Opening leader behaviors</th>
<th>Closing leader behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas:</td>
<td>In terms of contents and methods I use it (opening leader behaviors) relatively early in the process. Creativity is harmful later in the development cycle, I need to restrict it there. [...] If something goes wrong, for example, if one of our suppliers cancels his delivery last-minute. In such unexpected situations, I need to encourage my team to be creative in order to solve problems.”</td>
<td>The closer we work towards the customer in the series development, the more regulations I have to enforce in my team [...] Most of the things in our pre-development are simply not controllable.</td>
</tr>
<tr>
<td>Stefan:</td>
<td>“This is, of course, clearly more important in the beginning and when we eradicate flaws in the product development. [...] Afterwards, when we work in a more structured way, we need to work on it step by step [...] Traditionally, it is more important in the first steps of the performance development. Many have tried to improve the tire already. That is why it is particularly important that I encourage to take unconventional perspectives, to think differently and to come up with new ideas.”</td>
<td>“In our development, this is important. In the first three phases, it is also important but in a different way. Here, I expect a structured way of working as well of course. [...] The further it goes in the direction of the product and thus the production in the plant that is depending on our work, the more I have to reduce the uncertainty and risk.”</td>
</tr>
<tr>
<td>Andreas:</td>
<td>“It (opening leader behaviors) is mainly important in conceptual work. This is sometimes not so popular with colleagues because it is not easy to sit down and be creative. [...] Often there are so many ideas that we can not say right away which one is going to be successful.”</td>
<td>“If we have decided for something there will be not much time for creativity in the coming months. [...] And then everyone is glad that they can finally implement the things and do not have to experiment all the time. So, it is not necessarily a bad thing that I enforce plans.”</td>
</tr>
<tr>
<td>Christian:</td>
<td>“This is typical of the development process because if I start a product development I want to be done within the set time frame to release the product. Otherwise, we miss out on turnover, this is very strict. [...] Consequently, when we start the development project, I want to keep the uncertainties of the project as low as possible with regard to the technologies, the suppliers and the manufacturing technologies that we have to consider.”</td>
<td>“It is important throughout. The product development process exemplifies it because there I enforce structures and guidelines throughout.”</td>
</tr>
</tbody>
</table>

4.3 Opening and closing leader behaviors

The first reactions of the cases to questions regarding the relevance of opening and closing leader behaviors were quite different from each other. When it comes to opening leader behaviors, explained to the cases as encouraging trial-and-error,
creative thinking and experimenting, they all agreed that they demonstrate them daily or often. On the contrary, when the cases were confronted with the traits of closing leader behaviors, such as working in a structured and planned way, ensuring goal attainment and limiting risks and mistakes, they were more reluctant when confirming their use. Thomas admitted: “The innovation process itself is already quite structured” (personal communication, March 30, 2017). Andreas added: “we work in a structured and planned way despite all the creativity: There is a process with dates when something has to be delivered” (personal communication, April 04, 2017). This goes in line with Stefan who stated:

“The whole R&D is traditionally very slim and tends to focus on efficiency. For example, guidelines and regulations have a great influence on what we are doing here and on our daily work. Therefore, it is more likely that I have to encourage my team: ‘Question our guidelines and regulations. Are they still valid or has anything changed?’” (Stefan, personal communication, April 03, 2017)

As next step, the cases were asked with the help of the CIT to describe situations in which they demonstrated and restricted the behavioral traits of both opening and closing leader behaviors. These behavioral traits are based on Rosing et al. (2011) and, as stated in chapter 3.4.2, selected by the authors of this thesis (see Table 6) to gather empirical data that help to answer the second sub-question. This chapter is structured according to the behavioral traits and seeks to give insights about each opening and closing leader behavior and how the five cases apply them.

Table 6. Selected behavioral traits for opening and closing leader behaviors

<table>
<thead>
<tr>
<th>Opening leader behaviors (4.3.1)</th>
<th>Closing leader behaviors (4.3.2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>● Encouraging experimentation with different ideas</td>
<td>● Monitoring and controlling goal attainment</td>
</tr>
<tr>
<td>● Motivating to take risks</td>
<td>● Controlling adherence to rules</td>
</tr>
<tr>
<td>● Allowing errors</td>
<td>● Sanctioning errors</td>
</tr>
<tr>
<td>● Giving possibilities for independent thinking and acting</td>
<td>● Sticking to plans</td>
</tr>
</tbody>
</table>

Note. Own figure following Rosing et al., 2011, p. 967.

4.3.1 Demonstrating and restricting opening leader behaviors

The empirical findings are presented with respect to the behavioral traits to describe how opening and closing leader behaviors are demonstrated and restricted. Due to the extensive amount of empirical data collected, the findings will be only briefly outlined and supported by illustrating quotes in the respective tables below each chapter.

Encouraging experimentation with different ideas

When it comes to experimentation, all cases try to give their employees freedom in a certain frame. Andreas explained that he allows his team members “to work on ideas with reasonable effort” (personal communication, April 04, 2017) to test them. When it
comes to assessing ideas, Michael, Stefan, Andreas and Christian reported that they evaluate the results and ideas carefully regarding being valuable and worth to continue or not helpful and thus necessary to be stopped. Michael explained that “experimenting not necessarily leads to success; you sometimes have to say: ‘It does not work’” (personal communication, April 06, 2017). During SCRUM meetings, Andreas moderates discussions thoughtfully and tries to consider the ideas of all team members: “It is important that I am not interrupting if someone has said something completely stupid. Sometimes, if something initially seems to be silly, it can still be the trigger for something else“ (Andreas, personal communication, April 04, 2017).

Thomas, Stefan, Andreas and Christian reported that they set up workshops outside the offices to encourage experimentation apart from working routine. In the past, Thomas organized Hackathons at CES in which people from various disciplines involved in software development gathered to work on a software project in a sprint-like event. Similarly, Stefan and Andreas have coordinated innovation days at Continental and CEWE on which different disciplines came together to come up with and work on ideas that usually are not said out loud. The best ideas are further developed as prototypes within a quick time frame and then rated at the end of these innovation days. In both cases, the number of participants and ideas during these innovation days have grown and some ideas have become highly appreciated by the top management. At Sennheiser, Christian books a location outside the headquarters every now and then for his team to brainstorm and experiment with different ideas.

To avoid that team members experiment too much, all cases set restrictions via guidelines, regulations and rules. Andreas outlines that the fixed reviews of their SCRUM process on a regular basis give him the possibility to identify if something has gotten out of scope. At Sennheiser, Christian also relies on regular meetings in which team members present their status quo and in which he can adjust work processes, if needed.

Motivating to take risks
Regarding the next behavioral pattern of Rosing et al. (2011), ‘motivating to take risks’, all cases tell their employees to not be discouraged if something does not work as hoped or planned. “Anyone who experiments, takes risks”, summarized Thomas (personal communication, March 30, 2017). Michael sends his team members out to test their prototypes, although not perfect yet, in practice to learn from and work with the feedback they get. Along with that, Christian described that he sees taking risks as part of the work of his subordinates in order to improve. Stefan said that he encourages the employees: “Try it out and you might develop a better product with an even better technical result. And if you fail, you simply have gained a new insight” (personal communication, April 03, 2017). Andreas tries to get the importance of taking risks for learning across to his team:
“In any case, you have to make them feel that it is not bad and that mistakes happen and that there is a positive side to it. The goal is to avoid them in the future to limit further risks.” (Andreas, personal communication, April 04, 2017).

However, employees rarely take too many risks according to the five cases in this sample, also because “bosses try to minimize risks from the beginning” (Thomas, personal communication, March 30, 2017). Stefan added that “we expect our employees to set up risk estimates by themselves” (personal communication, April 03, 2017). Furthermore, all cases explained that they enforce and oversee formal barriers through, for example, confidential agreements at CES and financial releases and restrictions at Continental. At Sennheiser, Christian can only grant money for projects to a certain extent.

Allowing errors
All cases support an ‘error culture’ in their companies. Christian communicates to his team members: “Do not ask for permission but for forgiveness afterwards, if things don’t work out” (personal communication, April 05, 2017). Thomas stressed that he tells his subordinates: “It is important to learn from mistakes and to draw the right conclusions from them” (personal communication, March 30, 2017). Andreas stated that “it is important to build on it and learn from it and not to make the mistake a second time” (personal communication, April 04, 2017). Christian added that when mistakes occur multiple times “then you have to go through it to find out why they did it once and why they did it a second time.” (personal communication, April 05, 2017). Stefan reportedly thinks about a dare-to-try-award at Continental that proves how important it is to make mistakes to achieve success overall. Michael described his approach as follows: “I often hope that they will realize that they made a mistake and learn from it by themselves because I do not have time for too many details during my everyday work” (personal communication, April 06, 2017). Consequently, learning from mistakes is one aspect of the described ‘error culture’.

Similarly, Andreas and Christian reported on their culture of ‘fail faster’ in which experimenting is encouraged in order to get quicker insights of what works and what does not. Andreas explained that there are always many ideas for which the outcome and benefit is highly unsure. Then he encourages to test the idea: “Of course, you have to have an environment in which everyone can try things out. In the best case ‘fail faster’, as fast as possible, to find out if it works or not” (Andreas, personal communication, April 04, 2017). Christian said that small experiments are not extremely harmful to the company, even if they fail: “Then you consider how you can do it differently, for example by simulations. Sometimes you have to push the people a bit: ‘build something, you can do it.’” (personal communication, April 05, 2017). However, Christian is aware of possible risks but he thinks that “if something has not worked, this is a gain in knowledge and we are working here on gaining knowledge and insights, not the fact that a product needs to be finished at all cost” (personal communication, April 05, 2017).
Giving possibilities for independent thinking and acting
The last behavioral pattern of opening leader behavior, ‘giving possibilities for independent thinking and acting’, is actively encouraged by Stefan, Andreas, Christian and Michael. At Continental, Stefan explained that he tries to implement and actively promote the value ‘freedom to act’. Andreas reported that he tries to get his team members out of their everyday thinking: “Then we discuss how we can create such an atmosphere in which we can think unconventionally” (personal communication, April 04, 2017). When it comes to that, Christian and Michael stated that they may allow it if someone requests it. Christian explained: “The possibility is always there, the question is, if they make use of that possibility” (personal communication, April 05, 2017). Nevertheless, Stefan, Christian and Michael explained that they enforce boarders and frames if they see that subordinates drift off the topic. Michael stated it as follows: “If I can still step in, I try say ‘be careful here’ or ask ‘are you still on track?’” (personal communication, April 06, 2017).

The respective illustrating quotes for how the cases demonstrate and restrict opening leader behaviors are displayed in Table 7.

Table 7. Illustrating quotes on demonstrating and restricting opening leader behaviors

<table>
<thead>
<tr>
<th>Behavior 1: encouraging experimentation with different ideas</th>
<th>Demonstrating opening leader behaviors</th>
<th>Restricting opening leader behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas: “What I also did was to set up hackathons. We met at a weekend, very casual with music and BBQ, and coded.”</td>
<td>Thomas: “Our employees need to follow incredibly many technical rules in their everyday work that I in turn enforce.”</td>
<td></td>
</tr>
<tr>
<td>Stefan: “They (subordinates) are so grounded that I rather have to say: Go out, try something new, do something different.”</td>
<td>Stefan: “I monitor it mainly through guidelines and rules. That means they have a lot of technical rules and regulations to follow in the daily work.”</td>
<td></td>
</tr>
<tr>
<td>Andreas: “And I encourage my team members to work on ideas with reasonable effort in order to push a topic forward and to see if something can develop from it. […] Then I let them work for some time and I may have to stop it after half a year or year again.”</td>
<td>Andreas: “Well, we are now working in cycles of two weeks. If I find out in a cycle that a topic is developing in a wrong direction, I can still react after 2 weeks and adjust it.”</td>
<td></td>
</tr>
<tr>
<td>Christian: “I’ve come to the conclusion that it is best to let my team members do what they think is right. Of course, I need to explain them what is the approach and the idea behind it so they understand, what it is for. They need to understand the meaning of the task.”</td>
<td>Christian: “And then there are two possibilities, either I say ‘Yes, good idea, we are proceeding with it’ or ‘let’s do something else’.”</td>
<td></td>
</tr>
<tr>
<td>Michael: “And I said: ‘Sit together, work it out and next time you can present your ideas.’ And then we discuss it with the whole team.”</td>
<td>Michael: “I need to get involved and either say it does not work or we will work it out. Experimenting not necessarily leads to success; you sometimes have to say: ‘It does not work’.”</td>
<td></td>
</tr>
</tbody>
</table>
**Behavior 2: motivating to take risks**

**Thomas:** "Anyone who experiments, takes risks."

**Stefan:** "Here I encourage: 'Try it out and you might develop a better product and even a better technical result. And if you fail, you simply have gained a new insight.'"

**Andreas:** "Most times I try to take the responsibilities for risks. [...] Then I pass it on to the team and say that they can try it out without being afraid if it does not work. But we have to take risks, otherwise we will not develop further."

**Christian:** "We have also set up something like a mission here. We just have to take risks."

**Michael:** "I say: 'Go and try it out, look at how it works and if it does not work then you just take it back and we look at it again.'"

**Thomas:** "Well, bosses try to minimize risks from the beginning. So I try to limit risks by enforcing, for example, formal things, such as the confidentiality agreements of our legal department."

**Stefan:** "We expect our employees to set up risk estimates by themselves. Especially when it comes to material chemistry we are particularly sensitive since it can have effects on the health of people or the environment."

**Andreas:** "I try to address major risks as early as possible in order to prevent greater harm."

**Christian:** "There is sometimes also the risk of disproportionate costs. I of course enforce the frame, in which my team can stay. I know the monetary boundaries where I can freely decide."

**Michael:** "I enforce deadlines."

**Behavior 3: allowing errors**

**Thomas:** "It is important to learn from mistakes and to draw the right conclusions from them. [...] I encourage to try to see the error as a result. If I find the opposite of what I originally assumed, then it is really no mistake."

**Stefan:** "I was thinking about something like a dare-to-try-award, a sort of graveyard of wonderfully failed innovations, to celebrate this a bit."

