

**Leading Innovation and Efficiency – Personal and Situational Characteristics
of the Ambidextrous Manager**

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1 Introduction: The importance of innovation in society and business

„*Innovation distinguishes between a leader and a follower*“, Steve Jobs once said. For Jobs, innovation was the key criterion for exceptional leadership qualities. This insight holds true not only for individuals, but for entire societies and their companies.

1.1 Innovation as key to drive societal and economic transformation

In today's rapidly changing world, characterized by pervasive challenges for example in politics, climate and technology / Artificial Intelligence, the need for innovation is undeniable and the driving force behind adapting to and thriving in new realities (Die Zeit, 2024; BR, 2024; ZDF, 2023). Simply put, innovative thinking and action are essential to address today's diverse challenges and keep pace in a dynamic environment. This dynamic landscape in which companies have to operate is reflected in the VUCA model, describing volatile, unpredictable, complex and ambiguous environments (Bennett and Lemoine, 2014; Buckley, 2019; Millar et al., 2018). In his BANI model, the American futurist Cascio describes an even higher degree of chaos and unpredictability than postulated in the VUCA model. He argues that companies today have to cope with completely unpredictable crises (Stöttinger, 2022). For companies, the ability to anticipate and respond innovatively to changes in market dynamics, consumer preferences, technological advances, or the regulatory environment is critical to survival and success in turbulent times (Du & Chen, 2018).

Failure to innovate and adapt often leads to inertia with fatal consequences. For instance, Kodak, once a dominant player in the photography industry, failed to anticipate the shift in consumer behavior from printing photos to sharing them digitally. Although Kodak had the leading technology in digital photography, its resistance to change and adherence to traditional business models led to its downfall. The company's slow response to evolving trends and consumer demands eventually led to its irrelevance in a rapidly changing market landscape (Lucas et al. 2009). Another example with a similar focus is Blockbuster. While the company continued to rely on the traditional model of renting DVDs in physical stores, Netflix disrupted the industry. Despite the emergence of streaming services and changing consumer preferences, Blockbuster remained focused on physical rental stores, and was forced to file for bankruptcy in 2010.

1.2 Challenge for businesses: Balancing innovation and efficiency

While innovation is recognized as a driver of competitive advantage and long-term growth, it must be complemented by solid, proven structures, processes, and monetization strategies to turn inventive ideas into tangible value. The case of Ericsson, known for its innovative R&D initiatives, serves as an example in this regard. For much of its history, Ericsson has consistently focused on innovation and technological expertise, leading the way in the development of innovative telecommunications infrastructure and solutions. However, the pursuit of excellence in exploration and research has often come at the expense of commercial profitability. Despite groundbreaking achievements, Ericsson has failed to effectively exploit its innovations, resulting in declining financial performance and eroding market share (Kern, 2022).

These examples illustrate what has always been important, and is becoming even more important in an increasingly dynamic environment: that neither exploitation - adhering to traditional behaviors and processes (e.g. Kodak, Blockbuster) - nor exploration - focusing exclusively on new ideas and innovation (e.g. Ericsson) - should dominate (Papachroni et al. 2016). Levinthal and March (1993) described this as the success trap (overemphasis on exploitation at the expenses of exploration) and the failure trap (overemphasis on exploration at the expenses of exploitation). It remains a challenge for organizations to ensure a proper balance between exploring innovation to remain adaptable in the future and using proven resources and practices to operate efficiently today. This is a particular challenge for small and medium-sized enterprises (SMEs), which make up 99% of the German economy (Statistisches Bundesamt, 2022). In contrast to larger companies, SMEs are subject to unique structural constraints that make it particularly difficult to drive innovation while remaining true to their core business (Wenke et al. 2021). This dissertation examines how SMEs and their leaders can manage this complex task and be innovative without losing focus on their core business. By understanding the challenges and strategies associated with this dual role, this research aims to provide insights for SMEs and their leaders to succeed in dynamic environments. The need to address this issue results not just from the numerous changes in our landscape, but also from the declining capacity for innovation in Germany. While Germany is strong in research and development, implementation - the transfer of knowledge into innovation - was rated lower in the current innovation indicator (BDI, 2024). As the president of the Federation of German Industries (BDI) states, "Our competitiveness depends fundamentally on our ability to innovate" (BDI, 2024) – a sentiment that reflects Steve Jobs' statement that innovation is what separates leaders from followers.

2 Theoretical Background: Ambidexterity as a strategic response to the need for Innovation

The approach of creating a balance between the two described sides (exploitation and exploration) is termed ambidexterity. This essentially describes the ability of organizations to profitably leverage existing assets and positions while exploring new technologies and markets (O'Reilly & Tushman, 2011; Hafkesbrink & Schroll, 2014).

2.1 Conceptualizing ambidexterity: Definition and dimensions

Ambidexterity describes a dichotomy that can be considered at the macro and the micro level. The macro level refers to higher-level systems, structures, or units that consist of a large number of parts or individuals. For example, this could be an organization, as in the present study. The micro level refers to smaller, individual units within the larger system. In this study, this is the individual leader within an organization (Mueller et al. 2020). Organizational ambidexterity (macro level) was originally introduced by Duncan (1976) and refined by Tushman and O'Reilly (1996). O'Reilly and Tushman (2011, p. 324) describe organizational ambidexterity as “the ability to simultaneously pursue both incremental and discontinuous innovation...from hosting multiple contradictory structures, processes and cultures within the same firm.” It describes a balance between the application of established knowledge (Exploitation) and the generation of new knowledge (Exploration). The need for such a balance is underlined by the consequences of imbalance: An exclusive focus on exploration reduces efficiency and can inhibit the improvement of existing processes (March, 1991), while an overemphasis on exploitation hinders critical questioning and innovative thinking (Benner & Tushman, 2003).

On the micro level, competing demands are ubiquitous for leaders (Lewis and Kelemen, 2002; Jarzabkowski et al., 2013), including those of ambidexterity. Achieving organizational ambidexterity requires competent leaders who are able to manage these tensions (Duncan, 1976; Quinn and Cameron, 1988; Spender and Kessler, 1995; Tushman et al. 2010). In this sense, organizational ambidexterity relies on individual capabilities, especially the ability of managers to deal with conflicting demands and goals (Güttel et al. 2015). Individual ambidexterity is defined as “the individual-level cognitive ability to flexibly adapt within a dynamic context by appropriately shifting between exploration and exploitation” (Good & Michel, 2013, p. 4). Trying to fulfill both requirements at the same time can leave leaders torn between the poles of action. Specifically, these poles are the extent to which employees take

risks, experiment, and encourage exploration, while also monitoring and controlling goal achievement through established routines (Gebert & Kearney, 2011; Zacher & Rosing, 2015).

Hence, ambidexterity helps organizations maintain their strategic adaptability by adapting to the current environment while preparing for potential turbulence (Heracleous et al. 2017). Under volatile and uncertain conditions, organizational ambidexterity is particularly important (Du & Chen, 2018). Research shows that striving to explore and exploit has a positive impact on performance. Companies that innovate both disruptively and incrementally tend to experience sales growth and better performance (He & Wong, 2004; Jansen et al. 2005). Recent studies also show a significant positive relationship between (contextual) ambidexterity and SME performance (Ramdan et al. 2022).

2.2 Measuring ambidexterity on the organizational and individual-level

When it comes to measuring ambidexterity, empirical studies dominate the landscape, with quantitative approaches clearly outranking qualitative ones. About 80 percent of the studies use quantitative methods, while only about 20 percent apply qualitative methods (Mueller et al. 2020). In the field of organizational ambidexterity (macro level), particularly in the area of contextual ambidexterity, it is often conceptualized as a multidimensional construct that includes alignment and adaptability. For example, Gibson and Birkinshaw (2004) suggest elements such as coherence in management systems to support overall goals (alignment) and flexibility to adapt quickly to market changes (adaptability). Example items for alignment include: “The management systems in this organization work coherently to support the overall objectives of this organization” and “The management systems in this organization cause us to waste resources on unproductive activities” (reverse). Example items for adaptability include: “The management systems in this organization encourage people to challenge outmoded traditions/practices/sacred cows” and “The management systems in this organization are flexible enough to allow us to respond quickly to changes in our market.” Furthermore, within the framework of organizational ambidexterity, exploration and exploitation are described as two different forms of organizational learning. For example, skill exploration involves the acquisition of entirely new technologies and skills, while skill exploitation involves the improvement of current knowledge and skills for known products and technologies (Khan & Mir, 2019). Exploration sample items: „Over the last three years, our organization has acquired technologies and skills entirely new” and “learned new skills for the first time.” Exploitation sample items include: “Over the last three years, our organization has upgraded current

knowledge and skills for familiar products and technologies” and “...upgraded skills in product development processes in which the business unit already possessed significant experience.”

On the individual level, studies use predominantly quantitative methods to investigate the factors that facilitate the emergence of ambidextrous leadership behavior (e.g., Keller & Weibler, 2014; Spisak et al., 2014). Within the measurement spectrum, two poles emerge: exploration and exploitation, or open and closed behaviors. Keller and Weibler (2014) operationalize exploration through activities that deal with unfamiliar situations or complexity. Exploration items include: “Activities in which you have to deal with previously unknown situations” and “Activities that are so complex that they are difficult to survey at the start”. Example exploitation items include: “Activities that you carry out very routinely” and “Frequently recurring activities.” Zacher and Rosing (2015) describe open leadership behaviors such as encouraging experimentation and closed behaviors such as establishing routines. Example items for opening leadership behavior include: “My supervisor allows different ways of accomplishing a task” and “My supervisor encourages experimentation with different ideas.” Closing leadership behavior items include “My supervisor establishes routines” and “My supervisor pays attention to uniform task accomplishment.” Zacher and Rosing (2015) show that opening and closing behavior are two distinct factors. In addition, the scales developed by Mom et al. (2007) provide items that characterize managers' exploration activities, including searching for new opportunities and evaluating different options, which are contrasted with exploitation activities focused on serving existing customers or achieving short-term goals, as described by March (1991). Example items for managers' exploration activities include: “To what extent do you search for new possibilities with respect to products/services, processes or markets?” and “To what extent do you evaluate diverse options with respect to products/services, processes or markets?” Example items for managers' exploitation activities include: “To what extent do you engage in activities that serve existing (internal) customers with existing services/products?” or “To what extent do you engage in activities primarily focused on achieving short-term goals”?

Ambidexterity is a balance act requiring creative thinking and leadership on the one side and adherence to standardized routines on the other (Bledow et al., 2009). In fact, achieving ambidexterity is one of the major challenges for leaders and organizations (O'Reilly and Tushman, 2011).

2.3 Three perspectives on achieving ambidexterity

Similarly, Gupta and colleagues (2006, p. 697) illustrate how hard it is to implement ambidexterity: “Although near consensus exists on the need for balance [i.e. ambidexterity], there is considerably less clarity on how this balance can be achieved.” This chapter looks first at achieving ambidexterity at the organizational level, and then at the individual level. On the organizational level, it can be distinguished between *structural* and *contextual* antecedents.

The *structural antecedents* of ambidexterity distinguish between structural and sequential ambidexterity. Advocates of structural ambidexterity refer to the difference between the two processes of Exploration and Exploitation and argue for the organizational separation of these dimensions (Rosenbloom & Christensen, 1994; Tushman & O’Reilly, 1996). They claim that both processes require different approaches to learning (March, 1991). According to O’Reilly and Tushman (2004), ambidextrous organizations thus separate their explorative units from their traditional, exploitative units. Both units have their own processes, structures, and cultures, yet there are links between the two units at the management level. Spatial separation offers a key benefit: it allows individual subunits to concentrate on their core strengths and competencies (Asif, 2017). Within sequential ambidexterity, organizations focus more on exploration in one period and more on exploitation in the next (Raisch & Birkinshaw, 2008).

Contextual antecedents also play an important role in fostering ambidexterity (Gibson & Birkinshaw, 2004; Asif, 2017). Ghoshal and Bartlett (1994) suggest that four attributes - stretch, discipline, support, and trust - work together to facilitate contextual ambidexterity. First, performance management combines the two aspects of stretch and discipline and focuses on getting individuals to achieve results and take responsibility for their efforts. Second, social support, a balance of trust and support, is about giving individuals the security and autonomy, they require to perform at their best. Both performance management and social support are important pillars that complement each other. Their solid presence creates an environment conducive to high performance and leads to an ambidextrous organization (Gibson & Birkinshaw, 2004). Similarly, based on Cameron and Quinn's (1999) model, conceptual factors that are important for exploration and exploitation can be identified. Cameron and Quinn's model distinguishes four types of organizational cultures: clan, adhocracy, market and hierarchical. An emphasis on control (market and hierarchical) leads to a culture that is conducive to exploitation, while an emphasis on flexibility (clan and adhocracy) favors a culture that is conducive to exploration (Asif, 2017).