**Andreas:** "Of course, you have to have an environment in which everyone can try things out. In the best case 'fail faster', as fast as possible, to find out if it works or not. [...] And if it fails the first time it is okay. It is important to build on it and learn from it and not to make the mistake a second time. [...] In any case, you have to make them feel that it is not bad and that mistakes happen and that there is a positive side to it. The goal is to avoid them in the future to limit further risks."

**Christian:** "Do not ask for permission but for forgiveness afterwards, if things don’t work out. [...] And if something has not worked, this is a gain in knowledge and we are working here on gaining knowledge and insights, not the fact that a product needs to be finished at all cost."

**Michael:** "Of course, mistakes happen and that is okay."

**Thomas:** "Trial-and-error has a negative connotation for me since I always try to limit mistakes."

**Stefan:** "It could be that in such cases I talk to the employee in person. [...] We have annual appraisal meetings in which we give a 360-degree feedback."

**Andreas:** "We meet daily for our stand-up meeting in which everyone reports what he or she did yesterday and does today and the people are supposed to say: 'We made a mistake here or do not make progress there'. Hereby, I can quickly detect if we are delayed and how we can solve issues so we can meet our deadlines."

**Christian:** "Then you have to go through it to find out why they did it once and why they did it a second time. Then you consider how you can do it differently, for example by simulations. Sometimes you have to push the people a bit: 'build something, you can do it.' [...] If someone does not tell me early enough if problems come up, well, bad luck. Then I talk to the employee and in such a conversation they can reflect on their actions and what they could do differently next time."

**Michael:** "I often hope that they will realize that they made a mistake and learn from it by themselves because I do not have time for too many details during my everyday work."
4.3.2 Demonstrating and restricting closing leader behaviors

It is outlined in the following sections how closing leader behaviors are demonstrated and restricted. Since many issues raised in this part were useful for the third research question (see chapter 4.4), fewer aspects and illustrating quotes are presented in the following. It comes also into play that, as stated earlier, the cases were more reluctant when confirming the use of closing leader behaviors.

Monitoring and controlling goal attainment

All cases agreed that enforcing documentations, plans and structures is a crucial part of their daily work to ensure that their subordinates follow the set goals. Christian explained that he chooses a rather indirect approach: “There are two possibilities when employees approach me with ideas. I either say ‘that could work, try it out’ or ‘no, this is far off topic, maybe we can try a different way’” (personal communication, April 05, 2017). By doing so, Christian ensures that the work of his team goes in a right direction and evaluates together with the team, how ideas can be improved. However, Stefan reportedly made the experience that employees lost sight of the respective output due to him enforcing too much plan-orientation. Michael also mentioned possible problems when he enforces standardized processes based on the project goals too strongly. He stated: “I can not impart too many bureaucratic principles on my team, it would demotivate them” (personal communication, April 06, 2017). Therefore, the cases outlined that they rather enforce their teams to question goals.

Controlling adherence to rules

Thomas, Stefan, Andreas and Christian reported that they apply multiple rules. Thomas enforces and emphasizes the regulations, company agreements and budgets he as a leader has to follow as well. Furthermore, he explained that he monitors the
progress of the projects by a traffic light system which indicates the status of the respective projects in red, amber and green. At CEWE, Andreas said: “I use SCRUM processes as a framework to structure the daily work of my team” (personal communication, April 04, 2017). He further explained that the SCRUM process allows him to oversee if his team sticks to given regulations. Christian outlined that the use of systems, for instance SAP software or project management tools, which he applies when guiding his subordinates through processes, also determine the compliance with the company’s rules.

However, all cases agreed that violating the rules is welcomed by them, but only if it is beneficial. Christian explained: “If someone wants to do things differently than we have discussed, we need to talk” (personal communication, April 05, 2017). Thomas explained that he rather grants a ‘leap of faith’ to his team members and said that “rules can also provide freedom to act freely in a certain frame” (personal communication, March 30, 2017). Stefan admitted that rules might change and thus need to be questioned and adjusted in order to still be appropriate. Andreas and Michael stressed that they do not act very controlling since the employees often follow the few rules anyways and they mainly step in when things get out of hand.

Sanctioning errors and sticking to plans
Reportedly, the closing leader behavior ‘sanctioning errors’ is not actively demonstrated by the cases. Christian explained that sanctioning his team members if they did something wrong could be demotivating in the future. Michael, Thomas and Stefan agreed by stating that they would not sanction errors in their teams. Lastly, ‘sticking to plans’ is important to both Christian and Michael. Christian outlined that he tracks project progresses and cost plans and thus makes sure that his team members work according to certain guidelines. Michael said that he checks if plans comply with the progress at least every six weeks when a steering committee comes together at KRONE.

The respective illustrating quotes for how the cases demonstrate and restrict closing leader behaviors are displayed in Table 8. Other than Table 7, this table is not separated by each behavior because the quotes are not as easy to separate and some of them are used to illustrate the findings of the upcoming chapters.

Table 8. Illustrating quotes on demonstrating and restricting closing leader behaviors

<table>
<thead>
<tr>
<th>Demonstrating closing leader behaviors</th>
<th>Restricting closing leader behaviors</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas: “This is restricted by the development process. I set clear rules in the project plans. [...] in the later development stages I installed a traffic light system which reports the project status by green, amber and red marks. If a project is planned, there is a huge number of Excel forms to be filled in that are connected to SAP. It gives an overview who has to report to whom and the planned and actual costs.”</td>
<td>Thomas: “That is why it is important to work with a ‘leap of faith’ in these areas. And I need to encourage to be open and transparent about progresses and mistakes. [...] Rules can also provide freedom to act freely in a certain frame. Rules are not necessarily restricting.”</td>
</tr>
</tbody>
</table>
4.4 Alignment of opening and closing leader behaviors

The presentation of the previous findings slightly indicated already, how the cases align opening and closing leader behaviors. Together with the answers to part D of the interview guide, the findings build the foundation for answering the third sub-question. This chapter is structured according to the two main patterns the authors of this thesis identified: sequential and simultaneous alignment of opening and closing leader behaviors.

4.4.1 Sequential alignment

All cases described situations in which they demonstrate opening and closing leader behaviors mainly one at a time depending on different circumstances that will be outlined in the following.

Depending on the time of the business year and project phases

Andreas, Christian, and Stefan reported that they demonstrate each set of behaviors predominantly or switch it depending on the time of the business year and project phases, different project phases or between different months. Andreas emphasized that he grants creative phases to his team during certain times of the year, predominantly when the sales strongly decrease again after peaking during the Christmas time and the business is less busy and intense. During this time, he explicitly encourages experimentation and his team comes up with many new ideas. When Christmas time is approaching, however, he stated:

**Stefan:** “Our employees need to follow incredibly many technical rules in their everyday work that I in turn enforce. Our industry is very sensitive when it comes to, for example, patent infringements. I try to enforce the rules very strictly here.”

**Andreas:** “I use SCRUM processes as a framework to structure the daily work of my team.”

**Christian:** “The results of research projects are highly uncertain. But the budget and time frame is fixed and I can enforce that. Therefore, I can limit the critical risks of time and money there. Apart from that, we have the rule that projects need to be tracked and reported in our initiative management system. […] Some years ago, I saw that my team members were not motivated to fill in these reports. Then I included filling in the reports as a condition for the bonuses they get annually. […] There are two possibilities when employees approach me with ideas. I either say ‘that could work, try it out’ or ‘no, this is far off topic, maybe we can try a different way’”

**Michael:** “If we do something, certain things should comply with the way we determined it.”

**Stefan:** “It can happen that my team members are too much focussed with planning so they lose sight of the output […] That also depends on my scope for decision-making and budget to what extent I can grant freedom to my team members.”

**Andreas:** “Of course, certain regulations and cycle have to be followed, but most often they come naturally.”

**Christian:** “If someone wants to do things differently than, we have discussed, we need to talk.”

**Michael:** “I can not impart too many bureaucratic principles on my team, it would demotivate them.”
“I enforce a really structured way of doing things, emphasize to reach certain targets, and to deliver software at certain deadlines. At this point I have to tell them: ‘You cannot continue to experiment, get things done, we have to be finished by then!’” (Andreas, personal communication, April 04, 2017)

Similarly, Christian stated that there are different phases to consider at Sennheiser. He explained that during some months he motivates to try new things while during other months he wants tasks to be efficiently delivered and worked on in a structured way. Stefan however emphasized that during the early phases of an innovation project he sometimes encourages approaching things differently:

“I even tell them that they are allowed to fail and that this is good. Here, we try to follow the principle ‘failing fast and cheap, not expensive’. We want these failures in the beginning and not in the end of the project. But to keep the balance between trying something in the beginning and to do it at the end is difficult.” (Stefan, personal communication, April 03, 2017).

In this sense, he tends to distinguish the phases before and after the so-called technology steering meeting in which he and other managers decide whether a formal project is started or not. “It is the connecting link between allowing to do things rather freely and starting the formal projects which requires me to more strictly monitor costs and time,” Stefan (personal communication, April 03, 2017) stated.

**Approaching milestones and deadlines**

Reaching milestones and approaching deadlines are other causes which reportedly make Stefan, Christian and Andreas switch their leader behaviors from opening to closing. Stefan explained that innovation projects at Continental have milestone meetings every three to four months where everything is checked and monitored. During these meetings, he takes a look at the progress and results his team members have achieved:

“I may have to intervene in case of deviations or if things totally crash. Together we think about how to get back on track. My role as an innovation manager is to oversee this progress, to support the teams, and eventually readjust the goal attainment.” (Stefan, personal communication, April 03, 2017)

Christian similarly explained: “When reaching a milestone, I check whether the set targets have been reached or not and if we achieved what we wanted to achieve. Consequently, I may have to take action.” (personal communication, April 05, 2017). Regarding approaching deadlines, Michael exemplified his behaviors as follows: “Sometimes, I have to tell the team that we don’t need the ultimate high-tech solution at this point: ‘Solve the easy issues first and then the difficult ones. We are not on track as we have only reached 10 percent, how do we achieve the other 90 percent in time? Let’s get going!’” (Michael, personal communication, April 06, 2017).
Target out of sight

Another referred reason for Michael and Thomas to switch from opening to closing leader behaviors is when their subordinates lose sight of their objectives. Michael claimed that this doesn’t happen very often but just recently he faced such a situation:

“Sometimes I just need to step in. This can happen if someone loses the overall target out of sight and, for example, gets lost in details because he thinks by far too unconventionally, even about just small things. Then he is totally lost and not target-oriented at all anymore. At that point, I tell him to stop, and remind him about the goals and what we want to achieve.” (Michael, personal communication, April 06, 2017)

Thomas reportedly faced similar incidents. When he realizes that someone was too creative and does not move any closer towards the target, he intervenes, especially when things get out of hand in terms of creativity among team members. This is one purpose of their reviews as too much creativity sometimes hinders and does not support or enable the achievement of targets. Referring to making progress, Michael recalled a situation when the team found ten different solutions which could have possibly worked to solve a problem with an engine part: “At this point, we had to make progress, so I decreased the options and told them to choose and work with two of them.” (Michael, personal communication, April 06, 2017).

The respective illustrating quotes on sequential alignment are listed below in Table 9.

<table>
<thead>
<tr>
<th>Sequential Alignment</th>
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<tbody>
<tr>
<td>Andreas: “The level of stress is not the same throughout the year. On the one hand, I grant creative phases depending on the time of the year. [During these phases], I highly encourage experimentation and my team comes up with many new ideas. On the other hand, there I enforce a really structured way of doing things, emphasize to reach certain targets, and to deliver software at certain deadlines. At this point I have to tell my team: ‘You cannot continue to experiment, get things done, the Christmas time is approaching and we have to be finished by then!’ [...] If we decide to go for an idea, there is not much room and time for creativity in the next months. However, there are phases like after Christmas, in which we have a lot of time to do so.”</td>
</tr>
<tr>
<td>Christian: “There are such phases: During some months, I motivate to try totally new things and in the next months I want them to get things done efficiently and work on it in a structured way.”</td>
</tr>
<tr>
<td>Stefan: “During some phases of innovation and technology projects I literally encourage to try new things. I even tell them that they are allowed to fail and that this is good. Here, we try to follow the principle ‘failing fast and cheap, not expensive’. We want these failures in the beginning and not in the end of the project. But to keep the balance between trying something in the beginning and to do it at the end is difficult. […] We work in the so-called technology steering where I and other managers decide whether a project will be started or not. It is the connecting link between allowing to do things freely and starting the formal projects which requires me to more strictly monitor costs and time.”</td>
</tr>
</tbody>
</table>
Despite the sequential alignment of the contrary behavioral patterns of opening and closing leader behaviors, all the cases indicated that they would make use of them at the same time. Thomas said: “I always use them, because each of these behaviors on its own would result in chaos” (personal communication, March 30, 2017). Andreas agreed that “both occur at the same time, for sure” (personal communication April 04, 2017). Moreover, Christian mentioned that they must have the ability to unite both behavioral traits even though there is a tension between them.

Within the findings for simultaneous alignment of the behaviors, the authors of this thesis came across two patterns. The cases either aligned the behaviors simultaneously in order to reduce explorative behaviors or to reduce exploitative behaviors among their subordinates. Therefore, the findings are displayed according to those patterns.

**Reducing subordinates’ explorative behavior**

When the cases intend to limit or even reduce the explorative behavior demonstrated by their team members, they reported that they increasingly demonstrate closing leader behaviors while keeping elements from opening leader behaviors. Stefan explained it as follows: “I put crashing barriers in place through which the degree of freedom is limited” (personal communication, April 03, 2017). Several commonalities
across the cases of how to combine opening and closing leader behaviors have been found and are elaborated in the following.

**Processes**
Stefan, Andreas and Michael outlined that they apply and enforce processes, which are already in place in the company, for example when they intend to make subordinates stay within a given scope and frame. As Michael explained “making them aware of the process, which serves as a frame in which people can be creative, helps to bring structure and orientation into the fog (referring to the uncertainty and lack of structure in innovation)” (personal communication, April 06, 2017). Stefan and Andreas similarly argued that such frames enable subordinates to be creative without losing orientation and the target out of sight.

**Structures and plans**
As another means of applying closing leader behaviors, Thomas, Stefan and Christian emphasize the obedience of given structures and plans. They mentioned that plans and structures restrict the degree of explorative behaviors among their subordinates while still encouraging them to stay creative and experiment to certain extents. Christian argued that it is possible and beneficial to enforce structure and to flexibly encourage creativity at the same time. He stated:

> “Keeping the balance between flexibility and structure, helps to apply flexibility and freedom in a goal-driven way. This is crucial here. Allowing flexibility is good but constrains and limits have to be enforced because without any structure everybody thinks too freely which results in nothing useful.” (Christian, personal communication, April 05, 2017)

**Systems and regulations**
Furthermore, Thomas and Stefan outlined the importance to remind their subordinates of and enforce the compliance with existing systems and regulations when limiting their team members’ creativity and freedom.

> “Generally speaking, creativity is relatively little restrained here. But the boundaries in the system, such as controlling, audits and certification requirements, automatically limit the freedom of the creative people and establish structured approaches. Therefore, it often doesn’t even require us [leaders] to take explicit actions and I do, if needed.” (Stefan, personal communication, April 03, 2017)

In addition, Thomas explained that he pushes his subordinates to adhere to certain guiding systems of the projects, such as SAP, which includes filling in forms on a regularly basis. He further said that these limits, however, do not completely restrain the room for being creative.
**Time frames**

Another reported way through which Andreas and Christian constrain exploration among subordinates is by ensuring that they comply with time frames. “I tend to leave room for and encourage creativity but at the same time remind them of deadlines when things have to be delivered,” explained Andreas (personal communication, April 04, 2017). Similarly, Christian outlined that he distinguishes between the frame, such as time and deadlines, and the objectives. According to him, the time frame provides a structure in which the objectives are delivered through encouraging creativity and experimentation. Therefore, he reportedly fosters creative behavior while setting deadlines and time frames and monitoring the compliance.

**Continuous feedback**

Andreas, Christian and Michael also referred to continuously monitoring the progress and giving feedback to their subordinates to direct them to work in a more target-orientated way. This occurs at the same time as they encourage their team members to experiment with different ideas and giving room for independent thinking and acting. “I observe from above whether things go into the right direction or not,” Christian (personal communication, April 05, 2017) pointed out. He prefers to let his team members do things rather freely without telling them what to do. Throughout the process, he asks questions regarding the purposes, objectives, and motives of the actions taken by his subordinates in one to one meetings as part of an indirect monitoring of the progress. According to Christian, this helps his team members to keep the frames in mind and as a desired result lead them towards the intended direction. Michael follows a similar approach in his product management team at KRONE. While granting his subordinates freedom to act, he consistently reminds them of the target and evaluates if they are still on the right track to reach the objective: “Then I still remind the employees of the goals by questioning if taking such an approach is actually leading to the target or if we are totally drifting off” (Michael, personal communication, April 06, 2017).

In addition, Michael mentioned that “new ideas are always appreciated but they have to be realistic. Just mentioning an idea without elaborating on further details does not work” (personal communication, April 06, 2017). Therefore he wants his team members to quickly develop ideas further, for example, by thinking about the ideas’ (future) uses and possible characteristics. Demanding this and simultaneously granting autonomy and freedom prevents the employees from drifting off the target, Michael stated. Comparably, Andreas mentioned that he also directly asks for details, such as functionality, use, and potential, when he stimulates his subordinates to generate new ideas. He does so because he believes that “it should not be the case that employees continuously work on something for several weeks, without having any serious target in mind and without being realistically able to achieve it” (Andreas personal communication, April 04, 2017). According to him, taking such precautions also helps to prevent resources from being wasted in case the chances of success are small. Therefore, Andreas also constantly monitors the progress and reviews interim results.
of the team throughout the process at CEWE. By doing so, he keeps the overview and can continuously give feedback to prevent that results are too far out of scope or going in the wrong direction. To do it on a continuous basis and not just during scheduled review sessions is important to avoid confusion among his team members when they are confronted with corrective actions all of the sudden, he highlighted.

As an interim conclusion, the cases reportedly limit or reduce the variance in their subordinates' behaviors through enforcing or applying certain frames while still encouraging, for example, experimentation and creativity through opening leader behaviors. These coexisting frames can be given processes, structures, plans, existing systems, time frames, and continuous monitoring and feedback. The respective illustrating quotes on simultaneous alignment to reduce explorative behaviors of subordinates are listed below in Table 10.

Table 10. Illustrating quotes on simultaneous alignment in order to reduce explorative behaviors of subordinates

<table>
<thead>
<tr>
<th>Processes</th>
<th>Simultaneous Alignment to reduce explorative behavior of subordinates</th>
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<tbody>
<tr>
<td>Stefan:</td>
<td>“Our department is already well-structured and there are processes like the Stage-Gate Process, which, for example, requires that certain criteria are fulfilled or implemented at the gates. What I can do within this process: I can use it as a frame to make things more narrow and concrete or to provide freedom so they can be creative and experiment within the process. Both works.”</td>
</tr>
<tr>
<td>Andreas:</td>
<td>“Probably both, creativity and efficiency, can be enabled through the frames of the SCRUM process. They allow me to provide both. […] Nevertheless, providing too much freedom may cause the team to lose orientation and they try to do too much without coming closer to the target. Then I try to counteract by suggesting my team members to narrow down the problem into smaller parts and only focus on certain aspects.”</td>
</tr>
<tr>
<td>Michael:</td>
<td>“Making them aware of the process, which serves as a frame in which people can be creative, helps to bring structure and orientation into the fog. That’s how we do it here in our department.”</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Structures and plans</th>
<th>Simultaneous Alignment to reduce explorative behavior of subordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thomas:</td>
<td>“If we work on something creative, such as a research project, we have to be creative but also use plans to document our process and to communicate what we intend to eventually reach at the end. We can’t be just creative and literally play around with our ideas, this we cannot do. I have to make and follow plans because if someone is too creative, he won’t reach the defined target.”</td>
</tr>
<tr>
<td>Stefan:</td>
<td>“I motivate this one (pointing at opening leader behaviors) while I demand the other (pointing at closing leader behaviors). Here, the structures of an established company like Continental help. It is very structured and we strictly stick to the structures and procedures.”</td>
</tr>
<tr>
<td>Christian:</td>
<td>“Keeping the balance between flexibility and structure, helps to apply flexibility and freedom in a goal-driven way. This is crucial here. Allowing flexibility is good but constrains and limits have to be enforced because without any structure everybody thinks too freely which results in nothing useful.”</td>
</tr>
</tbody>
</table>
| Systems and regulations | **Thomas:** “We have some systems here which are used to, for example, document the progress like SAP and CAW. These systems are made to be used and serve as guiding systems. Especially because of the technical controlling we have a lot of paperwork to do and I have to make sure that such forms are signed by everyone, which are used to document and to give an insight into the projects. Enforcing such rules may limit but doesn’t kill our creativity and freedom.”

**Stefan:** “Generally speaking, creativity is relatively little restrained here. But the boundaries in the system, such as controlling, audits and certification requirements, automatically limit the freedom of the creative people and establish structured approaches. Therefore, it often doesn’t even require us [leaders] to take explicit actions but I do, if needed.” |
|---|
| Time frames | **Andreas:** “I tend to leave room for and encourage creativity but at the same time remind them of deadlines when things have to be delivered. […] If something looks really promising, then I have to grant freedom to generate new ideas. Therefore, I sometimes encourage to experiment during the days when time is very precious. I can do that but I have to watch out: If they get lost due to all the experimentation, and I promised something to be delivered for the Photokina fair, I don’t want to be responsible for that. If I acknowledge that, I supervise the team more closely.”

**Christian:** “The frame is not the content and scope but the time frame and time constraints. I need both: These time frames provide some kind of a structure which helps to deliver the objectives rather freely. To reach the objectives I often need to encourage creativity and new ideas. They are rather free regarding the content and how they reach the objectives. Nevertheless, I set the boundaries through time and tend to ask: Did we reach the objective, is it useful, and did we make it in time?” |
| Continuous feedback | **Andreas:** “The process of coming up with new ideas needs to be limited at some point. Actually, I keep asking them for the functionality and potential of idea and how we are going to bring it to the market, what is a potential price, and whether there is a demand for it or not. Hereby, I demand more details concerning the idea because it should not be the case that employees continuously work on something for several weeks without having any serious target in mind and without being realistically able to achieve it. […] Of course, at first everyone is very convinced of his idea and initially thinks it will save the world. But I allow only what is possible and what makes sense. There is no point to waste money when the chances of success are too small. […] I consistently take a look at the progress of interim results throughout the SCRUM process. Therefore, during the scheduled SCRUM reviews, when the results are presented, I tend to stay quiet and don’t say a lot because I go along with the team during the whole process. If I spontaneously intervened in the review and said that everything what you guys did is nonsense, the team would react and say: ‘Wait what? You were with us the whole time and why do you tell us now and why haven’t you told us before?’ This wouldn’t work at all and therefore I continuously monitor, support, and intervene already during the process.”

**Christian:** “I observe from above whether things go into the right direction or not. I don’t tell them exactly what to do most of the time but I rather ask them continuously why they are doing things and why they are doing them in such ways. I prefer to observe what they come up with. I’m am always interested in their motives and reasons for doing things and for the way they are doing it. It is always the most important thing to understand why someone is doing something and to dig deeper, if needed. During such conversation, one often thinks and reflects whether he (the employee) is on the right track and what could be done differently. I don’t tell him directly where to go but I guide him and it helps him also to keep certain boundaries in mind.”

**Michael:** “When granting freedom to them, then I still remind the employees of the goals by questioning if taking such an approach is actually leading to the target or if we are totally drifting off”? […] New ideas are always appreciated but they have to be realistic. Just mentioning an idea without elaborating on further details does not work. We need to know certain things such as customer value, USP, and product characteristics, and these I do demand. Otherwise, it could happen that we drift off target by coming up with something which is not useful at all. A good idea needs to be made concrete.” |

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Reducing subordinates’ exploitative behavior
There are also situations in which Stefan, Andreas and Christian want to reduce their team members’ exploitative behaviors. They explained that they generally do so by keeping structures, processes, boundaries, and frames in place but at the same time encouraging to think and act freely within these frames as well as stimulating experimentation and proactive behavior among their subordinates. Andreas described it as follows:

„We have milestones and crashing barriers here. Of course, the wider I can align these crashing barriers apart from each other the better. Within these frames I motivate my employees to be creative, act independently, and to share their ideas.” (personal communication, April 04, 2017)

Encourage to act and think freely
Stefan stressed that the “given structures in a long-established company like Continental, sometimes require me to motivate the team to think more freely and to take risks” (Stefan, personal communication, April 03, 2017). Andreas brought up a similar point and states that “although there are given processes and structures, which I generally use in a very disciplined way, I try to provide a lot of freedom to work creatively to the extent I can” (personal communication, April 04, 2017). As an example, he referred to communication tools, such as SCRUM boards, containing user stories and the strict rules which he enforces to keep track of the user-stories to make sure that tasks are accomplished. Andreas highlighted that the SCRUM process is very structured in general, even though many people may think that everything is managed ad-hoc and spontaneously when using agile methods. “Everything is structured and follows fixed procedures, which I lead my team in accordance to and which we can orientate ourselves toward. However, within this frame we can be very agile and I encourage to act freely,” he said (personal communication, April 04, 2017).

Giving flexibility
Regarding the need for structure for the sake of orientation, Andreas outlined: “We need a certain structure and while acting and leading within the frame of these structures and processes, I try to provide them with as much freedom as possible” (personal communication, April 04, 2017). He does so by allowing his colleagues individually to determine how they want to achieve the targets which have been set. However, Andreas also explained that if he does not track the process and time frame, his team would not get much done due to the lack of orientation.

In Christian’s opinion, however, it is sometimes not enough to just give subordinates the opportunity to think freely as he highlights the importance of flexibility in some cases. He claimed:
“I may have to create freedom by changing or introducing rules and boundary conditions in a way that will make it happen. Regarding independent thinking and acting, I always relate it to staying flexible. Flexibility is good but they (his subordinates) should still stay within certain boundary conditions and don’t cross certain lines. If the boundary conditions are set, wait how the process evolves, then it will work.” (Christian, personal communication, April 05, 2017)

**Encourage experimenting**

Furthermore, motivating to do things differently and more proactively as well as encouraging experimenting are other means reported by Stefan, Andreas and Christian while sticking to structures and plans. After having explained that the well-established structures at Continental are quite complex and can automatically hinder freedom to act, Stefan highlighted his tasks as innovation manager by saying: “sometimes I have to say: ‘Let’s go folks, be courageous and just do it, try something new, do it differently!’” (personal communication, April 03, 2017). According to him, not only given structures can be a problem in this sense but also target ranges, particularly if these are too tight or restricting. “This is especially the case in the early stages of an innovation”, he explained and then “I encourage to look also to the left and to the right and maybe here and there. However, I keep reminding them of the overall goal we want to achieve” (Stefan, personal communication, April 03, 2017).

Stimulating proactive behavior and experimentation was also done by Stefan, Andreas and Christian when urgent deadlines were approaching. Andreas brought up the example that he encouraged to experiment:

“Even though time was very scarce and precious at that point. I continuously reminded them of the deadline but at the same time I just told them to continue because what they were doing looked really promising and I was sure that we will make it [on time].” (Andreas, personal communication, April 04, 2017)

Stefan faced similar situations in the past during meetings of innovation project steering committees. He explained that “while trying to keep the tight deadlines in everyone’s minds, I sometimes stimulated to try things differently and to approach them more proactively: ‘Hopefully you will deliver something like that until the next meeting!’” (Stefan, personal communication, April 03, 2017). In line with that, Christian referred to situations he faced in the past when projects stopped to make progress. In this vein, he mentioned: “When things don’t move forward as planned and they have tried things we already know about and used successfully in similar situations, I let them sometimes do whatever they feel like but, of course, in consultation with me” (Christian, personal communication, April 05, 2017).