To understand the causes of organizational ambidexterity, it is critical to understand ambidexterity at the level of the individual and to investigate how leaders can inspire ambidexterity within their followers, thus exploring *leadership-based antecedents*. Ambidextrous leadership involves a dynamic interplay between the leader's behavior that encourages employees to develop new ideas and the behavior that supports implementation. This requires the leader to flexibly switch between these behaviors (Rosing & Zacher, 2023). Leaders play a central role in fostering ambidexterity in organizations; however, this remains a relatively understudied leadership task. What is still needed are more qualitative studies at the individual level to highlight the complexity of the phenomenon and reveal the organizational mechanisms, practices, and people behind this capability (Cantarello et al. 2012). Havermans et al. (2015) show that leaders must respond adaptively to environmental stimuli and shift between both practices. Further research suggests that transformational leadership behaviors, particularly "individual consideration", "intellectual stimulation" and "inspirational motivation" promote explorative innovation, while exploitation benefits from both transformational and transactional leadership (Berraies & Abidine, 2019; Baškarada et al. 2016).

2.4 Ambidexterity in Corporates vs. SMEs

Organizational scholars argue that organizational ambidexterity is crucial for a sustainable competitive advantage (Junni et al. 2015). Numerous studies conclude that the quest for exploration and exploitation has a favorable effect on performance: He and Wong (2004) find a positive relationship between the interplay of explorative and exploitative strategies and revenue growth. Jansen et al. (2005) find a positive correlation between performance and a company's ability to innovate both disruptively (exploration) and incrementally (exploitation). Recent research by Ramdan et al. (2022) shows a significant positive relation between contextual ambidexterity and SME performance. At the organizational level, case study designs are often used to identify how organizational ambidexterity translates into tangible benefits (e.g., O'Reilly et al., 2011). However, the correlation between organizational ambidexterity and performance outcomes is complex and influenced by various contextual and methodological factors. While ambidexterity is generally associated with positive outcomes, Junni et al. (2015) emphasize that industry dynamics and measurement approaches significantly moderate this relationship.

In particular, much of the existing literature focuses on larger firms (Wenke et al. 2021), so the applicability of these findings to SMEs is uncertain. In contrast to larger firms, resource constraints in SMEs may hinder the successful implementation of ambidexterity (Lubatkin et al. 2006). The structural separation often suggested for larger firms is rarely a practical option (Chang & Hughes, 2012; Wenke et al. 2021; Mu et al. 2022). So how could SMEs position themselves ambidextrously? There is contradictory empirical evidence of whether ambidexterity or a focus on either exploration or exploitation is more beneficial for SMEs. Given the high costs of maintaining dual structures, it may be more practical for SMEs to prioritize either exploration or exploitation and sequentially switch (O'Reilly & Tushman, 2013; Wenke et al. 2021). Moreover, previous research in SME contexts tends to emphasize how firms can become ambidextrous. However, the resulting internal conflicts and how to deal with them are less frequently addressed (Raisch & Birkinshaw, 2008; De Clercq et al. 2013). Hence, there is limited knowledge about if and how organizations, especially SMEs, manage the dichotomy of exploration and exploitation (Suzuki, 2014; Felício et al., 2019) and how (middle) managers specifically navigate this process (Papachroni et al. 2016; Renzl et al., 2013; Hodgkinson et al., 2014; Harvard Business Manager, 2023). The study of how actors on the individual level perceive and manage the relationship between exploration and exploitation under different circumstances is under-researched (Nosella et al. 2012; Hodgkinson et al, 2014; Rogan and Mors, 2014; Felício et al. 2019).

3 Research objectives: Approaches for ambidexterity in SMEs

In summary, there are different methodologies to approach the topic of ambidexterity. Most studies use quantitative designs, but qualitative designs such as case studies are also applied. **Second**, studies are conducted at both the organizational and individual (leadership) level to understand the phenomenon from different angles. **Third**, SMEs may face greater challenges in implementing ambidexterity than large firms and there is still insufficient research on how SMEs (organizational level) and leaders (individual level) cope with the challenges of ambidexterity.

3.1 Central research objective: Exploring ambidexterity strategies in SMEs

Based on the collected findings, this dissertation aims to explore the challenges and strategies related to ambidexterity, especially for small and medium-sized enterprises (organizational level) and for leaders (individual level). Through a comprehensive analysis, the dissertation aims to shed light on the factors that influence the successful adoption of ambidextrous

practices by leaders in SMEs. On a meta-level, it aims to create a holistic understanding of what ambidexterity means for SMEs and how they can promote it on the individual and organizational level. Specifically, this dissertation answers the following question:

- What are the **challenges** of ambidexterity for SMEs and what are the **strategies** to promote it?

3.2 Detailed research questions for the studies in this dissertation

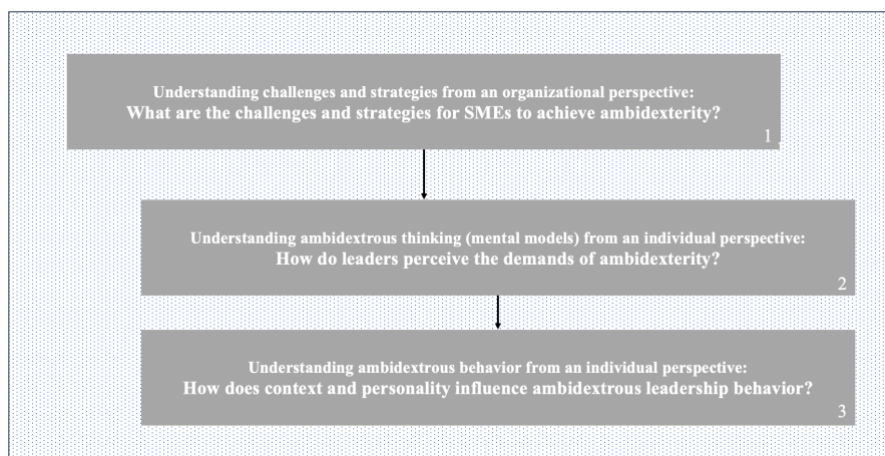


Illustration 1: Research Questions I-III

Study I: What are the challenges and strategies for SMEs to achieve ambidexterity?

First, two comparative case studies are applied to examine how SMEs deal with ambidexterity at the organizational level. This approach aims to understand the dynamics related to ambidexterity in SMEs as well as the contextual factors that shape ambidextrous activities in these firms. The use of a qualitative case study methodology allows for a nuanced exploration of the ways in which these SMEs divide exploration and exploitation in their businesses (Ridder, 2017). The findings of the first study demonstrate that ambidexterity implementation is highly dependent on various contextual elements, including organizational identity and (lack of) top management support. In addition, the study explores the different approaches taken by managers. In both cases, it is evident that ambidexterity places high demands on leaders: In Case 1, on the entire management team, which has difficulty implementing exploitation within the framework of a strong family identity. In case 2, the challenge lies primarily with middle management, which wants to lead in an explorative manner despite the tough approach of top management.

Study II: How do leaders perceive the demands of ambidexterity?

Not only the first study, but also previous research shows that the demands of ambidexterity involve a cognitive balance, which is one of the toughest challenges for leaders (O'Reilly & Tushman, 2004) and often leads to only one side of ambidexterity being chosen (Poole & Van de Ven, 1989). In fact, little is known about how leaders process the two sides of ambidexterity. In the second qualitative study, I analyze the demand aspect in more detail and focus on the individual leader. I aim to understand the cognitive demands of ambidexterity that leaders face in exploration and exploitation. To do so, I use a qualitative approach, more specifically the ZMET methodology. The findings demonstrate that leaders' cognition of ambidextrous leadership is shaped by the context of the organization and by its goals and values. Leaders choose very different strategies to handle explorative and exploitative leadership demands, with the "restriction of the scale of innovation" and the "individual consideration of employees" as the main strategies. The first two studies thus show that both the context in which the individual manager operates as well as personal perceptions of ambidexterity and its challenges appear to have an influence on the behavior.

Study III: How does context and personality influence ambidextrous leadership behavior?

In the third quantitative and final study, I examine the factors that influence explorative and exploitative leadership behavior. I analyze contextual (Goshal & Bartlett, 1994) and personality (Judge & Bono, 2000) factors and their influence on behavior. In a sample of N=140 managers, I examine autonomy and environmental uncertainty as contextual factors and emotional stability and openness to experience as personality factors. It is particularly interesting that uncertainty is positively related to explorative leadership behavior. This suggests strategies for organizations that operate in dynamic environments and should reframe uncertainty as an opportunity for exploration and innovation (White & Shullman, 2010).

3.3 Research Contribution: Advancing Multilevel Understanding of Ambidexterity in SMEs

The results of this study make contributions to the further development of existing theoretical frameworks on ambidexterity at both the organizational, macro and the individual, micro levels. At the organizational level, the study improves our understanding of the impact of ambidexterity demands on SMEs and sheds light on how these organizations might deal with ambidexterity, especially through the differentiated perspective of middle management (Renzi et al., 2013; Hodgkinson et al., 2014). The study offers a comprehensive examination of what

ambidexterity means in an SME context and provides insights into the specific challenges and manifestations that SMEs might face (Suzuki, 2014; Felício et al., 2019; Wenke et al. 2021). At the individual level, the research addresses the individual experiences of leaders, which enriches our understanding of individual thought processes in ambidextrous leadership (Wofford, 1994). This helps to understand why some people are more comfortable at dealing with the (ambidexterity) demands, while others find it difficult. In addition, the dissertation contributes to the literature by uncovering factors that positively influence explorative leadership behavior and provides a nuanced perspective on the intricacies of fostering explorative leadership (Goshal & Bartlett, 1994; Judge & Bono, 2000). Furthermore, while traditional studies examine ambidexterity either on the organizational- or on the individual-level, this dissertation examines how these elements interdependently shape ambidexterity in SMEs.

A methodological contribution is made in the second study in particular: The ZMET method is used, in which the participants bring pictures to the interview appointment that represent their experiences with ambidextrous leadership. This method enables access to the cognitive structures of the participants. To my knowledge, there are no studies in leadership research, especially in ambidextrous leadership, that use ZMET, which originally comes from marketing. My study could therefore serve as a springboard for further research using this method.

4 Empirical studies: Insights into ambidexterity in SMEs

The following chapters cover the three empirical studies of this dissertation.

4.1 Sustainable Leadership Activities in SMEs: Can Nonexploitative Exploitation Support Long-Term Orientation?

Keuscher, T. & Vergossen, H. (2024): Sustainable Leadership Activities in SMEs: Can Nonexploitative Exploitation Support Long-Term Orientation? *Journal of Leadership and Management*, 10(2), 54-76.

ABSTRACT

Small and medium-sized enterprises (SMEs) face unique challenges in managing conflicting demands while striving for long-term sustainability. This study explores the role of ambidextrous leadership in fostering sustainable practices within SMEs, addressing a gap in existing literature. Employing a comparative case study design, data was collected from two SMEs representing contrasting organizational cultures. Analysis revealed distinct leadership approaches and organizational contexts. In one case, a familial culture facilitated open leadership activities, while in the other, a focus on innovation led to top-down control. Both

cases demonstrated efforts towards what we call 'Nonexploitative Exploitation,' balancing control and autonomy to promote long-term orientation. The findings underscore the importance of organizational culture in shaping leadership behaviors and driving sustainable outcomes. While familial cultures foster employee loyalty, they hinder adaptability, whereas innovation-focused cultures drive competitiveness but risk employee dissatisfaction. This study contributes via insights into reconciling conflicting demands for exploration and exploitation, empowering SMEs to cultivate supportive environments aligned with long-term objectives, bridging sustainable leadership and ambidexterity.