Overall, Stefan, Andreas and Christian reportedly grant freedom and demonstrate other opening leader behaviors to enhance their subordinates' explorative behavior or decrease their exploitative behavior while keeping given boundaries, such as
structures, and processes, in place. However, Christian reported that sometimes certain rules and boundary conditions need to be flexibly adjusted. The respective illustrating quotes on simultaneous alignment to reduce exploitative behaviors of subordinates are listed below in Table 11.

Table 11. Illustrating quotes on simultaneous alignment in order to reduce exploitative behaviors of subordinates

<table>
<thead>
<tr>
<th>Simultaneous Alignment to reduce exploitative behavior of subordinates</th>
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</thead>
<tbody>
<tr>
<td><strong>Encourage to act and think freely</strong></td>
</tr>
<tr>
<td>Stefan: “The given structures in a long-established company like Continental, sometimes require me to motivate the team to think more freely and to take risks.”</td>
</tr>
<tr>
<td>Andreas: “I have no good experiences regarding entirely stopping to guide and tracking the process and the time frame because the team doesn’t get much done at all then due to the lack of structure. My experience tells me that we need a certain structure and while acting and leading within the frame of these structures and processes, I try to provide them with as much freedom as possible. Therefore, my colleagues can often define themselves how they want to achieve the targets which have been set and that is indeed a lot of freedom. […] Although there are given processes and structures, which I generally use in a very disciplined way, I try to provide a lot of freedom to work creatively to the extent I can. There are, for example, communication tools, such as SCRUM boards, which contain notes and there are strict rules I enforce to keep track of the user-stories to make sure that the tasks are fully accomplished. […] The process is very structured, even though many people think that everything is managed ad-hoc and spontaneously when using agile methods. Everything is structured and follows fixed procedures, which I lead my team in accordance to and which we can orientate ourselves toward. However, within this frame we can be very agile and I encourage to act freely.”</td>
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| **Giving flexibility**                            |
| Christian: “Spontaneously, I would say that giving them the opportunity to think freely is not enough. I may have to create freedom by changing or introducing rules and boundary conditions in a way that will make it happen. Regarding independent thinking and acting, I always connote it with staying flexible. Flexibility is good but they (his subordinates) should still stay within certain boundary conditions and don’t cross certain lines. If the boundary conditions are set, wait how the process evolves, then it will work.” |

| **Encourage experimenting**                      |
| Stefan: “Our structures are different from a start-up. The structures have been established for a long time and are quite complex and extensive. This often hinders freedom to act automatically and therefore we, or rather me in my role, sometimes I have to say: ‘Let’s go folks, be courageous and just do it, try something new, do it differently!’ […] This is especially the case in the early stages of an innovation, if the target range initially seems to be too tight and restricted, I encourage to look also to the left and to the right and maybe here and there. However, I keep reminding them of the overall goal we want to achieve. […] During a meeting of a steering committee, while trying to keep the tight deadlines in everyone’s minds, I sometimes stimulate to try things differently and to approach them more proactively: ‘Hopefully, you will deliver something like that until the next meeting!’” |
| Andreas: “Even when the deadline, which we wanted to comply with, was approaching, I encouraged to experiment, even though time was very scarce and precious at that point! I continuously reminded them of the deadline but at the same time I just told them to continue because what they were doing looked really promising and I was sure that we will make it [on time].” |
| Christian: “When things don’t move forward as planned and they have tried things we already know about and used successfully in similar situations, I let them sometimes do whatever they feel like but, of course, in consultation with me.” |
5 Analysis

In this chapter, the empirical findings presented in the prior chapter are analyzed by referring to the literature on the three main disciplines of ambidextrous leadership in innovation: ambidexterity, leadership and innovation. This chapter is structured according to the sub-questions and concludes with answering the research question of this thesis. At first, the usage and occurrence of opening and closing leader behaviors in the innovation process is analyzed in chapter 5.1. Chapter 5.2 scrutinizes the findings of how the cases demonstrate and restrict the two leader behaviors and relates them to theoretical aspects. Thereafter, in chapter 5.3, the empirical findings for both sequential and simultaneous alignment of the leader behaviors are analyzed by relating it back to the content of the theoretical framework in chapter 2. Finally, the findings are summarized and incorporated into a model that provides answers to the main research question in chapter 5.4 by taking into consideration the findings of the sub-questions.

5.1 Usage and occurrence of opening and closing leader behaviors in the innovation process

The empirical findings presented in chapter 4.2 reveal insights that explain the usage and occurrence of the two leader behaviors throughout the innovation process. They will be connected and further developed with the help of related theoretical concepts in the following sections.

The empirical findings show that both opening and closing leader behaviors are highly relevant to the cases and are often demonstrated in the everyday life of the leaders. However, while all cases instantly confirmed that they would use opening leader behaviors regularly, closing leader behaviors are reportedly less frequently used, mainly due to the restrictions and boundaries which structures and processes already provide. Consequently, the innovation leaders demonstrate opening leader behaviors that lead to explorative behavior of their team members more often than closing leader behaviors, for which they often enforce existing company frames to limit explorative behaviors among their team members. Now that the relevance of opening and closing leader behaviors has been outlined, the findings regarding the occurrence of the two leader behaviors in the innovation process are analyzed in order to answer the first sub-question.

Amabile (1988) and West (2002b), claim that creativity primarily occurs in the early stages of an innovation. Similarly, Cheng and Van de Ven (1996) indicate that the generation of ideas and creativity needs exploration. This is supported by the findings of this study, as the cases make predominantly use of opening leader behaviors in the early stages of the innovation process. Hereby, they encourage their subordinates to
be creative, to come up with new ideas, act creatively, and generally foster explorative behavior among them.

Other similarities can be found in De Jong and Den Hartog’s (2007) study of leader behaviors influencing employee’s innovative behavior during the idea generation and, as they call it, application - in this thesis referred to as idea implementation. As one exemplified leadership behavior, these authors brought up intellectual stimulation which means increasing the “employees’ awareness of problems and stimulating them to rethink old ways of doing” (De Jong & Den Hartog, 2007, p. 50). According to De Jong and Den Hartog (2007), such behavior, which can be related to exploration activities and opening leader behaviors respectively, stimulates the generation of ideas and therefore occurs rather in the beginning of the innovation process. Likewise, in this study, opening leader behaviors were primarily demonstrated during the idea generation, which is supported by Deschamps (2008). According to this author, in the front-end of innovation, which refers to idea generation, leaders need to motivate their subordinates to be creative and to create an open atmosphere, which is strongly related to opening leader behaviors as defined by Rosing et al. (2011).

Vice versa, characteristics of the idea implementation can be closer linked to March’s (1991) concept of exploitation than to exploration (e.g. Cheng & Van de Ven, 1996; Rosing et al., 2011). During the implementation of ideas, the focus is often directed towards being efficient and complying with targets in terms of costs, timeliness, and plans (Turner, 2008). Therefore, in the later stages of the innovation process, leaders need to monitor the progress much closer than before by predominantly demonstrating closing leader behaviors as outlined by Rosing et al. (2011).

The fact that closing leader behaviors mainly occur in the later stages of the innovation process is similar to Cheng and Van de Ven (1996) who found that periodic and rather orderly patterns prevalently appear during the ending period of an innovation development. A similar notion can be found in Deschamps (2008), who highlights the importance of planning and urges leaders to make sure that arising problems are solved efficiently during the idea implementation, which he refers to as the back-end of an innovation. Instead of giving room for creativity, it is therefore crucial here to ensure that the staff is reliable and committed to fulfil the tasks in time (Deschamps, 2008). Accordingly, the empirical findings of the case study support these theoretical notions. It has been found that closing leader behaviors are applied especially during the later phases of the innovation process. Furthermore, the cases seem to emphasize closing leader behaviors in order to monitor goal attainment, efficiency, and other factors when an innovation project reaches its later stages.

However, the cases agreed upon the fact that both leader behaviors are relevant throughout the whole process. More precisely, opening leader behaviors reportedly also occur during the idea implementation and closing leader behaviors in the idea generation. This finding can be related to the non-linearity of the chaotic innovation
process (e.g. Van de Ven, 1986; Bledow et al., 2009) which implies that unforeseen events can occur throughout the process. Situations like sudden issues in the procurement during the later stages of an innovation may force leaders to react fast by, for instance, demonstrating opening leader behaviors to generate ideas in order to find a solution for the issue (Thomas, personal communication, March 30, 2017). Such situations are, for example, supported by Mumford et al. (2002) and Bledow et al. (2009) who indicate that creativity, possibly enhanced by Rosing et al.’s (2011) opening leader behaviors, is required throughout the whole innovation process due to unforeseen problems, challenges, or arising disturbances. Another plausible cause for deviations from the patterns found above may be, as Bledow et al. (2009) argues, that exploration and exploitation, and supposedly opening and closing leader behaviors, are mutually interdependent and interwoven.

![Figure 4](image)

*Figure 4. Illustration of findings for the occurrence of leader behaviors throughout the innovation process*

To sum it up, the theoretical assumptions have been verified by the empirical findings of the multiple case study and are summarized in Figure 4. The empirical findings gathered through the first sub-question agree upon Rosing et al.’s (2011) claim that “creativity also requires exploitation, whereas idea implementation also calls for exploration” (p. 965) as opening and closing leader behaviors are accordingly demonstrated by the cases in both phases of the innovation process. However, with respect to both empirical and theoretical findings, opening leader behaviors occur predominantly in the early stages of the innovation whereas innovation leaders demonstrate closing behaviors prevalently in the later stages of the innovation process. Even though this distribution of the leader behaviors provides answers to the first sub-question, it still remains unanswered how innovation leaders align opening and closing behaviors. Nevertheless, these findings ultimately contribute to the part of the research question which is concerned with the occurrence of the leader behaviors throughout the innovation process.
5.2 Opening and closing leader behaviors

Figure 5 displays a summary of the findings which reveals several commonalities among the cases. It thus helps to answer the second sub-question, how leaders demonstrate and restrict both opening and closing leader behaviors. In this part of the study, it was tested how the two leader behaviors, which Rosing et al. (2011) had initiated and follow-up studies such as Zacher et al. (2014) applied, are actually used in practice. Since this has not been studied before, the theoretical connections are drawn to related, yet different fields.

One finding is that restricting opening leader behaviors is similar to demonstrating closing leader behaviors and vice versa. This is illustrated in Figure 5 in which demonstrating opening and restricting closing leader behaviors are highlighted in the same color. Respectively, demonstrating closing and restricting opening leader behaviors are marked in the same color as well. This finding goes in line with Rosing et al. (2011), who define opening and closing leader behaviors as opposing forces to foster either explorative or exploitative behavior in subordinates. They further propose that “closing leader behavior is a moderator of the relationship between opening leader behavior and innovation.” (Rosing et al., 2011, p. 987) and vice versa. Consequently,
this interdependence of the two leader behaviors is confirmed by this case study, however, without taking the effect on innovation into account.

In the following, patterns found in the empirics are analyzed by drawing connections to concepts in the existing literature. However, most of the findings which directly relate to the alignment of both leader behaviors are presented in chapter 5.3 hereafter as this section is dedicated to answering the second sub-question of this thesis.

**Demonstrating and restricting opening leader behaviors**

The findings provide an in-depth understanding of how four of the seven behavioral traits of opening leader behaviors (Rosing et al., 2011) are displayed by the cases in practice. For example, four cases stated that they try to establish an ‘error culture’ with tolerance for mistakes and two reported a culture of ‘fail faster’. A similar thought can be found in Hunter et al. (2011) who claim that “the paradox that emerges for leaders is simply succeeding in an environment comfortable with - or even celebratory of - failure” (p. 62). Other authors, such as Sitkin (1996) and Van Dyck, Frese, Baer, and Sonnentag (2005), have empirically verified that allowing errors enhances learning, innovation as well as resilience. Accordingly, Thomas, Andreas and Michael reportedly look at mistakes and errors in a rather relaxed way, as they supposedly tend to likely arise in a in an ‘error culture’ or a culture of ‘fail faster’. However, they do so only as long as they understand their subordinates’ motivations, which eventually led to the mistake or error. One example is a situation, in which subordinates experiment with different parameters. If something fails, the three cases reportedly consider it as a gain of new knowledge instead of a failure. This can be related to Hunter et al. (2011) who explain that embracing failure appears to increase the effectiveness of an organization when it comes to solving problems unconventionally. However, Thomas, Andreas and Michael also stressed the importance of learning from mistakes in order to prevent similar ones in the future. Consequently, an innovation leader plays a crucial role in not only allowing errors but also preventing similar further ones.

Another common pattern found was that the cases initiated creative workshops and events outside the working routine, such as hackathons and innovation days, on which their subordinates were given space, time and resources to further develop their ideas. Such events and workshops initiated by the cases may contribute to an atmosphere of psychological safety in which employees are encouraged to openly speak about their ideas and being allowed to make mistakes to eventually come up with unconventional solutions. This can be connected to Zacher et al. (2014) who note that opening leader behaviors lead to psychological safety, a concept established by Kahn (1990) who defines it as “feeling able to show and employ one’s self without fear of negative consequences of self-image, status or career” (p. 708), which is likely to be the case during these events. Although the concept of psychological safety is mainly concerned with shared beliefs of teams (Edmondson & Lei, 2014), this atmosphere is also related to the findings that the cases are giving their subordinates space to try out ideas and drifting off the context if necessary. Ultimately, the cases cultivate psychology safety
by taking responsibilities for possible errors and risks their subordinates engage in which in turn enhances a 'leap of faith', as Thomas puts it. Through providing psychological safety in doing so, the creative problem-solving is enhanced, as Edmondson (1999) states.

However, it has to be taken into account that too much freedom and creativity, which the cases foster, for example, by giving space to try out new ideas and by encouraging to experiment, can also be harmful according to Hunter et al. (2011). More specifically, these authors claim that “leaders must choose between supporting the individual who desires freedom to engage in creative tasks or the organization that seeks a greater degree of control, efficiency, and predictability” (Hunter et al., 2011, p. 54). This exemplifies the importance of not only demonstrating opening leader behaviors but also restricting them by demonstrating closing leader behaviors as displayed in Figure 5. To do so, the cases reportedly enforce given processes, rules and time frames further outlined in the next paragraphs. In line with that, the cases stress that not all solutions and ideas can be taken into further consideration.

As indicated in the empirical findings, the cases prefer to evaluate ideas quickly and give respective feedback in order to restrict the degree of their subordinates' explorative behaviors. Accordingly, Mumford et al. (2003) explain leadership as being an evaluative activity throughout the innovation process. Thus, leaders can be identified as gatekeepers (Hunter et al., 2011) or collaborators (Abra, 1994) of the creative activities of their subordinates. Moreover, the cases explained that they also make use of team reviews in order to limit explorative behaviors of subordinates. For example, Michael explained that he prefers to make use of feedback among his team members due to his busy schedule while he keeps the overview and mainly steps in when things get out of hand. However, since the patterns found for restricting opening leader behaviors are similar to those of closing leader behaviors, such as enforcing processes, they will be further outlined in the following section.

**Demonstrating and restricting closing leader behaviors**

The cases reportedly demonstrate closing leader behaviors more carefully. During the interviews, the cases often asked questions to clarify the exact meaning of each closing behavioral trait the interviewers mentioned when applying the CIT. This and the fact that the interviewees reacted with more caution when explaining situations in which they would demonstrate closing leader behaviors lead the authors of this thesis to the assumption that these behavioral traits defined by Rosing et al. (2011) might be formulated too drastically.

As visualized in Figure 5, the cases described that they would demonstrate closing leader behaviors by mainly stressing the scope of budgets they are responsible for, processes they set up with the help of tools, such as SCRUM, and plans they are required to follow to ensure that innovation projects are developed in time. All these scopes were often not actively set up by the cases but inherent in the company.
structures instead. The cases agreed that ensuring a certain degree of control over the work of their subordinates is needed due to the versatile tasks in innovations. However, they admit that if cases act out of scope and beyond what has been agreed on, they first try to comprehend the underlying motivations and reasons of their subordinates and try to find a solution together with them in a second step. The cases stressed the importance of that joined decision-making process in order to prevent demotivation which they see as harmful for creativity.

Moreover, the cases reportedly enforce existing frames their innovation processes provide, such as milestones, reviews and deadlines, and control the adherence to these plans and other organizational regulations. As outlined earlier, Hunter et al. (2011) explain the paradox that organizations need to allow autonomy while aiming for quick problem resolutions, which the innovation leader aim for when enforcing deadlines and plans. According to Anderson and West (1998), individuals can be held accountable for task orientation and quality which goes in line with the cases stressing to work according to fixed plans. However, if their subordinates act in a way that is too exploitative in the given situation whereas a higher degree of exploration is desired, the cases react by granting certain freedom within those frames, which will be analyzed in more detail in chapter 5.3. The cases report for instance that they encourage their subordinates to also question existing regulations and eventually come up with improvements of those. In doing so, they may follow Hunter et al. (2011) who claim that “the challenge is to provide adequate time and resources but not induce complacency” (p. 58).

To sum it up, even though the behavioral traits were tested independently from their counterparts, the interim result of this analysis is that opening and closing leader behaviors are opposing to each other. This corresponds to Rosing et al.’s (2011) claim that the leader behaviors are opposing, yet complementary. As a consequence, opening leader behaviors are restricted by demonstrating its counterpart, closing leader behaviors, and vice versa, which answers the second sub-question. The identification of such interplay between these opposing sets of leader behaviors further stresses the relevance and challenge of aligning these leader behaviors, and thus partly contributes to the research question by indicating, how innovation leaders act in situations that supposedly require them to change their leader behaviors. This leaves the reader with the question, how these contrary behaviors can be possibly aligned as Zacher et al. (2014) describes: “leaders face the paradox of having to motivate employees to explore and to engage in creative behaviors and, simultaneously, to enforce employees’ adherence to standards and to ensure high levels of efficiency and productivity” (p. 25). Consequently, how innovation leaders align the two behaviors is presented and connected with the literature in the following chapter.
5.3 Alignment of opening and closing leader behaviors

The empirical findings indicate that the cases align opening and closing leader behaviors in mainly two ways: one at a time or at the same time; sequentially or simultaneously. This is analyzed in the following in order to answer the third sub-question of this thesis.

5.3.1 Sequential alignment

The empirical findings indicate that opening and closing leader behaviors are partially aligned sequentially by innovation leaders. Initially, this confirms Rosing et al.’s (2011) proposition that ambidextrous leaders in innovation must have a “temporal flexibility to switch between both [behaviors] as the situation requires” (p. 966). Respectively, the fact that the cases sequentially align these two sets of behaviors can be related to the strategy of temporal separation to manage a paradox (Smith & Lewis, 2011). The underlying paradox is the management of demonstrating opening and closing leader behaviors introduced by Rosing et al. (2011) on the one hand and the notions of exploration and exploitation (March, 1991) on the other hand. More precisely, when following this strategy of managing a paradox by temporal separation, the leaders choose “one pole of a tension at one point in time and then switching” (Smith & Lewis, 2011, p. 385). This implies a sequence in which innovation leaders can only demonstrate either opening or closing leader behaviors at a time and continuously switch between them.

However, the empirical findings indicate, as displayed in Figure 6, that the switches between opening and closing leader behaviors are triggered by rather extreme situations, such as right before deadlines and milestones, and when the subordinates of the cases lose sight of the target. In such situations, the leaders reportedly switch to demonstrating closing leader behaviors in order to foster exploitative and to restrict explorative behaviors among their subordinates referred to as ‘tighten the reins when milestones are or deadlines are approaching’ and ‘tighten the reins when subordinates lose sight of objectives’ in Figure 6.

Figure 6. Illustration of findings for sequential alignment of leader behaviors

Such abrupt switches to closing leader behaviors can be related to Ekvall’s (1993) proposition that a great extent of control practiced by managers, who enforce respecting cost frames and deadlines, limits opportunities and room for creativity.
Accordingly, the innovation leaders intend to enhance efficiency through enforcing upcoming deadlines and respective goals. Therefore, creativity, which is related to March’s (1991) concept of exploration, fades due to prioritizing efficiency and setting time frames as formulated by Ekvall (1993): “the path to the goal is laid down in detail and deviations are punished, there is no incentive to look for a better road” (p. 25-26). At this point, the innovation leaders do not encourage or even give room to look for new ideas but decrease the variance in their subordinates’ behaviors and streamline their subordinates to reach the given goals efficiently and mainly through acting exploitatively (Rosing et al., 2010; March 1991). After dealing with these rather extreme situations, the cases indicated that they ‘loosen the reins when milestones and deadlines have passed’ and act rather exploration-enhancing by, for example, providing their subordinates with more freedom and by encouraging creativity.

Looking at this sequential alignment of opening and closing leader behaviors from an organizational perspective with respect to how organizations align exploration and exploitation, similarities can be found in Gupta et al. (2006). These authors propose a temporal separation of exploration and exploitation in case they are considered two ends of a continuum and are mutually exclusive. Aligning opening and closing leader behaviors this way would imply that leaders following this approach switch from one end of the continuum, which are either Rosing et al.’s (2011) opening or closing leader behaviors, to the other. This goes in line with March (1991) who states that exploration reduces exploitation and vice versa. Transferred to the concept of ambidextrous leadership in innovation, this means that opening leader behaviors would decrease closing leader behaviors and the other way around. Consequently, in accordance to March (1991), an innovation leader needs to allocate his or her resources, such as time and attention for subordinates, carefully between both leader behaviors.

Empirical evidence for switching from one continuum to the other have been found in this study: Three cases claim that their switches from opening to closing leader behaviors depend on the time of the year or project phase. Similar to such sequential alignment of leader behaviors, Tushman and O'Reilly (1996) claim that organizations switch between phases in which they focus on exploration to phases during which their focus is on exploitation. Respectively, organizations temporarily alter their focus (Tushman & O'Reilly, 1996). And indeed, Andreas for example reports that shortly before and during the busy Christmas season, he solely focusses on sticking to plans and solving problems immediately. Here, he states that he does not have time to allow experimentation and extensive creativity. However, when the Christmas season is over, he gives room for new ideas and experimentation again, referred to as 'loosen the reins when seasonal specialties allow it’ in Figure 6. Similarly, but relating to different phases in a project, Turner, Maylor, Lee-Kelley, Brady, Kutsch, and Carver (2014) exemplify that sequential or temporal ambidexterity starts with an exploratory phase in the development of a new product which then is followed by an exploitative phase in which the product is implemented and moved towards the market. Corresponding, empirical findings in the context of ambidextrous leadership in
innovation were found in this study, such as Christian who states that “there are such phases: During some months, I motivate to try totally new things and in the next months I want them to get things done efficiently and work on it in a structured way” (personal communication, April 05, 2017). Therefore, during the months when Christian motivates to try new things, exploration is enhanced as he ‘loosens the reins’ whereas during the other months he ‘tightens the reins’ when seasonal and different project phases require it, as shown in Figure 6.

As an interim conclusion, regarding the analysis of sequential alignment, the cases switch from exploration-enhancing to exploitation-enhancing behaviors and respectively from opening to closing leader behaviors and vice versa. With this in mind, the temporal flexibility to switch between these behaviors proposed by Rosing et al. (2011) is hereby empirically validated, which provides an initial answer to the third sub-question concerning the alignment of opening and closing leader behaviors. Nevertheless, the occurrence of these switches between the leader behaviors are limited to rather extreme situations, such as approaching deadlines or subordinates losing sight of the target, and to changing requirements of different project phases or seasons, according to the empirical data gathered in this study. This sequential alignment of opening and closing leader behaviors confirms what has been outlined in related theoretical concepts, such as the temporal separation when managing paradoxes (Smith & Lewis, 2011) and sequential ambidexterity (Tushman & O’Reilly, 1996). Consequently, and with regard to answering the research question, innovation leaders align opening and closing leader behaviors sequentially but only to a limited extent.

### 5.3.2 Simultaneous alignment

Even though Rosing et al. (2011) propose a temporal flexibility to switch between opening and closing leader behaviors, which is partly supported by the empirical findings and the previous section of the analysis, this study found evidence that the alignment of these two leader behaviors predominantly occurs in a simultaneous way and therefore at the same time. However, it has to be noted that simultaneously demonstrating these two leader behaviors does not automatically mean that they are equivalently demonstrated to the same extent. Instead, while demonstrating these behaviors simultaneously, the innovation leaders rather emphasize either opening or closing leader behaviors depending on the demand of the respective situation. In the following, this simultaneous alignment is analyzed with respect to related concepts in order to thoroughly answer the third sub-question of this thesis.

A similar notion can be found in the literature of ambidexterity regarding balancing exploration and exploitation, which opening and closing leader behaviors are related to (Rosing et al., 2011). As Andriopoulos and Lewis (2009) note, a balance between exploration and exploitation does not necessarily imply an equal extent of both or a ratio of 50:50 but instead the ability to engage in both exploration and exploitation.
According to Lavie et al. (2010), scholars argue on which contingencies the right level of balance depends on and whether it is impacted by, for instance, the industry or the organization’s goals. Referring back to the context of ambidextrous leadership in innovation, parallels can be drawn to the concurrent alignment of the respective opening and closing leader behaviors, as the extent to which the leader behaviors are demonstrated may differ depending on situational requirements and contingencies.

Another argument, which advocates a simultaneous alignment of the two behaviors, stems from the fact that the literature increasingly frames the relationship between March’s (1991) concepts of exploration and exploitation not as a dilemma but rather as a paradox (Papachroni et al., 2015; Lewis et al., 2014). Similar thoughts may be given to the respective theory of ambidextrous leadership in innovation initiated by Rosing et al. (2011) and more specifically to opening and closing leader behaviors. In contrast to Rosing et al.’s (2011) proposition that leaders in innovation flexibly switch between the behaviors, this study found out that opening and closing leader behaviors occur rather simultaneously. The fact that the two leader behaviors tend to be demonstrated at the same time indicates that leaders in innovation rather apply the strategy of synthesis to manage this paradox (Smith & Lewis, 2011; Poole & Van de Ven, 1989). According to Smith & Lewis (2011), synthesizing seeks to accommodate and integrate the poles opposing each other. Therefore, instead of strictly separating these two opposing behaviors from each other over time, they are demonstrated at the same time by the innovation leader.

The claim that innovation leaders align opening and closing leader behaviors rather simultaneously than sequentially is also supported by the concept of behavioral complexity (Denison et al., 1995; Hooijberg, 1996). Looking at the behavioral repertoire in the case of an innovation leader, it may consist of the two leader behaviors as two opposing strings. According to Denison et al. (1995), effective leaders practice behavioral differentiation as they flexibly apply their behavioral repertoire in accordance with the situation and “if [a] paradox exists in the environment, then it must be reflected in behavior” (p. 526). Consequently, when both explorative and exploitative actions are required at the same time, the innovation leaders influence the behaviors of their subordinates respectively. Here, switching between opening and closing leader behaviors seems not plausible and, therefore, the authors of this thesis propose that innovation leaders do not need the ability to flexibly switch between the behaviors in such situations. Rather, they need to have the ability to flexibly align such behaviors.

As the simultaneous alignment of opening and closing leader behaviors was analyzed on a rather general level and primarily by linking it to other related concepts, the following elaborates on how an innovation leader aligns the leader behaviors in specific. Here, it is analyzed how innovation leaders simultaneously demonstrate opening and closing leader behaviors in order to reduce the extent of subordinates’ explorative behavior and to increase their exploitative behavior or vice versa when
needed. The respective empirical findings are displayed in Figure 7 and are analyzed in the following.

![Simultaneous Alignment]

**Opening leader behaviors**
- granting as much autonomy and freedom as possible
- stimulating proactive behavior and experimentation
- motivating to think more freely, do things differently and to take risks
- being flexible when it comes to rules and boundary conditions

**Closing leader behaviors**
- applying and emphasizing processes, structures and plans
- enforcing the compliance with existing systems, regulations and time frames
- continuously monitoring the progress and giving feedback
- encouraging to quickly develop ideas further, taking respective precautions

*Figure 7. Illustration of findings for simultaneous alignment of leader behaviors*

To limit the explorative behaviors among subordinates, the leaders mainly demonstrate closing leader behaviors by enforcing and making use of formalized frames, such as existing processes, given structure, plans, and time frames. As it is desired in such situations to reduce but not to completely stop subordinates’ explorative behaviors, demonstrating closing leader behaviors in terms of enforcing structures, processes, plans while still keeping room to freely think and act creatively seems to be a logical mean applied by the leaders. This is because formalizations, such as rules, processes, and structures, have been widely accepted as inhibitor of experimentation, creativity and the generation of new ideas (e.g. Damanpour 1996; Persaud 2005).