Introduction

For small and medium-sized enterprises (SMEs), long-term survival is a critical issue and often requires managing conflicting demands (Franco & Haase, 2010; Garcia et al., 2022; Verbano & Venturini, 2013). Most importantly, SMEs face challenges due to their often-discussed limited resources (De Clercq et al., 2014; Lubatkin et al., 2006; Wenke et al., 2021). It can be argued that managing such conflicting demands and achieving long-term economic sustainability regardless is the goal of sustainable leadership activities (Assoratgoon & Kantabutra, 2023; Lee et al., 2023; Liao, 2022; Odegbesan et al., 2023).

SMEs do already address the issues related to sustainable leadership. Firstly, the concept of business sustainability, which at times encompasses economic, social, and environmental dimensions, necessitates SMEs to balance multiple priorities while ensuring long-term viability (Al-Shaikh & Hanaysha, 2023). Especially financial and human capital can be considered barriers to such strategic goals, which hinder their ability to invest adequately in sustainability initiatives (Shields & Shelleman, 2020). Additionally, cultural factors play a significant role in shaping SMEs' approach towards sustainability. Regional and geographic cultural antecedents influence owner-managers' attitudes and behaviors regarding sustainability, with some SMEs exhibiting a strong moral identity rooted in community responsibility and trust (Kraus et al., 2020).

For the study at hand, however, sustainability needs to be focused on issues related to 'business sustainability', as elaborated and understood by Al-Shaikh and Hanaysha (2023, p. 1), in terms of "implementing best practices and approaches for dealing with social, environmental, and economic aspects to ensure business development". For SMEs specifically, this perspective has been addressed so far by various approaches. For example, research by Franco and Matos

(2015) highlights the diverse leadership styles present in SMEs, with no single style dominating consistently. Transformational leadership, characterized by inspiring and motivating employees towards a shared vision, can be particularly beneficial in SMEs due to its emphasis on intrinsic motivation and individualized consideration. However, the effectiveness of leadership styles varies based on factors such as the SME's operating environment, sector, and geographical region. For instance, while transformational leadership may enhance performance in dynamic settings, transactional leadership might be more suitable for routine-based tasks in less dynamic environments (Franco & Matos, 2015). Moreover, Nguyen et al. (2021) emphasize the pivotal role of entrepreneurial leadership in driving SME performance. Entrepreneurial leadership fosters entrepreneurial orientation within SMEs, leading to increased organizational innovation and dynamic capabilities. However, the effectiveness of entrepreneurial leadership hinges on mediating factors such as team creativity, competitive advantage, and technological innovation capability. These factors serve as conduits through which entrepreneurial leadership influences SME performance, highlighting the intricate interplay between leadership styles and organizational dynamics. Viana Feranita et al. (2020), on the other hand, underscore the significance of leadership style in promoting innovation within SMEs. Transformational leadership emerges as a key driver of innovation and performance, surpassing the impact of transactional leadership. Transformational leaders inspire innovation through visionary leadership and individualized consideration, thereby enhancing SMEs' adaptability and competitiveness. Transactional leadership, although positively associated with innovation, exhibits a lesser direct effect on SME performance but exerts an indirect influence through innovation mediators.

An interesting perspective that has appeared in recent research, although still scarcely researched, is the concept of ambidextrous leadership in SMEs. Research by Busola Oluwafemi et al. (2020) highlights the importance of ambidextrous leadership in SMEs for fostering both explorative and exploitative innovation behaviors. According to this work, leaders who demonstrate openness in their leadership behavior create an environment conducive to creativity and learning, fostering explorative innovation. Conversely, leaders employing closedness in their leadership behaviour direct followers towards goal accomplishment, encouraging exploitative innovation. In the context of Qatar, Al-Eida (2020) explores the impact of ambidextrous leadership on organizational excellence in SMEs. Furthermore, the COVID-19 pandemic has exacerbated challenges for SMEs, necessitating innovative approaches to leadership. Atiku and Randa (2021) emphasize the role of ambidextrous

leadership in sustaining SMEs post-pandemic, particularly in promoting workforce creativity, continuous improvement, and resource efficiency.

Despite these advancements, a gap remains in understanding how ambidextrous leadership contributes to sustainable leadership practices in SMEs, particularly in managing conflicting demands and supporting long-term orientation. By addressing this gap, this study can provide valuable insights into the mechanisms through which ambidextrous leadership fosters sustainable leadership practices in SMEs, ultimately enhancing their long-term viability and success (Avery & Bergsteiner, 2011; Hargreaves & Fink, 2012; Lang & Keuscher, 2020).

The research methodology employed in this study embraces a comparative case study design. This approach facilitates an in-depth exploration and comparison of two distinct cases, offering a comprehensive understanding of the phenomena under investigation. By meticulously selecting these cases, the study aims to capture diverse perspectives and experiences. Data collection methods include expert interviews with entire management teams, daily self-reflections, and semi-structured interviews, ensuring a thorough exploration of leadership behaviors and organizational dynamics.

The main contribution of the article lies in its exploration of the connection between sustainable leadership and ambidexterity within small and medium-sized enterprises (SMEs), as evidenced by the analysis of two the contrasting cases.

Sustainable leadership and ambidexterity

The imperative of sustainable leadership in SMEs lies in its capacity to navigate these challenges while steering the organization towards long-term economic sustainability (Assoratgoon & Kantabutra, 2023; Lee et al., 2023; Liao, 2022; Odegbesan et al., 2023). It can be observed from further studies that in this particular field of interest, especially for SMEs, a main concern is the management of exploitation and exploration – two key elements of ambidextrous leadership (Ansah et al., 2022; He & Wong, 2004; Garretsen et al., 2020; Poon & Mohamad, 2020; Zacher & Rosing, 2015; Raisch & Birkinshaw, 2008; Turner et al., 2013). Moreover, previous studies have highlighted the importance of balancing exploitation and exploration (Jansen et al., 2009; O'Reilly & Tushman, 2013; Zacher & Rosing, 2015). In contrast, some scholars wonder whether exploitation or exploration are more beneficial than

ambidexterity and are left questioning if SMEs should focus more on either one of them or perhaps switch between these two (Samimi et al., 2022; Kang & Kim, 2020).

The most recent studies explicitly addressing the aim for sustainable leadership in SMEs in terms of an ambidextrous leadership understanding also take a look at the multifaceted challenges that SMEs face and that could jeopardize their sustainability on a daily basis. One crucial strategy for overcoming these challenges is through strategic alliances. Russo and Schena (2021) explore the innovative concept of ambidexterity within the context of SME alliances, aiming to address the exploration-exploitation dilemma for enhanced financial performance. In the manufacturing sector, Hossain et al. (2023) emphasize the necessity for SMEs to adopt Industry 4.0 technologies and complex leadership approaches to attain sustainability. Their study reveals that organizational ambidexterity mediates the relationship between these factors, while strategic flexibility moderates their effects. Finally, Malik et al. (2024) delve into the relationship between ambidextrous leadership style and human resource management (HRM) practices in knowledge-intensive SMEs. Their findings emphasize the positive impact of ambidextrous leadership on creating a culture conducive to innovation, trust, and employee empowerment, thus enhancing strategic agility and organizational outcomes.

Furthermore, sustainable leadership in SMEs has its roots in foundational concepts such as Rhineland leadership, which champions a long-term orientation, incremental and radical innovation, ethics, and corporate social responsibility (Avery, 2005; Kantabutra, 2012; Kantabutra & Avery, 2011; Kantabutra & Suriyankietkaew, 2013). Building on these foundations, sustainable leadership has been associated with models such as authentic, responsible, and transformational leadership, each offering unique insights into leadership dynamics within SMEs (Avolio & Gardner, 2005; Bass, 1985; Maak & Pless, 2006). Notably, sustainable leadership entails not only making long-term decisions but also driving systemic innovation, nurturing workforce development, and delivering high-quality products and services (Avery & Bergsteiner, 2011; Ranabahu & Wickramasinghe, 2022).

Research endeavors have explored the role of sustainable leadership in fostering organizational resilience, innovation, and competitiveness (Bansal & Song, 2017; Haroon et al., 2019; Kuenkel, 2016), as well as its antecedents, including personal values and ethical climates (Armani et al., 2020; Dey et al., 2022; Schneider et al., 1996). Moreover, studies have examined the influence of factors such as gender, nationality, and culture on shaping sustainable

leadership activities, enriching our understanding of leadership dynamics in diverse SME contexts (Bulmer et al., 2021; Shinbrot et al., 2019). Hallinger and Suriyankietkaew's (2018) science mapping study identifies key research themes, sub-themes, influential authors, and journals in the field, while also underlining gaps and potential future research directions. By focusing on conceptualizations, measures, and outcomes of sustainable leadership, Liao analyses sustainable leadership at the individual and organizational levels (Liao, 2022).

Therefore, sustainable leadership and ambidextrous leadership represent pivotal dimensions of SME success. While sustainable leadership encompasses a holistic approach to balancing economic, social, and environmental imperatives, ambidextrous leadership focuses on managing exploitation and exploration to drive innovation and performance. The potential link, as well as potentially related challenges, are the main focus of the study at hand.

The research gap identified in the introduction, concerning the understanding of how ambidextrous leadership contributes to sustainable leadership practices in SMEs, particularly in managing conflicting demands and supporting long-term orientation, is reflected in two distinct problems highlighted by this brief literature review. Firstly, the imperative of sustainable leadership in SMEs, as discussed by Assoratgoon & Kantabutra (2023), Lee et al. (2023), Liao (2022), and Odegbesan et al. (2023), underscores the critical need for SMEs to navigate challenges while steering towards long-term economic sustainability. Secondly, the management of exploitation and exploration, essential elements of ambidextrous leadership, emerges as a main concern in the literature (Ansah et al., 2022; He & Wong, 2004; Garretsen et al., 2020; Poon & Mohamad, 2020; Zacher & Rosing, 2015; Raisch & Birkinshaw, 2008; Turner et al., 2013). While some scholars emphasize the importance of balancing exploitation and exploration (Jansen et al., 2009; O'Reilly & Tushman, 2013; Zacher & Rosing, 2015), others question whether focusing on one dimension over the other or adopting ambidextrous leadership altogether is more beneficial for SMEs (Samimi et al., 2022; Kang & Kim, 2020).

Moreover, recent studies explicitly addressing sustainable leadership in SMEs within the framework of ambidextrous leadership explore multifaceted challenges faced by SMEs and strategies for overcoming them. Russo and Schena (2021) examine the role of strategic alliances in addressing the exploration-exploitation dilemma, while Hossain et al. (2023) emphasize the adoption of Industry 4.0 technologies and complex leadership approaches. Similarly, Malik et al. (2024) investigate the relationship between ambidextrous leadership style and human

resource management practices in knowledge-intensive SMEs, highlighting its positive impact on innovation, trust, and employee empowerment. Furthermore, foundational concepts such as Rhineland leadership, authentic leadership, responsible leadership, and transformational leadership are discussed in the literature, emphasizing long-term orientation, innovation, ethics, and corporate social responsibility as integral aspects of sustainable leadership in SMEs (Avery, 2005; Kantabutra, 2012; Avolio & Gardner, 2005; Maak & Pless, 2006).

The intersection of sustainable leadership and ambidextrous leadership thus represents pivotal dimensions of SME success, with potential links and challenges being the main focus of the study. By addressing these issues, the study aims to provide valuable insights into the mechanisms through which ambidextrous leadership fosters sustainable leadership practices in SMEs, ultimately enhancing their long-term viability and success.

Methodology

Design and Sample. For studying the research question at hand, we employed a comparative case study design (Eisenhardt, 1991; Yin, 2009). This design provides the possibility of an in-depth examination and comparison of multiple cases (Bartlett & Vavrus, 2017; Harrison et al., 2017). It allows a comprehensive understanding of the investigated phenomenon and its influencing factors (Ridder, 2017). One sampled company was a textile company that rented workwear to a small local customer base having a strong service culture. This was a financially strong and growing family business with approximately 140 employees. The other company was founded in 1823 and has been in the family for six generations. Now owned and run by two sons, it provided tax services to a large customer base across Germany. We assumed that the latter predominantly relied on remote work processes, whereas the former on closer personal relationships.