Similar but relating to innovation on the organizational level, Jansen, Van den Bosch and Volberda (2006) found that the extent of formalization, such as rules, instructions, and processes, influences exploitative innovation positively. This is because formalization restrains experimentation and reduces the likelihood that individuals deviate from their structured behavior. Here, “formalization is aimed at reducing variance” (Jansen et al., 2006, p. 1663) and can be utilized to increase the efficiency. Therefore, demonstrating closing leader behaviors by enforcing different kinds of formalizations is a means innovation leaders apply to reduce the degree of explorative behavior among their subordinates. However, by keeping opening leader behaviors demonstrated at the same time, explorative behavior among their subordinates is still kept to a certain extent according to the empirical findings.

Vice versa, in order to reduce the degree of exploitation in the behavior of their subordinates, the innovation leaders reportedly demonstrate opening leader behaviors while keeping elements of closing leader behaviors. Although the innovation leaders show closing leader behaviors by enforcing existing structures, processes and timelines, this does not exclude demonstrating opening leader behaviors at the same time. Concurrently to enforcing such boundaries, opening leader behaviors are demonstrated by motivating, for example, to thinking independently or to encourage experimentation, creativity, as well as proactive behavior.
Such simultaneous occurrence of opening and closing leader behaviors can be related to Cohendet and Simon’s (2007) case study concerning knowledge creation in a company developing video games. Although the study was conducted for a different purpose and in a different context, it reveals that despite strict deadlines in the project, it is still allowed and encouraged to develop “creative slack” which is, for example, used later in the project (Cohendet & Simon, 2007). Combining opening and closing leader behavior in such ways keeps up a certain degree of efficiency and structure related to March’s (1991) concept of exploitation. One may argue that it helps to progress and move forward, while leaving room for explorative activities to generate new ideas (March 1991), which is also desired in such situations. Overall, by aligning behaviors in such way, the innovation leaders may follow Fromm (1941) who claimed that “true freedom is not the absence of structure - letting the employees go off and do whatever they want - but rather a clear structure that enables people to work within established boundaries in an autonomous and creative way” (as cited in Judge, Fryxell, & Dooley, 1997, p. 83).

When enforcing frames or ‘crashing barriers’, as Andreas and Stefan call the structures, plans, frames, and processes, the innovation leaders often keep some freedom by allowing independent and creative thinking. This can be related to Martins and Terblanche (2003) claiming that “personnel are free to achieve their goals in an automatic and creative way within guidelines” (p. 71). Enforcing time frames and deadlines while demonstrating opening leader behaviors can be beneficial according to Hunter et al. (2011). They claim that “more pragmatically, it may also be necessary for leaders to develop timelines that provide subordinates information as to necessary progress, but also flexible enough to handle the predictably unpredictable lags that occur in innovation” (Hunter et al., 2011, p. 58). One answer to such unpredictable lags might be explorative activities as outlined by March (1991) and the respective opening leader behaviors initiated by Rosing et al. (2011) occurring concurrently to the timeline.

Going beyond enforcing boundaries in which freedom is granted, one innovation leader emphasized the importance of flexibility in some situations. Christian mentioned that it is sometimes important to “create freedom by changing or introducing rules and boundary conditions in a way that will make it happen” (Christian, personal communication, April 05, 2017) while still highlighting that the boundary conditions should still be abided, when referring to independent thinking and acting. Therefore, instead of demonstrating just opening leader behaviors, he hereby changes the contextual conditions to the extent he can, in order to increase the degree of explorative behavior among his subordinates. In a broader sense, this may slightly correspond to the concept of contextual ambidexterity initiated by Gibson and Birkinshaw (2004). Here, not the organization as whole adjusts its processes and systems in order to support the individuals’ judgment to pursue exploration and exploitation, but the innovation leader does so. More specifically, by changing the boundary conditions and rules, which partly frame the context, Christian reshaped his subordinates’ ambidextrous behavior to the desired degree.
Additionally, the innovation leaders demonstrate opening and closing leader behaviors concurrently by continuously monitoring the progress and giving feedback to their subordinates while encouraging them to experiment and giving room for independent thinking and acting. Hereby, the cases encourage their subordinates to be explorative but at the same time to focus on a given goal. Setting goals and continuously monitoring their attainment corresponds to many of the rather general leadership definitions (e.g. Bass, 1990; Allio, 2012) which highlights that both leader and subordinates are united by a certain goal and move towards it, namely to create and implement an innovation in this case. Demonstrating closing leader behaviors in the form of continuous feedback also prevents subordinates from losing orientation and the target out of sight and informs them “whether they are producing results on time, at the correct level of quality, and in the correct form” (Gilley, Dixon, & Gilley, 2008, p. 159). Therefore, consistently monitoring and giving feedback helps to reach such goals, and to prevent that subordinates act in a too explorative way, for example, by coming up with ideas which in the end do not contribute to reaching the overall target.

Finally, it can be said that opening and closing leader behaviors are predominantly demonstrated simultaneously which was empirically verified and connected to the literature on related theoretical concepts. Such simultaneous alignment however does not imply that the innovation leaders demonstrate opening and closing leader behaviors to the same extent. Rather, an emphasis is put on either leader behavior in accordance with the requirements of a given situation, which corresponds to Andriopoulos and Lewis (2009) claiming that the balance of exploration and exploitation on the organizational level does not automatically connote an equal extent of both. The sequential alignment of these behaviors proposed by Rosing et al. (2011) only plays a minor role according to the analysis of the empirics.

The alignment of opening and closing leader behaviors has hereby been proven to be prevalently simultaneous while having sequential elements, which answers the third sub-question. Nevertheless, the research question of this thesis cannot be answered solely by these results since they do not consider how the alignment occurs throughout the innovation process. Therefore, the answers to the first and second sub-questions are additionally taken into account in order to answer the research question of this thesis in the final step of this analysis.

5.4 Model illustrating the alignment and answering the research question

In order to integrate the empirical and theoretical findings of the sub-questions to ultimately answer the research question of this thesis in the following, a schematic model was developed. This model, which is displayed in Figure 8, seeks to holistically incorporate the findings in order to explain the alignment of opening and closing leader behaviors throughout the innovation process.
Figure 8. Illustration of a model for the alignment of opening and closing leader behaviors

Regarding the occurrence of the two leader behaviors throughout the innovation process, Rosing et al. (2011) claim that opening leader behaviors are predominantly demonstrated in the beginning, whereas leaders prevalently demonstrate closing leader behaviors in the later stages. This is confirmed by the findings of this study. Despite using a different terminology, Deschamps (2008) presents similar propositions by stating that innovation leaders need to encourage creativity and create an open atmosphere in the front-end of the innovation process, while in the back-end, innovation leaders are required to foster efficiency and the adherence to plans. However, the two leader behaviors reportedly occur in both idea generation and implementation, which is likely to stem from the unpredictability and uncertainty involved in the innovation process (e.g. Bledow et al., 2009). All these findings contribute to answer the later part of the research question regarding the occurrence of the two behaviors throughout the innovation process. Respectively, the model (see Figure 8) considers that opening and closing leader behaviors occur to different extents in both idea generation and implementation.

According to Rosing et al. (2011), opening and closing leader behaviors are opposing, yet complementary poles which mediate each other. This is supported by the findings of this study which indicate that innovation leaders restrict opening leader behaviors by demonstrating closing leader behaviors and vice versa. Accordingly, this result is incorporated in the model through the clear differentiation between the two leader behaviors as counterparts in white and black. Even though this finding and the details regarding concrete ways these behaviors are demonstrated by innovation leaders (see chapter 5.2) do not provide direct answers to the research question, they contributed to it by enhancing the understanding of the two leader behaviors.
Concerning the alignment of opening and closing leader behaviors, Rosing et al. (2011) propose a ‘temporal flexibility to switch’, which finds support in the theory on the management of paradoxes. Here, such sequential alignment may follow the strategy of temporal separation, or switching from one pole to the other as Smith and Lewis (2011) describe it. In addition, connections can be drawn from the sequential alignment of leader behaviors to sequential ambidexterity on the organizational level. Comparable to organizations which temporally alter between focusing on explorative and exploitative activities when pursuing this type of ambidexterity (Tushman & O'Reilly, 1996), the empirical findings initially confirm a sequential alignment of the two leader behaviors and therefore the ‘temporal flexibility to switch’. However, this approach for aligning the two leader behaviors plays overall only a minor role and is limited to rather extreme situations and different phases of the year.

Several related theoretical concepts, such as the management of paradoxes and behavioral complexity, support the idea of a simultaneous alignment and therefore initially question and oppose Rosing et al.’s (2011) proposition that leaders sequentially switch between opening and closing leader behaviors. Regarding the management of paradoxes, a simultaneous alignment of the leader behaviors is feasible when pursuing the strategy of synthesis (Poole & Van de Ven, 1989), which implies that opposing poles, such as the two leader behaviors, are integrated and accommodated (Smith & Lewis, 2011). In addition, the concept of behavioral complexity implies the possibility of a simultaneous alignment because concurrently existing paradoxes and contradictions, in this case exploration and exploitation, are reflected in the behavior of an effective leader (Denison et al., 1995). Consequently, this could entail a simultaneous presence of opening and closing leader behaviors, which is indeed confirmed by the findings of this study. More precisely, it is proven that innovation leaders prevalently align the two behaviors simultaneously, which in turn challenges Rosing et al.’s (2011) proposition of a sequential alignment. Finally, the predominantly simultaneous alignment of leader behaviors, which is interrupted by sequential phases, ultimately answers the first part of the research question and is respectively incorporated in Figure 8. At this point, the model considers the previously outlined distribution of opening and closing leader behaviors through the diagonal line from the upper left and the lower right corner.

In conclusion, the answer to the research question is that innovation leaders align the two leader behaviors in a primarily simultaneous approach interrupted by sequential phases, while opening leader behaviors predominantly occur in the beginning and closing leader behaviors in the later stages of the innovation process.

5 Although the model only shows two randomly placed elements of sequential alignment, the occurrence varies among innovation projects, companies and innovation leaders.
6 Conclusion

The challenge of aligning opening and closing leader behaviors in innovation was approached in this thesis from both a theoretical and an empirical point of view. Ambidextrous leadership in innovation is a relatively new field based on and related to other concepts and dilemmas that are widely discussed in the literature. Among them are the exploration-exploitation dilemma, the management of both idea generation and implementation as well as approaches for managing paradoxes and the concept of behavioral complexity. These theoretical concepts were applied to analyze the empirical results collected in a multiple case study of five innovation leaders working for innovative manufacturing companies in Germany. The results are compelling and at the same time question and extend the state-of-the-art of the literature in the field of ambidextrous leadership in innovation.

6.1 Answering the research question

Three sub-questions were derived from the main research question and were used to answer partial aspects of the research question. The respective answers are outlined in the following before merging them into the answer to the research question.

In order to answer the first sub-question regarding the occurrence of the two leader behaviors throughout the innovation process, the study revealed that the cases predominantly use opening leader behaviors in the early stages of the innovation process. In contrast, closing leader behaviors are rather used in the later phases. Nevertheless, the findings of the multiple case study indicated that both leader behaviors occur throughout the whole innovation process. These findings are similar to the existing literature on managing innovation processes and ambidexterity in innovation.

The empirical findings of the second sub-question proved that in order to demonstrate opening leader behaviors, several cases stressed the enforcement of principles such as an 'error culture' and 'fail faster'. Furthermore, four cases reportedly set up creative workshops or innovation days. Moreover, the cases often take responsibilities for risks and mistakes so their subordinates do not have to worry about possible negative consequences. On the contrary, the cases described the way they make use of closing leader behaviors more carefully and rather reluctantly. These behaviors are primarily demonstrated by enforcing existent frames such as milestones, processes, and time frames. Moreover, the empirical findings revealed that the effects of closing leader behaviors on subordinates can be restricted by demonstrating opening leader behaviors and vice versa.
These findings were drawn back to the original model of ambidextrous leadership in innovation in order to illustrate three issues. Firstly, it has been verified what has been suggested by the literature in the field: opening and closing leader behaviors are indeed opposing poles. Secondly, it was clarified how the two leader behaviors are used in practice and, thirdly, that the behavioral traits outlined by Rosing et al. (2011) have to be taken into consideration with caution, for example, because of the rather reluctant use of some closing leader behaviors. It can therefore be summarized that innovation leaders can indeed actively influence the explorative or exploitative behavior of their subordinates by applying opening or closing leader behaviors to certain degrees.

The empirical findings gathered as part of the third sub-question revealed compelling results contrary to the predominant proposition of Rosing et al. (2011) that the alignment of the two leader behaviors is following a sequential approach that requires leaders to have a temporal flexibility to switch. Unlike Rosing et al. (2011) proposed, a sequential alignment of opening and closing leader behaviors in the innovation process was found to play only a minor role. It is primarily used in extreme situations, such as approaching deadlines, and when subordinates lose sight of objectives, as well as due to seasonal fluctuations or according to different project phases. These situations urge the innovation leaders to switch their behaviors to solely demonstrating either closing or opening leader behaviors at a time. In the course of the analysis, this was examined with regard to the literature on managing paradoxes and organizational ambidexterity.

However, the more dominant approach is an alignment of the leader behaviors at the same time. Such simultaneous alignment of opening and closing leader behaviors occurs for example by granting a certain degree of freedom and encouraging creativity while insisting on the compliance with the existing structures and processes. Moreover, changing frames when needed and giving room for experimenting while continuing to urge the subordinates to get things efficiently done is another way of concurrently aligning these leader behaviors. Parallels to the simultaneous alignment of these opposing behaviors were drawn to the concept of behavioral complexity, management of paradoxes and types organizational ambidexterity.