Table 1 summarizes the overall study design. The cases described represent both unique and critical instances within the study's context of investigating ambidextrous leadership and sustainable practices in SMEs. Firstly, the uniqueness of each case lies in their distinct characteristics and operational contexts. The textile company's emphasis on personal relationships and service culture, coupled with its status as a financially strong family business catering to a local customer base, distinguishes it from other SMEs. Similarly, the second company's multi-generational family ownership, long-standing history since 1823, and reliance on remote work processes for providing tax services across Germany set it apart as a unique

case study subject. Furthermore, the criticality of these cases stems from their potential to offer valuable insights into the research questions at hand. Each case represents a critical point of analysis for understanding the interplay between ambidextrous leadership and sustainable practices in SMEs. By examining these distinct contexts, the study can glean insights into the mechanisms through which ambidextrous leadership fosters sustainability within SMEs, ultimately contributing to their long-term viability and success.

For the first case company, the research team utilized the study design to investigate the implementation of organizational change. Daily self-reflections in the form of written diaries provided a unique window into the individual experiences and reflections of managers throughout the implementation process. This method allowed for real-time documentation of emotions, challenges, and breakthroughs encountered by managers, offering invaluable qualitative data for analysis. Expert interviews, conducted with senior and line managers, delved deeper into specific aspects of the organizational change, garnering expert opinions and insights from those directly involved in the process. The audio recordings of these interviews ensured the preservation of detailed responses and enabled researchers to revisit and analyze the discussions thoroughly. For the second case company, the research team applied the same study design to evaluate the effectiveness of a leadership development program as for the first company. In comparing the two case studies, several commonalities and differences emerge in the application of the study design. Both cases highlight the importance of initial interviews in setting the context and objectives of the research, albeit with different focuses on organizational change and leadership development.

[Insert Table 1 here]

Data Collection. The senior managers of both cases supported our assumption and agreed to participate with their entire management teams. We conducted in-depth expert interviews with the entire management teams in two SMEs, identified in the university's company network (DiCicco-Bloom & Crabtree, 2006; Denzin, 2007; Garretsen et al., 2020; Magilvy & Thomas, 2009). The initial interviews exclusively involved senior managers, allowing for in-depth discussions on the objectives, challenges, and anticipated outcomes of the change initiative. Through audio recordings, researchers captured nuanced insights regarding managerial perspectives and strategies. The online kick-off session, which included both senior and line managers, facilitated the dissemination of key information and fostered alignment among

stakeholders. Zoom recordings enabled the researchers to observe non-verbal cues and interactions, enriching their understanding of managerial dynamics during the kick-off phase.

Hence, our research design focused on a self-assessment of all senior and line managers ($n = 24$) of conflicting situations and their management reactions in the context of exploitative or explorative activities. Our research design followed three steps. First, we held an online kick-off session of approximately 15 minutes with all 24 managers to introduce the study and ourselves. Secondly, all senior and line managers participated in daily self-reflections for approximately 15 minutes per day during one work week. These sessions focused on critical demands in connection with leadership situations. Third, building on the self-reflections, we conducted semi-structured expert interviews with all managers (see Table 2). This became the main means of data collection. The semi-structured interview guide provided serves as a foundational tool for conducting a comparative case study focusing on the contexts and leadership behaviors of senior and line managers within organizations. This guide encompasses two primary sections: a warm-up segment centered on contextual factors and a main section focusing on leadership dynamics. Within the warm-up segment, the interviewer initiates the discussion by probing the interviewee's experiences with self-reflection, thereby setting the stage for introspective dialogue. Subsequent inquiries delve into the interviewee's responsibilities, tasks, and the competitive landscape within their industry. This contextual understanding is further enriched by exploring both the overarching organizational culture and the specific cultural nuances within the interviewee's department. Additionally, the interviewer seeks to gauge the current atmosphere within the department to capture any recent developments or prevailing sentiments. Transitioning to the main part of the interview, attention shifts towards leadership-related inquiries. The interviewee is prompted to recount a specific leadership scenario documented in their diary study, providing a tangible basis for discussion. Through open-ended questioning, the interviewer seeks to elucidate the rationale behind the interviewee's leadership approach, thus unraveling their underlying motivations and decision-making processes. Exploratory dialogue ensues regarding potential alternative courses of action in the described situation as well as the perceived barriers preventing their adoption. This exploration extends to the interviewee's overarching leadership style, encompassing their general approach and any contextual factors influencing their leadership paradigm. Furthermore, the interviewer delves into the broader impact of additional factors on the interviewee's leadership behaviors, thereby capturing a holistic understanding of their leadership dynamics.

[Insert Table 2 here]

Further, we have analyzed documents, web pages, and LinkedIn profiles in order to better understand the company contexts of Case 1 and Case 2.

Data Analysis. The study produced 72 hours of data. To analyze the data, we used an approach following the suggestions by Gioia et al. (2013) which provides researchers with a systematic and flexible process of analysis (Charmaz, 2014; Glaser & Strauss, 2017; Schulte et al., 2020). Following this approach, the initial stage, termed 1st-order analysis, prioritizes fidelity to informant terms, resulting in a profusion of categories. As the research progresses, researchers embark on a process akin to axial coding, seeking similarities and differences among emerging categories to distill them into a more manageable set. This reduction typically yields 25 to 30 germane categories (Gioia et al., 2013). Subsequently, researchers label these categories or provide phrasal descriptors, drawing from informant terms where possible. The analysis then shifts towards discerning deeper structures within this array, prompting researchers to engage with the data at multiple levels of abstraction. In the 2nd-order analysis, researchers move firmly into the theoretical realm, exploring whether emerging themes suggest concepts capable of describing and explaining observed phenomena. Special attention is accorded to novel concepts lacking adequate theoretical grounding or preexisting concepts deemed relevant to the research domain. The culmination of this process, termed theoretical saturation, signifies the attainment of a workable set of themes and concepts. Researchers then investigate the potential for further distillation of emergent 2nd-order themes into 2nd-order aggregate dimensions. The final step involves constructing a data structure, which serves as a pivotal aspect of the research approach. Consequently, we conducted initial data coding and classified informant-centric statements, guided by our research questions (Langley, 1999; Miles & Huberman, 1994). Then, we identified similarities and differences, and each of the researchers created a comprehensive set of 1st-order concepts. Thereafter, we thoroughly discussed the concepts and their relationships. Based on this, and informed by the literature, 2nd-order themes emerged. We aggregated the second-order themes into dimensions and further advanced the Gioia methodology (Gioia et al., 2013) with the notion of conflict (Samimi et al., 2022). These results and identified main-themes are presented in detail in the results chapter below. Table 3 and Table 4 show this process more systematically.

[Insert Table 3 and 4 here]

Validity. In ensuring the validity of the comparative case study's approach and study results, several strategies were employed. Firstly, the study design, rooted in Eisenhardt (1991) and Yin (2009)'s comparative case study framework, facilitated an in-depth examination and comparison of two distinct cases. This design choice was reinforced by Bartlett and Vavrus (2017) and Harrison et al.'s (2017) recognition of its efficacy in providing comprehensive understandings of complex phenomena. The sampled companies, representing different industries and organizational structures, were meticulously selected to offer rich insights into the research question. Detailed descriptions of the companies' backgrounds, including their histories, financial statuses, and operational characteristics, were provided to contextualize the study. Data collection methods were rigorously implemented to ensure the reliability and depth of the gathered information. Utilizing expert interviews with entire management teams, as recommended by DiCicco-Bloom and Crabtree (2006), Denzin (2007), and Garretsen et al. (2020), enabled a thorough exploration of conflicting situations and management reactions. The incorporation of daily self-reflections and semi-structured interviews further enriched the dataset, allowing for nuanced insights into leadership behaviors and organizational dynamics. By involving both senior and line managers in the data collection process, the study aimed to capture diverse perspectives and experiences, thereby enhancing the validity of the findings. Regular discussions among researchers facilitated consensus-building and minimized potential biases in interpretation, thereby enhancing the reliability of the findings. Lastly, we addressed the issue of validity by ensuring a meaningful comparison since the cases should have relevant similarities and sufficient diversity (Gerring & McDermott, 2007; Seawright & Gerring, 2008). Moreover, to verify assumptions regarding the cases and recruit participants, we conducted initial interviews with only the senior management of both SMEs (Merriam & Tisdell, 2015).

Results

Based on the approach outlined above, the following section attempts to provide a cohesive overview of the findings and results of our study. In order to achieve transparency and a most exhaustive overview of the findings, we will work with extensive direct quotes from our interviews.

Case 1

In the first considered company, the senior and line managers identified strongly with the organization, which was reflected in a strong family-like identity, their close personal relationships, and long tenure.

I find the culture very family-like. Everyone who works for us feels appreciated and welcomed. Every employee has a coffee meeting with the management two months after being hired because I want to know the names of the people who work here. I would like to wish them a happy birthday, I would like to know how my employees' mother, who lives in Kiev, is doing. Monday is actually always the day when I go through the company. (Case 1_Senior Manager 3)

When you start working for us now, I will accompany your children to high school graduation, and you will accompany me to my retirement. (Case 1_Line Manager 1)

However, owing to the COVID-19 pandemic and resulting in remote working, these strong personal relationships have suffered, and cohesion in the company had weakened.

When I went back to the company and talked to my colleagues, I noticed that many of them were totally dissatisfied and also said that there was no longer any real cohesion in the company and no common path at all. No one was really motivated to implement new ideas. (Case 1_Line Manager 7)

The company operated in a niche market and distinguished itself from other workwear suppliers with an excellent customer service. During the COVID 19 pandemic, the company's business experienced positive growth because of increased demand for workwear that required more frequent cleaning due to higher hygiene standards.

Anyone can clean coats. Unlike our competitors, we have excellent customer service. (Case 1_Line Manager 8, Case 1_Senior Manager 1)

Overall, the pandemic was positive for us. We do not only clean hotel laundry but are well represented in other industries, too. In some industries, there are more hygienic regulations, which means clothes have to be washed more often, and of course we benefit from that and don't have a problem. (Case 1_Senior Manager 1)

The dimension 'explorative leadership activities' emerged from the aggregation of the 2nd-order themes 'allowing freedom', 'encouraging learning', and 'encouraging new ideas'. Similarly, 'monitoring plans and routines' and 'controlling goal attainment' were aggregated into the dimension of 'exploitative leadership activities'. Several senior and line managers expressed their desire to exert more exploitative leadership activities but faced difficulties in doing so. The 2nd-order themes 'accepting change initiatives as a positive challenge' and 'avoiding exploitative activities' resulted in 'slowed down decision-making.' The management recognized the need for exploitative activities as a crucial part of initiating change processes. However, avoiding this seemed to be partly due to the strong family context. These dimensions revealed an imbalance between exploratory and exploitative activities, leading to an exploitation-exploration conflict. Several open and closed leadership activities could be identified: The line managers drew parallels between the explorative leadership of the senior management and a route that allowed them to operate freely rather than simply follow a predetermined course. Many line managers expressed a preference for having a general leadership overview and the freedom to navigate within a given but broad structure.

I don't run to my boss for every decision. I want to make my own decisions and only be given a framework. I have the feeling that my boss sees this in the same way. (Case 1_Line Manager 2)

The management never says, "Oh, we've never done it that way before." They never put a stop to it; I can always try things. (Case 1_Line Manager 6)

The senior and line managers emphasized the importance of an attitude that encouraged learning within the organization. One member of the senior management had previously been a teacher and explained that his professional life had been dedicated to the development of young people. He emphasized that this was important in his present leadership position.

I am a teacher by profession. My entire career was designed to support young people. And I have incorporated this into my management style, too. (Case 1_Senior Manager 1)

This means I give my employees a lot of space, and I want them to fill this space themselves and make their own mistakes and learn from this. (Case 1_Line Manager 4)

The employee should not take a hint as a decision but as food for thought. (Case 1_Line Manager 3)

The senior and line managers of this case preferred open leadership activities, as employees were given opportunities to develop new ideas without fearing negative consequences. Several examples illustrated that the line managers encouraged their employees to share ideas and perspectives while receiving support from the senior management to explore themselves.

Senior management supports everything. When I have a new idea, they say: What is the idea based on? What do you want to achieve? And then I can implement it. The management understands that times are changing and therefore supports our explorative ideas. I never had my bosses saying: "Don't bother me with this." By contrast, they are always very interested in change and new ideas. (Case 1_Line Manager 4)

I don't try to put my own idea in the center of everything, I'd rather try to let the other one come up with something new. (Case 1_Line Manager 8)

If I have an employee who is very motivated, I let him do. I encourage him to try out things within a structure that I provide. (Case 1_Line Manager 5)

The senior and line managers expressed their will to be involved in decision-making processes that have an impact on the entire organization, important negotiations with a client, or a decision with significant financial implications. In such scenarios, the managers aimed to intervene at any time, as minor errors could have far-reaching consequences.