Finally, the authors of this thesis connected the empirical findings of the three sub-questions with the existing literature in various related fields to answer the research question: How do innovation leaders align opening and closing leader behaviors throughout the innovation process? Accordingly, the authors synthesized the empirical and theoretical findings into a comprehensive model which provides a profound understanding of the alignment of opening and closing leader behaviors. The model illustrates that the alignment predominantly follows a simultaneous approach in which opening leader behaviors are mainly demonstrated in the early phases of an innovation process while closing leader behaviors are primarily used in the later phases. Nonetheless, this does not imply that the two leader behaviors are demonstrated to the
same extent but rather depending on situational requirements. However, this simultaneous alignment is interrupted by sequential phases every now and then, if for example urgent situations require the innovation leader to only pursue one of the two leader behaviors at a time or if the time of the year and project phase allow it.

6.2 Implications

Several implications for both researchers and practitioners can be derived from this study about ambidextrous leadership in innovation.

6.2.1 Theoretical implications

Based on the existing literature on ambidextrous leadership in innovation, two findings support the assumptions of the original model initiated by Rosing et al. (2011). Firstly, this study reconfirmed that opening and closing leader behaviors are relevant throughout the whole innovation process while opening leader behaviors are rather used in the beginning and closing leader behaviors rather in the later stages of the innovation process. Secondly, the interrelation and interdependence of opening and closing leader behaviors as opposing poles were proven in this study. The findings confirm that the effects of opening leader behaviors on the subordinates can be restricted by demonstrating closing leader behaviors and vice versa.

However, this thesis challenges the view on the alignment of opening and closing leader behaviors in the field of ambidextrous leadership in innovation. The findings of the study indicated that the alignment of opening and closing leader behaviors is more complex than initially assumed by the authors in the field of ambidextrous leadership in innovation. A solely sequential approach as proposed by Rosing et al. (2011) is therefore no longer sufficient since the more dominant way of aligning these two behavioral traits follows a simultaneous approach. Consequently, their model is argued to be insufficient when explaining the alignment of opening and closing leader behaviors.

This thesis argues for a more enhanced understanding of the combination of the two leader behaviors. In order to do so, the authors of this thesis interlinked the literature on ambidextrous leadership in innovation with theoretical concepts from the fields, which include the management of paradoxes, behavioral complexity and organizational ambidexterity – an approach that has not been taken into consideration in the literature on ambidextrous leadership in innovation so far. For example, viewing opening and closing leader behaviors as paradoxes gives a new perspective on the challenges of innovation leaders that has not been considered thoroughly in the literature on ambidextrous leadership so far. This thesis therefore revealed first indications that insights from the management of paradoxes can contribute to a better understanding of managing both leader behaviors respectively.
Finally, a comprehensive model was derived from both empirical findings and theoretical insights. It explains the dynamics of opening and closing leader behaviors in the innovation process more thoroughly and detailed and thus contributes to a more holistic understanding of the alignment of two opposing but complementary leader behaviors. This model challenges the state-of-the-art in ambidextrous leadership by revealing a more complex interrelation of the two leader behaviors as previously assumed by authors in this field. It thus builds the basis for further, extensive research in both theory and practice regarding the alignment of opening and closing leader behaviors.

6.2.2 Practical implications

As described in the introduction of this thesis, innovation leaders such as Christian are rather unconsciously dealing with the alignment of opening and closing leader behaviors in practice. However, the alignment of the contradicting yet supplemental leader behaviors seems to be far more complex than one may initially assume. This study therefore could help innovation leaders to get a first understanding of the different forces and contradictions that determine their daily work. Being aware of the dynamics between these leader behaviors and applying them deliberately in accordance with situational requirements could help innovation leaders to lead their subordinates more consciously and possibly more effectively.

This study has revealed that innovation leaders can indeed change their leader behaviors proactively and respectively those of their subordinates in accordance with the given circumstances. For example, if subordinates demonstrate exploration and exploitation-enhancing behaviors but not necessarily as desired in the certain stage of the innovation process, innovation leaders can actively counteract by demonstrating opening or respectively closing leader behaviors. In doing so, they can influence the level of exploitative or explorative behaviors among their subordinates. Understanding these dynamics can vitally contribute to a more conscious approach for managing subordinates in innovation projects.

Moreover, this study concretizes the behavioral traits of opening and closing leader behaviors defined in theory. Hereby, innovation leaders can gain a better insight in the usage and relevance of these behavioral traits. For example, as part of opening leader behaviors, ‘allowing errors’ usually comes along with an error culture or culture of fail faster and a ‘leap faith’ that supports subordinates to do mistakes, learn from them and not being distracted or restrained due to possible risks and consequences. In contrast, as part of closing leader behaviors, ‘controlling goal attainment’ can be ensured by enforcing project plans and milestones. Furthermore, an understanding of related concepts in theory as well as the model developed by the authors of this thesis could offer first indication for how the dynamics between opening and closing behaviors can be managed in practice. In addition, since ambidextrous leadership in innovation has been identified to play a crucial role in practice when managing the various challenges
of the innovation process, future research could address best-practices and guidelines containing specific recommendations to enhance management practices in this field.

6.3 Limitations and future research

Several limitations related to the methodology and content have to be taken into consideration when evaluating the findings of this thesis. Nevertheless, these limitations provide possible directions for future research.

6.3.1 Related to methodology

Regarding the limitations of the applied methodology, it has to be taken into account that the results of the underlying multiple case study are specific to the studied cases with respect to their individual context. Due to the focus on behaviors of innovation leaders in German manufacturing companies, this study might oversimplify the dissimilarities and complexities of contextual factors, such as external, internal and character-based issues. However, these factors may have influences on the leader behaviors of the research subjects. Among the contextual influencing factors are the companies’ external factors, such as the influence of industries, market situations as well as stake- and shareholders. For example, product innovations of competitors might influence the need for exploration and exploitation is organizations and the innovation leaders’ behaviors respectively. Consequently, considering such external factors and their influence on the leaders’ behaviors might be valuable to be studied in the future. Moreover, internal factors such as the company size, financial situation and organizational structure could also play an influencing role. Those external and internal contextual factors might be worth to explore in studies to understand, if and how they affect the two behaviors of leaders.

The conducted case study has a limited scope since it focusses on German manufacturing companies. The study is therefore limited to the national context of the case companies and thus may not be directly transferable to cases with other cultural backgrounds since leadership is a field that is highly influenced by the cultural background of the subjects. However, this thesis has circumvented this issue by choosing cases with a similar background in order to increase the comparability across the cases. Additionally, several studies have verified the influence of personal backgrounds, gender, characteristics and team dynamics on leadership behaviors, which is not taken into consideration in this study. In specific, considering the diverse challenges innovation leaders face as outlined in this thesis, personal backgrounds might be a determining factor in understanding, how leaders align the two leader behaviors differently. Although this case study has not identified any indications which point to a difference in handling opening and closing leader behaviors due to variations in personal backgrounds, it might be worth looking into this aspect in further studies on ambidextrous leadership in innovation.
In addition, the cases’ organizations differ in size and branch and thus may have a limited representativity for other cases. Even though the number of five case was sufficient to generate an initial theory regarding the alignment of opening and closing leader behaviors, future studies with larger and more diverse samples could be conducted in order to verify the findings of this thesis. All these factors that might have an influence on the leader behaviors of the cases have intentionally not been considered with respect to the given time horizon and the purpose of enhancing the understanding of the alignment of two contrary leader behaviors.

Moreover, the case study is solely based on interviews with the cases themselves. Therefore, the results of the study are self-rated and might be subject to biases on the side of the cases. The authors of this thesis were not able to verify and reconcile these statements with the help of observations at the work place or interviews with the subordinates of the respective cases due to the limited time horizon. Future studies that seek to understand the leader behaviors and their alignment better should therefore consider the impressions and view of subordinates as well to verify that the leader behaviors are as effective as intended. Moreover, longitudinal studies and observations can enhance a better understanding of how the leader behaviors develop over time and if the subordinates are indeed reacting to opening and closing leader behaviors by acting in a more explorative and respectively exploitative way.

Another limitation is the choice of the study subject that is focusing on innovation leaders involved in both idea generation and implementation. Therefore, the findings can neither be directly transferred to leaders in general nor to other subjects with responsibilities for only certain parts of the innovation process. This is because other leaders might not be involved throughout the innovation process and possibly need to apply opening and closing leader behavior to different extents. Moreover, the authors of this thesis are aware of the fact that five cases may bear a limited transferability and more studies might be needed to enhance it by reconfirming the findings in other contexts.

6.3.2 Related to the applied theoretical concepts and results

The authors made use of several relevant aspects found in the literature on ambidexterity, innovation and leadership in order to analyze the empirical findings of this study. However, since all three research fields are broad, only some of the relevant aspects in these fields have been considered to analyze the paradoxes and practices in ambidextrous leadership in innovation. Consequently, this thesis does not attempt to give holistic and in-depth views on the literature being relevant for the chosen topic. Future research might interlink these and other concepts even more in depth and stronger to ambidextrous leadership.

Since leader behaviors in the field of ambidextrous leadership in innovation are a relatively new field, many details are yet still unclear and thus possibly affected the
respective study. With the help of the critical incident technique, it was found that several behavioral traits of closing leader behaviors, such as ‘sanctioning errors’ and ‘control adherence to rules’, are exaggerated formulations. The cases instantly refrained from these formulations, even though they gave examples for following these leader behaviors in a more mitigated way in other parts of the interview. Furthermore, Rosing et al. (2011) intended to increase or respectively reduce the variance among subordinates by explaining behavioral traits of leaders. However, the interviews have shown that the behavioral traits often needed further explanations and guidance of questions so the interviewees understood them correctly. The cases sometimes slightly drifted off the context by solely referring to, for instance, barriers and frames already existing in the company as means to enhance exploitative behavior among their subordinates without directly taking action or demonstrating closing leader behaviors. Therefore, the descriptions and definitions of opening and closing leader behaviors may need to be further clarified and elaborated with respect to their practical relevance.

Furthermore, the model developed by the authors of this thesis aims to explain the alignment of opening and closing leader behaviors. However, it needs to be taken into consideration that several details remain unclear and that the model might still oversimplify the complexities of this alignment yet clarifies overall tendencies. For example, the authors assume that a simultaneous alignment implies that the two leader behaviors are not demonstrated to the same extent but that extents may vary depending on situational requirements. Therefore, future studies could examine the distributions of opening and closing leader behaviors in situations when both are simultaneously demonstrated.

In addition, so far, the theory about ambidextrous leadership and thus the research of this thesis that is ultimately based on it are solely describing the reactions of innovation leaders to the explorative or exploitative behaviors among their subordinates in order to direct these. However, this view does not consider that especially innovations benefit from the free mind of subordinates who eventually might question the behaviors of their leaders and do not necessarily demonstrate the anticipated behaviors. Consequently, describing the leader-follower-relation as a one-sided demonstration and adaptation of behaviors fails to display the reality of a far more complex interdependence. Future research on ambidextrous leadership therefore might consider the specificities on innovation settings in general and the independent mind of the subjects in it in specific.

Similar to Rosing et al. (2011) who initiated the model of ambidextrous leadership in innovation, the authors of this thesis base their model on a simplified and rather superficial innovation process consisting of the phases of idea generation and implementation. However, this is a limitation since these two phases are often run simultaneously and cannot be as clearly separated from each other in practice. Future research on ambidextrous leadership in innovation should therefore address the alignment of the two leader behaviors in, for example, more iterative and parallel
processes that display the innovation processes used in practice more realistically. Additionally, a longitudinal study could follow a lifecycle of an innovation to get a better in-depth understanding of the role of opening and closing leader behaviors in the respective innovation process. Finally, managing innovations often goes hand in hand with managing projects, since innovations are often organized in project-based structures. Consequently, future research on ambidextrous leadership in innovation should take the discipline of project management closer into account. Possible studies could be for example conducted regarding the project manager’s alignment of these leader behaviors in different phases of an innovation project. Here, future studies may take into account different methodologies for managing projects, for instance SCRUM and PRINCE2, and their implication on the alignment of opening and closing leader behaviors. In addition, best practices for project managers in innovation regarding the alignment of these two leader behaviors could be addressed while specifically considering the role of a project manager for innovation projects and within an organization.

6.3.3 Outlook

In this thesis, it has been demonstrated in detail that the model of and research about ambidextrous leadership in innovation as proposed by Rosing et al. (2011) is just at the beginning of a process that further clarifies and criticizes, reflects and extents the concept. Nevertheless, the following quote exemplifies that both, the new field of ambidextrous leadership in innovation and leader behaviors, should consider opposites as a chance for growth:

“Most people think of success and failure as opposites, but they both are products of the same process.”

(Roger von Oech)
References


Appendices

Appendix 1. Informed Consent Agreement (English and German)

To:
Name of Interviewee
Company Name
Address

Informed Consent Agreement

Monday, 27th of March 2017

Dear ,

Thank you very much for your willingness to be available for an interview. We would like to provide you with this informed consent agreement to inform you about the procedures and the usage of the data from the upcoming interview.

We are students of the master program Strategy and Management in International Organizations at Linköping University in Sweden. For our master’s thesis, we are conducting a research study about leadership behaviors in innovation. The purpose of this study is to gain insights about the alignment of leader behaviors and indicators that lead to the different behaviors along the innovation process.

In this research, there are no foreseeable risks for you as a participant. However, you should be aware of the following:

- **Voluntariness**: Your participation in this study is voluntary. You can stop the interview or refuse to answer questions at any time.

- **Confidentiality**: The results of the research study may be published, but your identity will remain confidential and your name will not be disclosed to any outside party. Furthermore, the name of your company and a short company profile will be used in the master’s thesis. However, details of innovation products will remain confidential. If you wish, we can provide you with a summary of your quotes we intend to use in our thesis.

- **Recording**: The interview will be recorded, stored as an audio file and transcribed by the researchers. Your responses are treated in a confidential manner and will be anonymized in any research reports.

- **Report**: If you are interested, we are more than happy to provide you with a summary report about the results of the study.

Please confirm with your signature that you would like to participate in the interview and have been informed about the points listed above. If you have any questions concerning the research study, please contact us.