It is about a new 13 million Euro contract; nothing should go wrong. That is why I always want to be in copy here. (Case 1_Senior Manager 2)

If it is, for instance, a matter of coordinating a very important organizational process that might have an impact on all of us, I really want to be more closely informed so that I can intervene if I have to. (Case 1_Line Manager 3)

Some tasks required a certain degree of control, particularly when the tasks had to be executed according to specific standards owing to legal or regulatory requirements.

For instance, mass production. If I assign a task where there is no leeway but a clear framework and corresponding completion within a certain time frame, I can control whether the goal is attained in the end. (Case 1_Line Manager 5)

The managers perceived upcoming change as a positive challenge. This implied that they understood that change was necessary, but they had yet to determine the most appropriate course of action. All managers were positively excited about change initiatives.

We know that we have to move the wheel in a different direction. Not turn it 180 degrees, but we have to adjust it. We don't know exactly in which direction yet, but we have to do it. (Case 1_Senior Manager 2)

We have so many new, and at the same time big, issues right now that we're looking forward to, but ... we don't know what's going to come out, how we're going to approach that exactly. (Case 1_Line Manager 4)

We are aware that change is coming, and this is exciting. (Case 1_Senior Manager 1)

Although the managers were aware that change was necessary, they faced challenges due to their family identity, which discouraged exploitative and closed leadership activities. This made it difficult to implement change initiatives, conduct decision-making processes, and monitor the plans necessary for a successful change.

In the future, we must be able to make an unpleasant decision for an employee if we find it to be the best thing for the company. (Case 1_Senior Manager 1)

We too often lead without clear targets. It would make sense to have more sanctions, clearer targets, more control—this is just missing. In many situations, there is a lack of pressure from senior management, and a lot of new ideas just ripple along, and nothing is really implemented. (Case 1_Line Manager 6)

It seems that the management avoided placing a strong emphasis on exploitative and closed leadership activities because such activities seemed socially undesirable in their family context. A senior manager summarized the issue as follows:

Since we also like to party together, it is sometimes difficult for us to bring in a certain seriousness and also to sanction certain things. We are too soft in some areas and do not have the courage to address certain things. It is maybe someone who has been there for 20 years, and you don't want to hurt that person. (Case 1_Line Manager 4)

Often, we are not really consistent. For instance, I had sales managers who failed to deliver their figures for two years, yet we did not dismiss them; we offered them another opportunity. (Case 1_Senior Manager 1)

‘Avoiding closed leadership activities’ included several quotes demonstrating the critical self-assessment of management practices.

Our main weakness is a lack of consequences. We are quite bad at sanctioning. We are not good at clearly formulating tasks and drawing consequences when these tasks are not done properly. (Case 1_Senior Manager 2)

Some of us don't want any friction with the senior management. They prefer to do things the way the senior management wants them to be done and not try anything else. Just so that the relationship with the CEO doesn't suffer. We really need to work on these issues. (Case 1_Line Manager 2)

The senior and line managers' leadership activities balanced autonomy and control. They aimed to improve their ability to make tough decisions only when necessary.

In the future, it is important to make better decisions, sometimes even unpleasant ones. (Case 1_Senior Manager 1)

The senior and line managers recognized that their exploitative and closed leadership activities were not sufficient, so they sought to create a framework that would allow for clear communication.

In smaller projects, I allow employees to work within a clear framework and set boundaries. (Case 1_Line Manager 1)

For each new contract, our old sales manager used to say “We will decide individually whether we take this new customer or not.” There were no clear guidelines. Now, I try to lead in a very clear and structured way and say: “No, we have our guidelines, and we are not going to decide individually. Stick to the guidelines.” (Case 1_Senior Manager 1)

The management team recognized the importance of maintaining control over certain aspects of the organization that may have far-reaching consequences or involve legal requirements.

For instance, if there is a lot of money involved, I want to be in control and be in the loop so that I can intervene. (Case 1_Senior Manager 2)

Despite uncertainty, the management team recognized the need for change and embraced it as a positive and exciting challenge. This was evident in several interview quotes.

The outcome of change is uncertain, and renewal tends to be difficult for us, but we know that something has to move. (Case 1_Senior Manager 3)

We look forward to a change. The generational change helps there as well. New, younger employees help because they bring a fresh perspective. (Case 1_Line Manager 4)

The senior and line managers demonstrated a sense of critical self-reflection and sought external support. They regularly participated in workshops with an external consulting firm and collaborated with the local university. Even though the management team was prepared for change, they considered the family identity as a crucial aspect of the organization. All the management team members understood that they had to proceed with caution.

Tomorrow, for example, we're meeting in the evening at a colleague's house who invited us. We all know each other so we also do a lot together. (Case 1_Line Manager 3)

Today, it is a little different. People don't identify with the company that much anymore, but I think that's very important that you identify with a company, and this is at the heart of our company values. (Case 1_Senior Manager 6)

The findings revealed that the senior and line managers collectively managed their conflicts by engaging in critical self-reflection, seeking external support, balancing autonomy and control, embracing change, and maintaining their family identity.

Case 2

The organizational context of the second organization under scrutiny was characterized by an emphasis on digitalization and a strong interest in innovation. The two senior managers regularly traveled to Silicon Valley.

We constantly try out the latest digital systems. We even have a "Digi-Team" that helps employees understand new systems. You can book them to understand the system better. (Case 2_Senior Manager 4)

I have been here for 15 years. Our focus is on staying up-to-date with the latest innovation in the market. We regularly evaluate new systems and test their implementation. (Case 2_Line Manager 3)

We have an almost paperless office. Anyone who wants to can work from home. During the COVID-19 pandemic, every office workstation was duplicated at home. (Case 2_Line Manager 8)

The external context was affected by the legal requirement for companies to submit a tax declaration. Additionally, the government's support in relation with COVID-19 increased the number of inquiries.

When I look at the influx of clients, we really do have about 20 new inquiries each day. (Case 2_Senior Manager 2)

We could not identify any conflict at the senior management level. The dimensions here were 'ambiguous management signals' and 'exploitative leadership activities.' We observed a different situation at the line management level. Their aggregated dimensions were

‘appreciation and caretaking activities’, ‘explorative leadership activities’, and ‘exploitative leadership pressure’. These line managers’ dimensions resulted in a conflict relating to exploitation-exploration as well as time at the line management level. According to several interviewees, the senior management of this case was trying to establish an open atmosphere through the implementation of different initiatives like a culture of “first name base” for instance. The senior managers described that employees are their most valuable resource. In the beginning, the atmosphere of the second case seemed open and approachable.

The senior management is very open to all kinds of suggestions from other people, which are always passed on to us as team leaders. They do everything they can to make sure we are well positioned for the future. (Case 2_Line Manager 4)

It’s very relaxed. You don’t have to be afraid of the boss at all. You can talk to them; you know you’ll get help. This was different during the last few years, but now they are a bit more tangible and not so far away from our day-to-day business. We are also on a first-name basis with the managers, so they are very close. (Case 2_Line Manager 1)

One of the things that we learned in Silicon Valley is that the employee should always be in the focus of our activities. (Case 2_Senior Manager 1)

However, the line managers expressed their concern about a perceived lack of appreciation.

There is a lack of saying thank you. The only time something is done is when the boss is approached directly, and feedback is very scarce. (Case 2_Line Manager_5)

There is no such thing as employee retention here. I don’t understand why we let good people go. Just because you don’t want to pay this person a little more money, you let someone go who is trained and knows all the processes. We have a very high turnover rate. Very unfortunate. (Case 2_Line Manager 3)

One employee had achieved high monthly sales and, proud of his achievement, presented the numbers to the senior management with his supervisor. However, instead of complimenting him, the senior management told him that another employee had done better. Several line managers have described senior management as difficult to reach.

The management is sometimes quite far away. A direct contact with the senior management would sometimes be better. (Case 2_Line Manager 7)

The senior management made strategic decisions through a top-down approach without considering the opinions of the line managers or employees.

Actually, it is us making all the strategic decisions. (Case 2_Senior Manager 2)

Innovation comes from the senior management; we as team leaders just help to implement. (Case 2_Line Manager 8)

Then, I get a call from the senior management: “here you are, three new mandates; distribute them to this and that person in your team.” The senior management doesn’t account for the interests of each team member. (Case 2_Line Manager 5)

The senior managers closely monitored employee performance and pressured them to deliver monthly results.

In the structures in which we work, it’s all about numbers, about capacity, about turnover. The senior management looks at figures every day and tries to optimize things. If you have a little bit less to do, then you get some additional work from senior management. (Case 2_Line Manager 6)

A lot of people on my team are overloaded, which is not noticed by the senior management. (Case 2_Line Manager 9)

The line managers tried to regulate the exploitative leadership activities of the senior management. They attempted to create an approachable environment by addressing the concerns and needs of employees and establishing an open atmosphere.

My leadership behavior is very much geared towards ensuring that the staff feels well integrated into the team. (Case 2_Line Manager 4)

As the team leader, I aim to maintain a collaborative work environment where my team members feel valued and respected. I do not consider them to be reporting to me; rather, they are my colleagues. (Case 2_Line Manager 2)

Moreover, they acted as people managers by fostering employee involvement through a variety of initiatives. These initiatives included providing opportunities for team members to express their concerns, encouraging open communication, and acknowledging and rewarding individual and team contributions. The interview quotes emphasized the importance for line managers to value their employees.

I regularly write emails to my team members in which I thank them for their great work; I also write where things are still not right, where we need to make adjustments. (Case 2_Line Manager 8)

I try to talk to people in the morning and in the evening, listen to their problems, and support them where I can. (Case 2_Line Manager 3)

The line managers tried to adopt an explorative and open leadership approach. This included encouraging employees and, wherever possible, providing their team members with the freedom to explore.

I try to encourage people to research themselves and think about a problem before they approach me. So, first bring in your own ideas, and then ask me for support. That is what I try to actively encourage in my team members. (Case 2_Line Manager 7)

We have fixed processes, but everyone in my team also has the opportunity to contribute to new ideas. For example, we now have a certain process in our team on how to proceed with the annual financial statement, which is the same throughout the whole company. We thought through this process in the whole team and said: “Ok, can’t we develop something better so that we can get the money faster? Because invoicing always comes at the very end.” We are now in a test phase. (Case 2_Line Manager 1)

As a result of the pressure, control, and lack of appreciation from the senior management, the line managers applied closed leadership activities only when necessary. This seemed to be a contradiction to their attempt to encourage open leadership activities.

Checklists from senior management specify how to complete tasks. As a team leader, I closely monitor adherence. (Case 2_Line Manager 6)

The line managers had their own responsibilities and clients to manage. The combination of management duties, work assignments, and intensive supervision created a time conflict.

I am often contacted to answer issues related to day-to-day work. In addition, I also have my own mandates to look after. (Case 2_Line Manager 9).

We always really have a lot of time pressure, so there is not much time to look left and right. (Case 2_Line Manager 4)

In summary, the senior management sent ambiguous management signals. On the one hand, they appeared open and approachable, and on the other hand, they exerted a lot of pressure and control. The line managers attempted to motivate and integrate their employees, but at the same time they had to deal with their own tasks and a considerable amount of pressure.

I am very easygoing. I have known the people I work with for a long time. To be in this sandwich position between senior management and employees is positive on the one hand and difficult on the other. I have a buddy role but simultaneously serve the interests of the senior management. (Case 2_Line Manager 3)

The line managers acted as a bridge between the senior management and their employees. They tried to maintain a balance between acting as friends to their team members (“I certainly don’t want my team members to perceive me as a leader”; Case 2_Line Manager 4) and forwarding the interests of the senior management (“Then, I have to pass on the tough announcements coming from the senior management to my team members”; Case 2_Line Manager 4). This put a considerable time pressure on the line management.

I look around me. Many employees can’t cope with the controlling behavior, the pressure, and leave our company. (Case 2_Line Manager 5)

Many employees leave because they can’t handle the pressure. (Case 2_Line Manager 7)

While facing high pressure, many line managers tried to organize their work load. For instance, they scheduled particular days to address their employee's needs. On these days, they simply listened to their employees' concerns, as one line manager explained.

I am in the office two days a week, and that's when I'm only there for my people. Just a contact person to take care of my employees' needs. I don't do anything in my day-to-day business then. (Case 2_Line Manager 6)

It appeared that the line managers were trying to regulate the anxiety of their employees because of the pressure and control exercised by the senior management. They encouraged employees to use their freedom to experiment. However, owing to the pressure from the senior management, many employees were afraid to take risks.

There were reports of bullying under the previous team manager. Currently, my focus is on rebuilding the team's confidence and encouraging them to take initiative. (Case 2_Line Manager 5)

I am spending a lot of time rebuilding the confidence of my people. Unfortunately, there was some bullying under the previous team leader, and now I frequently remind them: "You are capable and do not need to check your work excessively." (Case 2_Line Manager 4)

The line managers attempted to regulate the senior management's exploitative and closed leadership activities by counterbalancing them with explorative leadership activities of appreciation, encouragement, and giving more freedom to their employees.

Comparing the results

In the context of Case 1, we have observed an exploitation-exploration conflict for senior and line managers, and exploitative leadership activities were socially undesirable. This conflict had resulted from the management's emphasis on explorative and open leadership activities and an attempt to avoid exploitative leadership activities. In the context of their family identity, the senior and line managers collectively managed this conflict between exploitation and exploration (Argyris, 1995; Denison et al., 2004; O'Reilly & Tushman, 2013). They regarded change positively, although it may also have caused them to avoid exerting necessary exploitative leadership activities and be more lenient in enforcing strict measures or sanctions (Kets de Vries, 1993). The commitment of the senior and line managers to collectively engage

in critical self-reflection, seeking external support, balancing autonomy and control, embracing change, and maintaining a family-like identity supported the long-term orientation of the organization (Liao, 2022). The fact that Case 1 was a financially solid and growing company during the COVID-19 pandemic could have reinforced simplicity (Miller, 1993). The simplicity theory argues that successful organizations tend to become simpler over time. Their strategies become more specific, their cultures reflect a singular perspective, and their systems and routines become more concentrated. This can lead to a rigid structure that lacks diversity and subtlety, causing such companies to operate more like predictable machines and lose the ability to adapt or learn from unexpected events. Highly uniform organizations eliminate different viewpoints and alternative approaches, reducing their flexibility and hindering their ability to adapt or learn. When these organizations are perfectly aligned with their environment, they can achieve remarkable success and inspire others to follow a similar path, despite the risks (Miller, 1993). However, we observed the ability of senior and line managers to critically self-reflect their own actions and seek external support, which were important prerequisites for an organization's ability to learn (e.g., double-loop learning) and develop (Corley & Gioia, 2003; Miller, 1993). In summary, the family-like identity of this company supported the collective leadership efforts of the senior and line managers, facilitated organizational learning, but slightly slowed down decision-making processes (Miller, 1993; Ramachandran & Bhatnagar, 2015).

In the context of Case 2, we did not notice any conflict at the senior management level. In this case, we observed a lack of organizational identity and found that only the line management was facing a conflict between exploitation and exploration (Wenke et al., 2021). This conflict had emerged from the fact that the line management was to a considerable extent left alone with explorative leadership activities because the senior management was mainly engaged in exploitative leadership activities. The conflict of the line managers was intensified by the fact that they also had their own management and work tasks to fulfil (Gjerde & Alvesson, 2020). The line management had tried to adopt a dual role, to organize better and to regulate the fear of their employees. They attempted to enforce control measures only when necessary (Smith & Lewis, 2011; Saks, 2021). In contrast to Case 1, we were not able to identify a strong family context or a common understanding of leadership. As a result, we did not observe any form of collective leadership but rather a division of leadership activities. On the one hand, the focus of the senior management on exploitative leadership activities resulted in a lack of appreciation, employee dissatisfaction, and a high turnover. On the other hand, the line management was

engaged in explorative leadership activities, caring for employees and work tasks (Table 3, second-order themes). This partially compensated for the exploitative leadership activities of the senior management but made it more difficult to maintain a long-term orientation. The counter-management activities we observed were similar to those found in Gjerde and Alvesson's (2020) study of middle managers in an academic context, "protecting from and removing fear" and "recruiting for and creating academic culture" (p. 138). In both of the cases, we discovered a phenomenon which we called 'Nonexploitative Exploitation.' The senior and line managers in both organizations tried to make sure that employees were not exploited in a negative sense, because excessive exploitation could have negative impact on employees. With Nonexploitative Exploitation, both SMEs tried to achieve a long-term orientation of their management activities. In Case 1, the senior and line managers described that their family-like context of appreciation and interest in employee's needs, led to long-term loyalty with the company. Involving employees was considered to be important, even if it slowed down the process to some extent. In Case 2, the statements of the managers described how the line managers tried to counterbalance the ambiguous management signals, lack of appreciation, and pressure from the senior management that resulted in fluctuation.

The comparative case analysis of Case 1 and Case 2 reveals distinct leadership approaches and organizational contexts. In Case 1, a familial culture prevails, fostering strong personal relationships and long tenures among employees. This environment encourages open leadership activities, such as promoting learning and providing autonomy to employees. However, the familial culture also poses challenges in implementing changes due to its discouragement of closed leadership activities.

Conversely, Case 2 emphasizes digitalization and innovation, characterized by a top-down leadership approach and ambiguous management signals. Line managers in Case 2 attempt to balance the pressure and control exerted by senior management by providing more freedom and encouragement to their employees. However, they face challenges in rebuilding employee confidence and reducing turnover rates due to a perceived lack of appreciation from senior management.

Overall, while Case 1 prioritizes employee engagement and recognition within a familial culture, Case 2 focuses on innovation and digitalization but struggles with maintaining employee morale and retention. Both cases underscore the importance of balancing autonomy

and control and fostering a supportive work environment to enhance organizational effectiveness, thus underscoring the importance of organizational culture and collective leadership efforts in promoting sustainable practices within SMEs. While Case 1 highlights the benefits of a familial culture in fostering organizational learning and adaptation, Case 2 emphasizes the challenges of maintaining employee morale and retention in the absence of a cohesive organizational identity. These insights contribute to our understanding of how ambidextrous leadership influences sustainable leadership practices in SMEs and offer implications for enhancing organizational effectiveness and long-term success.

Discussion

In Case 1, Nonexploitative Exploitation was achieved through collective leadership activities in a family context. In Case 2, Nonexploitative Exploitation was partly achieved through the line managers' attempt to counterbalance the exploitative activities of the senior managers. In this respect, our study advances the understanding of sustainable leadership activities in SMEs. From a theoretical perspective, our results provide insights into how SMEs can address the conflicting demands of exploitation and exploration. The findings of Case 1 demonstrate how Nonexploitative Exploitation can promote long-term orientation and support sustainable leadership activities. (Hallinger & Suriyankietkaew, 2018; Samimi et al., 2022). The findings of Case 2 revealed how long-term orientation and support for sustainable leadership activities can partly be achieved through Nonexploitative Exploitation efforts exerted not by upper management but by line managers closer to the employees (Garretsen et al., 2020; Liao, 2022). From a practical perspective, Case 1 demonstrated the importance of supportive leadership activities which foster a trust-based environment where employees feel involved. This suggests a shift from traditional top-down approaches towards more inclusive leadership. The implications of Case 2 suggest that when the senior management is predominantly exploitative, the line managers can play an important role in counterbalancing this. This approach can result in a time conflict because the line managers are in a contradicting position, sandwiched between pressure from management and the task of maintaining employee morale (Gjerde & Alvesson, 2020). Through Nonexploitative Exploitation, both SMEs in our study tried to implement a less destructive form of exploitation and demonstrated how this concept can take different forms (Garretsen et al.; 2020, Wenke et al., 2021).

Therefore, we can deduct that our study on sustainable leadership and ambidexterity in SMEs provides valuable insights into the complex interplay between leadership styles, organizational

culture, and managerial practices. With this specific research focus in mind, the findings from Case 1 depict a company characterized by a familial culture, where senior and line managers prioritize personal relationships and employee well-being (Ceja et al., 2012; Karofsky et al., 2001; Le Breton-Miller & Miller, 2022; Pradhan & Hati, 2022). The strong identification with the organization fosters a sense of belonging and loyalty among employees (Basly & Saunier, 2020). This familial context encourages open leadership activities, such as promoting learning, providing autonomy, and supporting explorative ideas (Fries et al., 2021; Kandade et al., 2021). One of the key findings in Case 1 is the exploitation-exploration conflict observed among senior and line managers. While the organization values explorative leadership activities, such as encouraging learning and allowing freedom, there is a reluctance to embrace exploitative activities due to the familial context. This imbalance between exploitation and exploration poses challenges in decision-making processes and change initiatives, as avoiding exploitative activities hinders the implementation of necessary measures and sanctions. This has, so far, rarely been studied (cp. Luong, 2022).

Moreover, the study identifies the phenomenon of 'Nonexploitative Exploitation,' wherein senior and line managers strive to prevent employee exploitation while maintaining a long-term orientation. This involves balancing the need for control and autonomy to ensure employee well-being and organizational sustainability. Similar research exists, but none of it is related to this specific research context and with such applicable results to sustainable leadership and ambidexterity (cp. Bocean et al., 2022; Emre & De Spiegeleare, 2021; Stankevičienė et al., 2021). The findings thus suggest that the familial culture in Case 1 contributes to long-term loyalty and employee satisfaction, albeit at the expense of slower decision-making processes. Further researching the specific issue of impact on decision-making processes might be an interesting future research alley.

In contrast, Case 2 presents a different organizational context characterized by a focus on digitalization and innovation. Here, senior management exerts pressure and control through exploitative leadership activities, leading to a lack of appreciation and high turnover rates among employees. Line managers attempt to counterbalance these pressures by fostering an open and supportive work environment, but they face challenges in rebuilding employee confidence and reducing turnover. This is a highly interesting phenomenon, which to date had not been discussed in related studies, despite indications from previous studies (Kammerlander

et al., 2020; Knight & Cuganesan, 2020). It appears highly advisable to also make a strong plea for further research in this direction.

Therefore, our study contributes to the understanding of sustainable leadership and ambidexterity in SMEs. It highlights the importance of organizational culture in shaping leadership practices and the need to reconcile conflicting demands for exploration and exploitation. The findings suggest that while a familial culture may foster employee loyalty, it can also hinder organizational adaptability and decision-making processes. On the other hand, a focus on innovation and digitalization may drive competitiveness but can also lead to employee dissatisfaction and turnover if not accompanied by supportive leadership practices. The study underscores the pivotal role of organizational culture in shaping leadership behaviors and driving sustainable outcomes (Isensee et al., 2020; Xenikou, 2022). Through contrasting cases, it demonstrates how different cultural norms and values influence leadership practices and organizational success (Cadden et al., 2020; Lasrado & Kassem, 2020). This insight empowers SMEs to cultivate a supportive work environment aligned with their long-term objectives, thus providing a potential link between sustainable leadership and ambidexterity.

Conclusion

In analyzing the two cases presented, several key conclusions can be drawn regarding the connection between sustainable leadership and ambidexterity in SMEs.

Firstly, the familial culture depicted in Case 1 highlights the significance of personal relationships and employee well-being within the organization. This culture fosters open leadership activities, promoting learning and autonomy among employees. However, there exists an imbalance between explorative and exploitative activities, with a reluctance to embrace the latter due to the familial context. While this culture engenders long-term loyalty and satisfaction among employees, it may hinder organizational adaptability and decision-making processes. Conversely, Case 2 illustrates a focus on digitalization and innovation, characterized by exploitative leadership activities from senior management. This pressure and control lead to employee dissatisfaction and high turnover rates. Despite efforts by line managers to foster an open and supportive work environment, they face challenges in rebuilding employee confidence.

Overall, these contrasting cases underscore the importance of organizational culture in shaping leadership practices and driving sustainable outcomes in SMEs. They highlight the need to

balance conflicting demands for exploration and exploitation, with organizational culture playing a pivotal role in shaping leadership behaviors. While a familial culture may foster loyalty and satisfaction among employees, it could impede organizational adaptability. Conversely, a focus on innovation and digitalization may enhance competitiveness but could lead to employee dissatisfaction if not accompanied by supportive leadership practices.