Date/Signature of Interviewee _________________________________________________________

Name of interviewee _________________________________________________________________

Thank you very much for your interest and participation.

Kind regards

Martina Ahlers & Maximilian Wilms
Sehr geehrter ,

vielen Dank für Ihre Bereitschaft, für ein Interview zur Verfügung zu stehen. Mit dieser Einverständniserklärung möchten wir Sie über die Vorgehensweisen und die Nutzung der Daten des bevorstehenden Interviews informieren.


Als Teilnehmer dieser Studie gibt es keine absehbaren Risiken für Sie. Allerdings sollten Sie sich über Folgendes bewusst sein

- Freiwilligkeit: Ihre Teilnahme an dieser Studie ist freiwillig. Sie können das Interview zu jeder Zeit stoppen oder Fragen nicht beantworten.
- Vertraulichkeit: Die Ergebnisse der Studie können veröffentlicht werden, aber Ihre Identität bleibt vertraulich und Ihr Name wird nicht an externe Parteien weitergegeben. Darüber hinaus wird der Name Ihres Unternehmens und ein kurzes Firmenprofil in der Masterarbeit verwendet. Details der Innovationsprodukte bleiben jedoch vertraulich. Wenn Sie es wünschen, können wir Ihnen eine Zusammenfassung Ihrer Zitate zur Verfügung stellen, die wir in unserer Arbeit verwenden möchten.
- Bericht: Wenn Sie interessiert sind, freuen wir uns, Ihnen einen zusammenfassenden Bericht über die Ergebnisse der Studie zuzusenden.

Bitte bestätigen Sie mit Ihrer Unterschrift, dass Sie am Interview teilnehmen möchten und über die oben aufgeführten Punkte informiert wurden. Wenn Sie Fragen zur Studie haben, wenden Sie sich bitte an uns.

Datum, Unterschrift des Interviewpartners ______________________________________________

Name des Interviewpartners ____________________________________________________________

Herzlichen Dank für das Interesse und Ihre Teilnahme.

Mit freundlichen Grüßen

Martina Ahlers & Maximilian Wilms
Appendix 2. Interview Guideline (English and German)

INTERVIEW GUIDELINE: Innovation Leader

Introduction

- Framework: Time frame (2h), recording, data use (selected quotes), rights (confidential, anonymous, not all questions need to be answered)
- Explaining main theme and research purpose: innovation leaders need to align two leadership behaviors – one is related to encouraging experimentation and creativity and the other is related to enhancing monitoring and controlling goal attainment. The master’s thesis aims to explain the dilemma.
- Interview themes: current position, experience as innovation leader, innovation process and projects, leadership practices

A. Background

A1. Experience in Innovation: How many years have you been working within innovation? How many years have you been a leader in that field?

A2. Current Position: What is your current position? What are your functional tasks and responsibilities?

A3. Leadership responsibilities: How many subordinates do you have? How is your department organized in terms of hierarchy? In what way do you interact with your subordinates in your daily work?

B. Innovation Process

B1. Innovation Projects: Can you briefly describe the innovation projects and products developed in your department? What are they dealing with? What do they aim for? What role (estimate) do innovations play that seek to (a) develop products that are based on existing ones and aim to improve and further develop them? (b) come up with a totally new product that has no or few relations to existing products?

B2. Innovation Process: How does a typical innovation process in your department look like (in phases ideally)?

C. Leadership Behaviors

Introduction for Behavioral Interview: This is a part of the interview may be different from interviews you have had in the past. It focuses on what you have done in past experiences. Please use the first person as much as possible because we are most interested in what you have done in the situations. We are going to ask you specific questions about your experiences and will ask that you try, as best as you can, to only discuss experiences that have occurred within the past 3 years. Furthermore, we will ask follow-up questions to get as many details around what you were doing in the situation.

C1. Opening Behaviors

C1.a. Description (presented on cards in the interview): There is one leadership behavior relevant in innovation in which leaders encourage trial and error, creative and alternative thinking and experimentation.

Questions: Describe a situation that required this behavior towards your subordinates? In which situations did you overstimulate this behavior? To which problems did it lead? How did you overcome them?
C1.b. Critical Incident Technique (CIT) based on key behaviors (see table, presented on cards in the interview):
Questions: In which situations did you demonstrate a behavior that [see left column key behaviors of leader] in the past?

[See right column overstimulated behaviors of subordinates] – Did you have to take corrective actions? If yes: In which situations and how did you counteract?

<table>
<thead>
<tr>
<th>Key Behaviors for Opening Leader Behaviors</th>
<th>Resulting and overstimulated behaviors of subordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviors of leader¹</td>
<td></td>
</tr>
<tr>
<td>Leader encourages experimentation with different ideas</td>
<td>Subordinates experiment too much without coming to an end</td>
</tr>
<tr>
<td>Leader motivates to take risks</td>
<td>Subordinates take too much risks</td>
</tr>
<tr>
<td>Leaders allows errors</td>
<td>Subordinates are making too many mistakes</td>
</tr>
<tr>
<td>Leader gives possibilities for independent thinking and acting</td>
<td>Subordinates drift off the context with their ideas and thoughts</td>
</tr>
</tbody>
</table>

¹ Following Rosing et al. (2011)

C2. Closing Behaviors

C2.a. Description (presented on cards in the interview): Another important leadership behavior in innovation encourages subordinates to work in a structured and planned way, to attain set goals and to limit mistakes and risks.

Questions: Describe a situation that required this behavior towards your subordinates?
In which situations did you overstimulate this behavior? To which problems did it lead?
How did you overcome them?

C2.b. Critical Incident Technique (CIT) based on key behaviors (see table, presented on cards in the interview):
Questions: In which situations did you demonstrate a behavior that [see left column key behaviors of leader] in the past?

[See right column overstimulated behaviors of subordinates] – Did you have to take corrective actions? If yes: In which situations and how did you counteract?

<table>
<thead>
<tr>
<th>Key Behaviors for Closing Leader Behaviors</th>
<th>Resulting and overstimulated behaviors of subordinates</th>
</tr>
</thead>
<tbody>
<tr>
<td>Behaviors of leader²</td>
<td></td>
</tr>
<tr>
<td>Leader monitors and controls goal attainment</td>
<td>Subordinates work too goal-oriented and block out other solution processes</td>
</tr>
<tr>
<td>Leader controls adherence to rules</td>
<td>Subordinates have no freedom for taking actions apart from rules</td>
</tr>
<tr>
<td>Leaders sanctions errors</td>
<td>Subordinates have no freedom for taking actions apart from norms</td>
</tr>
<tr>
<td>Leader makes sure that plans are being followed</td>
<td>Subordinates have no freedom for taking actions apart from plans</td>
</tr>
</tbody>
</table>

² Following Rosing et al. (2011)

D. Interplay of Opening and Closing Behaviors

Combining (Opening & Closing) Behaviors: We have talked about two behaviors, one that is encouraging trial and error and one that is corrective and controlling (show respective cards with behaviors):
- How do you combine both behaviors? Why do you combine it that way? How/Do you switch from one to the other behavior?
INTERVIEW GUIDELINE: Führungskraft in Innovationen

Einführung:
- Rahmen: Zeitrahmen (2h), Aufzeichnung, Datenverwendung (ausgewählte Zitate), Rechte (vertraulich, anonym, nicht alle Fragen müssen beantwortet werden)
- Interviewthemen für Innovationsführer: aktuelle Position, Erfahrung als Führungskräfte in Innovationen, Innovationsprozess und -projekte, Führungspraktiken

A. Hintergrund

A1. Erfahrung in Innovationen: Wie viele Jahre arbeiten Sie schon in Innovationsbereichen? Wie viele Jahre sind Sie eine Führungskraft in diesem Bereich?

A2. Aktuelle Position: Was ist Ihre aktuelle Position? Was sind Ihre funktionsbezogenen Aufgaben und Verantwortungen?

A3. Führungsaufgaben: Wie viele Mitarbeiter haben Sie? Auf welche Weise interagieren Sie mit Ihren Mitarbeitern in Ihrer täglichen Arbeit?

B. Innovationsprozess

B1. Innovationsprojekte: Können Sie kurz die Art der Innovationsprojekte und -produkte beschreiben, die in Ihrer Abteilung entwickelt werden? Welche Rolle (geschätzt) machen Innovationen aus, die (a) Produkte entwickeln, die auf bestehenden Produkten basieren und darauf abzielen, diese zu verbessern und weiterzuentwickeln? (b) ein völlig neues Produkt entwickeln, das keine oder nur wenige Beziehungen zu bestehenden Produkten hat?

B2. Innovationsprozess: Wie sieht ein typischer Innovationsprozess in Ihrer Abteilung aus?
  - Wie entwickeln Sie Ideen?
  - Wie implementieren Sie Ideen?
  - Was sind Ihre Aufgaben und Verantwortlichkeiten in diesem Prozess?

C. Führungsverhalten

Einführung zum Verhaltensinterview: Dieser Teil des Interviews kann sich von Interviews unterscheiden, die bislang geführt haben. Er konzentriert sich auf das, was Sie in der Vergangenheit getan haben. Bitte benutzen Sie, wenn es geht, die Ich-Form, da uns am meisten interessiert, was Sie getan haben in den Situationen. Wir werden Ihnen spezifische Fragen zu Ihren Erfahrungen stellen und werden Sie bitten, so gut wie möglich zu versuchen, nur von Erfahrungen zu berichten, die Sie in den letzten 3 Jahren gemacht haben. Darüber hinaus werden wir Folgefragen stellen, um mehr Details zu den Situationen zu erfahren.

C1. Aufgeschlossenes Führungsverhalten (Open Behaviors)


Fragen: In welchen Situationen äußern Sie diese Verhalten gegenüber Ihren Mitarbeitern? In welchen Situation haben Sie das Verhalten überreizt? Zu welchen Problem führte das? Was haben Sie getan, um es zu korrigieren?
C1.b. Methode der kritischen Ereignisse (CIT) basierend auf zentralen Verhaltensweisen (siehe Tabelle, im Interview auf Karten vorgelegt):

Fragen: In welchen Situationen haben Sie in der Vergangenheit Ihre Mitarbeiter als Führungskraft [siehe linke Spalte zentrale Verhaltensweisen der Führungskraft]?

[Siehe rechte Spalte überreiztes Verhalten durch Mitarbeiter] – Haben Sie in solchen Situationen korrigierende Maßnahmen ergriffen? Wie sind Sie vorgegangen?

Zentrale Verhaltensweisen für aufgeschlossenes Führungsverhalten

<table>
<thead>
<tr>
<th>Verhaltensweisen der Führungskraft</th>
<th>Resultierendes und überreiztes Verhalten der Mitarbeiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Führungskraft ermutigt, mit verschiedenen Ideen zu experimentieren</td>
<td>Mitarbeiter experimentieren zu viel, ohne zu einem Ende zu kommen</td>
</tr>
<tr>
<td>Führungskraft motiviert, Risiken einzugehen</td>
<td>Mitarbeiter gehen zu viele Risiken ein</td>
</tr>
<tr>
<td>Führungskraft lässt Fehler zu</td>
<td>Mitarbeiter machen zu viele Fehler</td>
</tr>
<tr>
<td>Führungskraft gibt Möglichkeiten für unabhängiges Denken und Handeln</td>
<td>Mitarbeiter driften zu weit vom Kontext ab mit ihren Ideen und Gedanken</td>
</tr>
</tbody>
</table>

1 In Anlehnung an Rosing et al. (2011)

C2. Eingrenzendes Führungsverhalten (Closing Behaviors)

Beschreibung (im Interview auf Karten vorgelegt): Ein weiteres wichtiges Führungsverhalten in Innovationen ermutigt die Mitarbeiter zu einer strukturierten und planvollen Arbeitsweise, zur Zielerreichung und Fehler und Risiken zu limitieren.

Fragen: In welchen Situationen äußern Sie diese Verhalten gegenüber Ihren Mitarbeitern? In welchen Situation haben Sie das Verhalten überreizt? Zu welchen Problem führte das? Was haben Sie getan, um es zu korrigieren?

Methode der kritischen Ereignisse (CIT) basierend auf zentralen Verhaltensweisen (siehe Tabelle):

Fragen: In welchen Situationen haben Sie in der Vergangenheit Ihre Mitarbeiter als Führungskraft [siehe zentrale Verhaltensweisen der Führungskraft]?

[Siehe überreiztes Verhalten durch Mitarbeiter] – Haben Sie in solchen Situationen korrigierende Maßnahmen ergriffen? Wie sind Sie vorgegangen?

Zentrale Verhaltensweisen für eingrenzendes Führungsverhalten

<table>
<thead>
<tr>
<th>Verhaltensweisen der Führungskraft</th>
<th>Resultierendes und überreiztes Verhalten der Mitarbeiter</th>
</tr>
</thead>
<tbody>
<tr>
<td>Führungskraft überwacht und kontrolliert Zielerreichung</td>
<td>Mitarbeiter arbeitet zu zielgerichtet und blendet andere Lösungswege aus</td>
</tr>
<tr>
<td>Führungskraft kontrolliert Einhaltung von Regeln</td>
<td>Mitarbeiter haben keinen Freiraum für Verhalten abseits der Regeln</td>
</tr>
<tr>
<td>Führungskraft sanktioniert Fehler</td>
<td>Mitarbeiter vermeiden Verhalten abseits der Norm</td>
</tr>
<tr>
<td>Führungskraft achtet darauf, dass Pläne eingehalten werden</td>
<td>Mitarbeiter haben keinen Freiraum für Verhalten abseits der Pläne</td>
</tr>
</tbody>
</table>

21 In Anlehnung an Rosing et al. (2011)

D. Wechselspiel von aufgeschlossenem und eingrenzendem Führungsverhalten

Kombinierte Verhaltensweisen (Opening & Closing) Wir haben über zwei Verhaltensweisen gesprochen, eine, die trial-and-error fördert und die andere, die kontrollierend und korrektiv ist:

- Wie kombinieren Sie diese beiden Verhaltensweisen? Warum kombinieren Sie diese so? (Wie) wechseln Sie von einem zur anderen Verhaltensweise?