At the same time, the focus on only senior and line managers can be seen as a limitation of this study. People tend to view themselves positively, known as “self-serving bias” (Miller & Ross, 1975, p. 213). The managers we interviewed may have portrayed their leadership in a more favorable light than was actually the case. We may have missed some of the complexities within the leader-employee dynamic (Maak & Pless, 2006). We suggest that future research should include other perspectives in order to have a better picture of what happened in this context. The fact that we investigated only two SMEs in a comparative case study makes it difficult to draw general conclusions for all SMEs. This is why future research should test our concept with a larger sample. Furthermore, our study could have included SMEs from different industries and different sizes. This would have helped to identify additional influencing factors.

Beyond that, the integration of questionnaires, surveys, or longitudinal data would have strengthened the trustworthiness of our findings (Denzin, 2007). Our study empirically established the concept of Nonexploitative Exploitation. We suggest that future research further develops the concept, expanding its application to a larger and more diverse sample of SMEs. Future research could also examine organizational and individual characteristics such as power structures, personality traits, cognitive styles, and cultural aspects. This would lead to a more comprehensive understanding of how to manage conflicting demands and support sustainable leadership activities (Hofstede, 2011; Song et al., 2020). While for SMEs, a supportive organizational identity seems important to promote sustainable leadership activities (Hallinger & Suriyankietkaew, 2018; Liao, 2022), it may be appropriate to distribute exploration and exploitation across different management levels (Wenke et al., 2021).

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Tables

Table 1: Study Design

Method	Participant	Number	Duration	Source
Initial interview	Only senior managers	7/24	30 minutes / per interview	Audio recorded
Online kick-off	Senior and line managers	24/24	15 minutes / one session	Zoom recorded
Daily self-reflection in one working week	Senior and line managers	24/24	15 minutes / each day	Written diary
Expert interviews	Senior and line managers	24/24	90 minutes / per interview	Audio recorded

Table 2: Semi-Structured Interview Guide

Contexts and Leadership of Senior and Line Managers
<p><u>Warm up (context)</u></p> <ol style="list-style-type: none"> 1. What was your experience with the self-reflection? 2. Can you describe your responsibilities and tasks? 3. Briefly describe the competition in your industry. 4. Briefly describe the culture in your organization. 5. Briefly describe the culture in your department. 6. Briefly describe the current atmosphere in your department. <p><u>Main part (leadership)</u></p> <ol style="list-style-type: none"> 7. Can you describe one of the leadership situations from the diary study in more detail? 8. Can you describe why you have led in the described way? 9. Would there have been other options for you? 10. What prevented you from doing this? 11. How would you generally describe your leadership? 12. Are there other factors that have an impact on your leadership? 13. What does it mean for you to lead in an explorative or exploitative way?

Table 3: Results of Case 1

1st-Order Concepts	2nd-Order Themes	Aggregated Dimensions	Conflicting Demands
<ul style="list-style-type: none"> - Management is open to new ideas - Management allows employees to deviate from norms - Management sets a rough framework 	<p>Allowing freedom (<i>n</i> = 8/12)</p>	<p>Explorative leadership activities</p>	

<ul style="list-style-type: none"> - Management provides food for thought - Management encourages employees - Management discusses and decides as a team 	<p>Encouraging learning (n = 12/12)</p>		
<ul style="list-style-type: none"> - Management motivates people to try things out - Management allows employees to contribute - Management is interested in change 	<p>Encouraging new ideas (n = 10/12)</p>		<p>Exploitation- Exploration Conflict</p>
<ul style="list-style-type: none"> - Management wants to be copied in emails - Management wants to be included in important decisions - Management wants to intervene 	<p>Monitoring plans and routines (n = 5/12)</p>	<p>Exploitative leadership activities</p>	
<ul style="list-style-type: none"> - Management specifies task completion 	<p>Controlling goal attainment (n = 5/12)</p>		

<ul style="list-style-type: none"> - Management has acceptance for the upcoming reconstruction - Management perceives upcoming changes as a positive challenge - Management wants to turn the wheel 	<p>Accepting change as positive challenge (n = 12/12)</p>	<p>Slowed down decision- making</p>	
<ul style="list-style-type: none"> - Management avoids having conflicts - Management avoids sanctioning - Management avoids consequences 	<p>Avoiding exploitative leadership activities (n = 10/12)</p>		

Table 4: Results of Case 2

1st-Order Concepts	2nd-Order Themes	Aggregated Dimensions	Conflicting Demands
<ul style="list-style-type: none"> - Informal culture vs. unable to retain employees - Employees in focus vs. senior managers far away 	<p>Sending ambiguous management signals (n = 8/12)</p>	<p>Ambiguous management signals</p>	<p>No conflict at the senior management level identified</p>
<ul style="list-style-type: none"> - Innovation only comes from senior managers - Senior managers provide strategic direction 	<p>Exerting Top-down decisions (n = 7/12)</p>	<p>Exploitative leadership activities</p>	

- Line managers implement strategies			
- Senior managers' strong controlling behavior based on numbers - Senior managers assert pressure to perform	Exerting Pressure and controlling (n = 7/12)		
- Line managers try to think of the company as a team	Supporting team orientation (n = 5/12)	Appreciation and caretaking activities	Exploitation- Exploration Conflict the line management level identified
- Line managers listen to the problems of employees - Line managers send regular "thank you" emails to employees - Line managers support wherever possible	Appreciating employees (n = 8/12)		
- Line managers try to motivate employees - Line managers and employees conduct projects jointly - Line managers encourage the pursuit of employees' ideas	Encouraging employees (n = 5/12)	Explorative leadership activities	
- Line managers try to give room for ideas in meetings	Allowing freedom (n = 4/12)		

<ul style="list-style-type: none"> - Line managers provide employees with skills for autonomous work 			
<ul style="list-style-type: none"> - Line managers enforce the interests of the senior management - Line managers provide clear structures - Line managers adhere to checklists and rules provided by the senior management 	<p>Controlling employees (n = 7/12)</p>	<p>Exploitative leadership pressure</p>	
<ul style="list-style-type: none"> - Line manager: “We are overloaded” - Our credo: “Higher, faster, further” 	<p>Experiencing Pressure (n = 8/12)</p>		

4.2 Uncovering Mental Models of Leaders in Ambidextrous Leadership

Vergossen, H. (2025). Mental Models of Leaders in Ambidextrous Leadership. *International Journal of Academic Research in Business & Social Sciences*, 15(1), 1130-1148.

ABSTRACT

To remain competitive, businesses must continuously adapt by exploring new markets and exploiting existing ones, which require different, often paradoxical, cognitive processes from leaders. Ambidextrous leadership has emerged as a framework for managing these competing demands. Effective ambidextrous leaders balance the opposing needs of exploration and exploitation through distinct cognitive patterns, exhibiting either opening or closing behaviors. Understanding the mental models of such leaders can offer insights into how they navigate these paradoxes. This study examines the mental models of ambidextrous leaders using ZMET, through interviews with 17 leaders from German SMEs. The consensus model reveals how leaders' cognition is influenced by their organizational context and by its goals and values.

Within this framework, leaders adopt strategies to balance paradoxical demands, with the restriction of the scale of innovation and the individual consideration of employees as main strategies.

Ambidextrous Leadership and Mental Models

Companies that manage to remain competitive and profitable in the long term excel at two things: constant innovation and efficient management of day-to-day demands (Gibson & Birkinshaw, 2004; Kassotaki, 2022; Raisch & Birkinshaw, 2008; Tushman & O'Reilly, 1996). These activities are referred to as exploration and exploitation (March, 1991), and their combination as ambidexterity (Duncan, 1976).

The challenge with ambidexterity lies in the differing behaviors and cognitive demands of exploration and exploitation (March, 1991; O'Reilly & Tushman, 2004; Rosing et al., 2011, 2018; Smith & Tushman, 2005). In larger companies, a common solution to this dilemma is to separate these activities into different departments or business-units (Raisch & Birkinshaw, 2008; Smith & Tushman, 2005). Especially in SMEs, this is not always possible (Cao et al., 2009; Lubatkin et al., 2006). In these cases, ambidexterity has to be implemented on the team and individual level (Cao et al., 2009; Gasda & Fueglistaller, 2016; Zhang et al., 2019; Keuscher & Vergossen, 2024). Furthermore, Rosing & Zacher (2023) argue that the innovation process itself depends on successfully navigating the dynamics of exploration and exploitation.

Ambidextrous leadership has been proposed as a way to integrate exploration and exploitation at the level of individual leaders. The concept has gained significant attention over the past two decades (Gebert & Kearney, 2011; Gibson & Birkinshaw, 2004; Lin et al., 2013; Rosing et al., 2011; Rosing & Zacher, 2023; Zacher & Rosing, 2015). Ambidextrous leaders deal with ambiguities, tensions and demands that are complex and often paradoxical. They have to make smart and fast decisions and balance long-term strategic vision with a sharp eye for immediate decisions to secure present revenue streams (Bledow et al., 2009). Accordingly, ambidextrous leadership involves the ability to embrace risks, experiment with new ideas, and encourage exploration, while also monitoring and controlling goal attainment and establishing routines (Gebert & Kearney, 2011; Rosing et al., 2011; Rosing & Zacher, 2023; Zacher & Rosing, 2015).

To understand how successful ambidextrous leadership emerges, factors such as personality, identity and cognition are examined (Bono & Judge, 2004; Mumford et al., 2017; Zhang et al., 2015, 2019). In terms of cognition, the demands of ambidexterity require a cognitive balancing

act that is a major challenge for leaders (O'Reilly & Tushman, 2004; Schad et al., 2016; Smith & Tushman, 2005; Zhang et al., 2019) and often results in favoring one side (Poole & Van de Ven, 1989; Smith & Lewis, 2011). How successfully leaders cognitively navigate the complex demands and tensions that are inherent in ambidextrous leadership will be the decisive factor for the quality and success of their leadership.

This argument implies that successful ambidextrous leadership depends on the quality and adequacy of leaders' mental models. Mental models are cognitive structures that represent how individuals perceive and understand the world (Albert et al., 2022). Specifically, a mental model is "a concentrated, personally constructed, internal conception, of external phenomena (historical, existing or projected), or experience, that affects how a person acts" (Rook, 2013, p. 42). Mental models thus serve as lenses through which people perceive and make sense of phenomena and which shape their decisions (Collins & Gentner, 1987; Johnson-Laird, 1983, 2010; Rouse & Morris, 1986). At the core of mental models are assumptions about the causal relationships between the concepts that are part of a mental model (Mumford et al., 2017, 2019). According to Goldvarg and Johnson-Laird (2001), this necessitates that mental models include two types of information: one, abstract concepts, along with concrete exemplars of these concepts derived from experience. And two, assumptions about the causal relationships between these concepts. That is, mental models involve assumptions about how a given course of action will cause a certain outcome (Goldvarg & Johnson-Laird, 2001).

Mental models are abstracted from past experiences and are used to make decisions in situations that are similar to these past experiences, as well as in novel situations that are sufficiently similar (Goldvarg & Johnson-Laird, 2001; Mumford et al., 2019; Sax & Clack, 2015). Once established, mental models can be difficult to change, which is regarded as one factor contributing to organizational inertia (Barr et al., 1992).

Since mental models are at the core of sensemaking, decision making, and acting of any kind, they are also crucial for effective leadership (Albert et al., 2022; Combe & Carrington, 2015; Mumford et al., 2017; Partlow et al., 2015). Mumford et al. (2017) list mental models as one of nine crucial leadership skills. Depending on which mental model they rely on and how rich that model is, leaders will differ with regards to which elements in a given situation they see as causal. For example, Mumford (2006) demonstrated that charismatic leaders view people as causal factors, whereas ideological leaders see situational factors as causal. Similarly, differences in leaders' mental models influence how leaders approach specific leadership problems such as follower participation, and how effective they will be in this regard (Bedell-

Avers et al., 2008). Thus, a leaders' behavior and influence on followers will differ depending on the nature of the mental models they rely on. On an interindividual basis, mental models can differ in two regards: first, how many concepts they include, and how rich those concepts are, and two, the nature of the causal links between these concepts (Johnson-Laird, 2001). In general, mental models become more adequate and more complex as a function of experience (Hmelo-Silver & Pfeffer, 2004).

However, as Genrich et al. (2022) point out, it is currently not well-understood how exactly these differences in leaders' mental models cause actual leader behavior in specific contexts. This is also true for ambidextrous leader behavior. The following literature review provides an overview over the published literature that links mental models to (ambidextrous) leader behavior.

Literature Review

The role of mental models for leadership behavior has been examined in different contexts. Leader behavior during a crisis is a relevant context for the purposes of the present study because a crisis presents leaders with complex and ambiguous situations (Mumford, 2006). In that sense, leadership during crises is comparable to ambidextrous leadership. Combe and Carrington (2015) examine the congruence of mental models of top management teams before and after a crisis and find that shared mental models emerge after crises and are seen as critical to team performance. Specifically, whereas there was considerable cognitive diversity among top management regarding the question of what the company's priorities, objectives and strategies should be before a crisis, after the crisis there was a broad consensus regarding these factors as all leaders within the company addressed the same crisis and hence developed shared mental models.

Other studies examine the role of mental models in creative problem solving. Research in this area is relevant for ambidextrous leadership because creative problem-solving forms the basis for innovation (Mumford et al., 2012; 2023; Proctor, 2019). Using concept mapping, Mumford et al. (2012) examined the role of subjective and objective differences in mental models for creative problem solving in the areas of marketing and education. They found that mental models which were subjectively and objectively richer and more complex were associated with more creative solutions.

A number of other studies deal with shared mental models in teams (Carrington et al., 2019; Dionne et al., 2010; McIntyre & Foti, 2013). These studies are relevant for ambidextrous

leadership in such contexts in which ambidexterity needs to be executed on a team and/or individual level. For example, Carrington et al. (2019) demonstrated that during crises, leader mental models converge toward follower mental models with regards to the causal factors that are relevant for solving the crisis and adapting to new conditions, rather than the other way round.

To explore mental models, researchers often work with the causal mapping technique (Markóczy, 2001; Markóczy & Goldberg, 1995) which involves three steps, from “developing a pool of constructs” to “selecting those constructs that leaders consider relevant” to “assessing the causal relationship between pairwise constructs” (Markóczy, 2001, p. 1019). Decisions generally result in behavior or at least in behavioral intentions, thus emphasizing the relationship between mental models and observable behavior (Mumford et al., 2015).

The results summarized above show that mental models influence how leaders perceive and process and respond to leadership situations. While some studies (e.g. Mumford et al., 2012) identify specific aspects of mental models relevant to behavior, no published study has examined the contents of leaders’ mental models in the context of ambidextrous leadership. This is a significant research gap, since ambidextrous leadership poses several challenges in practice. First, ambidextrous leaders are regularly faced with ambiguity (exploration vs. exploitation), which can be stressful (Hunter et al., 2017; Poole & Van de Ven, 1989). Second, ambidextrous leadership poses high demands on leaders’ cognition. For example, an important cognitive skill that helps leaders in the context of ambidexterity seems to be the ability to think paradoxically (Good & Michel, 2013; Kauppila & Tempelaar, 2016). This means that leaders must be able to understand both sides of a paradoxical tension as contradictory but necessary for long-term success (Smith & Lewis, 2011; Zhang et al., 2015). Good and Michel (2013) suggest divergent thinking, focused attention, and cognitive flexibility as important cognitive factors to achieve this. However, these factors are only useful insofar as the mental models they are applied to are adequate for the problem or paradox at hand. Therefore, being able to characterize the structure of ambidextrous leaders’ mental models would provide valuable insights into how exactly they process information and make decisions in ambiguous or paradoxical contexts. From a practical perspective, since the richness and complexity of mental models depends on experience (Hmelo-Silver & Pfeffer, 2004), insights into these structures could enhance leaders’ training and development. The aim of the present study is to explore how leaders process the demands of ambidexterity. The research question underlying this work is:

- How are the mental models of leaders structured in the context of ambidextrous leadership?

Materials and Methods

A qualitative research study

To answer the research question, this study employs a qualitative research methodology. Qualitative studies offer a platform to explore cognitive dimensions of leadership (Bryman et al., 1988), and are therefore an appropriate approach for examining cognitive structures like mental models. This research's aim is to address this less-explored cognitive aspect of ambidextrous leadership, focusing on how leaders perceive and manage the ambidextrous tensions inherent in their roles. In Gephart's words, my study aims to provide "thick, detailed descriptions of actual actions in real-life contexts that recover and preserve the actual meanings that actors ascribe to these actions and settings" (Gephart, 2004, p: 455) in order to better understand leaders' thought processes when being confronted with exploitative and explorative demands. I conducted semi-structured, one-on-one interviews with 17 leaders.

Zaltman Metaphor Elicitation Technique

The Zaltman Metaphor Elicitation Technique (ZMET) was used to surface the mental models of the interviewed leaders. In ZMET, it is assumed that (1) most communication is nonverbal, (2) people tend to think in images, not words, (3) metaphors are units of thought, and (4) the constructs and connections between constructs that constitute a mental model are often represented as metaphors. Therefore, by understanding the metaphors leaders bring to bear on leadership problems, one can understand the underlying mental models that underlie their decision-making and behavior in those situations (Damasio, 1989; Zaltman, 1997; Zaltman & Coulter, 1995). Accordingly, in ZMET, the interviewee is asked to select multiple images before the actual interview that in their opinion represent or symbolize the theme or problem under investigation. These images then serve as an entry point into the interviewee's mental models (Kokko & Lagerkvist, 2017; van Kleef et al., 2005; Zaltman, 1997; Zaltman & Coulter, 1995). As these images are self-selected, the interviewee decides which themes will be covered during the interview, thus uncovering mental models of real importance and meaning to the participant (Zaltman, 1997; Zaltman & Coulter, 1995).

Procedure

Pre-interview preparation. The first information session took place approximately ten days before the interview. Interviewees were told of the study's purpose, the provisions for confidentiality and anonymity, as well as of their right to withdraw. I also obtained their oral consent. They were asked to think about situations or moments in which they had to deal with "leading exploration" and "leading exploitation," while finding images that described these situations. The term "ambidextrous leadership" was put into frame to ensure that everybody had the same basic understanding of it. This first information session lasted about 20 minutes and ended with the instruction: *In the next ten days, find five–eight images that represent to you the leadership between "leading innovation" and "leading day-to-day-business". These can, but do not have to be linked to specific situations. Images (printed or digital) can be taken from any source and brought to the interview appointment.*

Interviews. In the first step, Storytelling, participants were asked to describe the images they brought to the interview and why they brought them. Each interview began with the first step of the ZMET (Storytelling), by asking the following question, meant to trigger participants' stories regarding the pictures: *Why did you bring the following pictures? What do you associate with them and why are they important to you?* Several images were linked to a participants' personal story, which offered a frame to understand their subjective reality (Zaltman, 1997; Zaltman & Coulter, 1995). In the second step (Missed Issues and Images) participants were asked to describe images they were not able to find but felt should be included. Some interviewees remembered other stories that they had not previously considered. The third step (Sorting Task) consisted of the interviewees grouping all the images. They were asked to categorize and name groups of concepts they perceived as similar, with no restrictions on the number of categories. The fourth step (Construct Elicitation) consisted of the interviewer selecting three images from different groups, and separating them into two groups (one consisting of two images, the other of one). The interviewee was then asked how the two images were similar to each other on the one hand, and how they were different from the third image on the other hand. The complete ZMET procedure involves four more steps (Metaphor Elicitation, Sensory Images, Vignette, Digital Image; Zaltman, 1997). However, in the present study, they did not produce any new results in most cases, since interviewees struggled with these exercises. The results from these steps were therefore not considered for further analysis. This is in line with other, previous studies in which these steps did not provide any additional information either. At best, they confirmed the information gathered in previous steps (Hansson & Kokko, 2018; Kokko & Lagerkvist, 2017). The interviews were conducted in person or via

a video conferencing tool (Zoom), and lasted between 30 and 90 minutes. All interviews were recorded and transcribed verbatim.

Selection of Participants

In order to gather data that offers a diverse and comprehensive understanding of ambidextrous leadership in different organizational contexts, this research involved in-depth interviews with 17 full-time leaders from German medium-sized companies. The sample size of 17 was considered appropriate, as it aligns with the typical participant range in ZMET studies of 15-20 participants (Christensen & Olson, 2002). The sampling process unfolded through several distinct steps and included purposeful sampling, which relies on transparency (Yin, 2018). First, the company network from the home university's institute served as a foundational resource for participant recruitment. This network included around 30 companies from different branches. The sampling strategy was carefully designed to ensure a heterogenous representation of leaders from different branches (Eisenhardt & Graebner, 2007). Lin et al. (2013) suggest that ambidexterity is not constrained by specific industries, justifying including leaders from different industries. The network was categorized based on industry and company size. Second, I contacted two medium-sized companies of each industry. I included only medium-sized companies to ensure comparability. In all cases, I worked with the company's human resources department or with the managing director(s) directly as an entry point into the organization. I conducted initial interviews to check whether the companies would be interested in participating in the study. Five companies expressed interest. Interviewees worked in financial services (29%), management consulting and auditing (29%), consumer goods and retail (12%), insurance (12%), and manufacturing (18%). The financial service firms saw themselves confronted with the disruptive influence of newer FinTechs, forcing them to innovate in order to maintain their competitive edge. The consulting firms needed to rapidly respond to evolving business scenarios to effectively advise clients. In the consumer goods sector, the companies wanted to expand their international presence. The manufacturer's recent acquisition by a US-American company triggered substantial internal changes and adaptations to new external regulations. All companies faced increasing challenges in talent acquisition, driving the need for innovative approaches to attract and retain employees. Third, within these firms and with the help of an initial contact person, I contacted leaders within these companies. The specific inclusion criteria involved selecting leaders with at least two years of experience in their respective leadership positions. This ensured a certain level of leadership expertise. All leaders

also reported having to deal with both exploitation and exploration in their role, thus ensuring their suitability for the study and the comparability of the interview results within the sample. Of these leaders, 29% were female and 71% were male. They were Managing Partners, Department Heads or Team Leaders, and the size of the team they directly managed ranged from six to ten people. Table 1 provides an overview of the interview partners.

Place Table 1 about here

Analytical Approach

The transcribed interviews were analyzed through two rounds of coding. The first round consisted of open coding with the goal of developing a grounded theory (Corbin & Strauss, 2015). This first round of coding was completed using ATLAS.ti. For the second round of coding, the construction of means-end-chains that connect organizational and leadership-related conditions with actions, consequences, and goals (Gutman, 1982) was attempted, but the attempt ultimately proved unfruitful because Gutman's approach requires a rather specific interview style which aims at asking many probing questions, and which could not be implemented during data collection. As an alternative, an adapted version of the causal mapping technique was used (Markóczy & Goldberg, 1995). The causal mapping technique consists of three basic steps: (1) developing a pool of constructs that are relevant for topic or issue under investigation, (2) selection of the most relevant constructs, and (3) assessing the causal relationships between those constructs. The aggregated data from steps two and three can be represented in the form of a consensus map that shows both the central constructs and the causal relations between them. In the present study, the first step was covered through the first round of coding. For the second step, the frequency of the constructs/codes across interviews was determined in order to filter out the most frequently mentioned constructs. The fact that they were mentioned so frequently indicates that they were regarded as the most important constructs by the interviewees. After analyzing the frequency of the data, it was decided that a construct must have been mentioned by at least six interviewees (i.e., about a third of all interviewees) for it to be integrated into the consensus map. For the third step, it was analyzed how many interviewees drew connections between two constructs in their statements. It was then determined how often this specific connection was made across all interviews. If a connection between two constructs was mentioned at least three times across interviews, it was integrated in the consensus map.

Furthermore, I considered the images that participants were asked to provide during the interviews, and their descriptions of the mental models they symbolized. To increase the

validity of the data, another experienced researcher in the field of leadership was involved in the data analysis. This researcher independently analyzed a subset of randomly selected transcripts, which were then compared and discussed to establish coding agreement (Burnard, 1991). Additionally, I had the chance to revisit findings with about half of the 19 participants and validated the identified themes against their own experiences (Appleton, 1995). This reinforced the credibility and offered participants the opportunity to contribute their perspectives on the findings.

Results

The coding resulted in a total of 76 constructs/codes, of which 35 remained after the second step of causal mapping. Regarding these 35 constructs, interviewees made a total of 676 connections between them. After completing the third step of causal mapping, 52 connections reached the threshold of at least three mentions. Furthermore, three constructs that were mentioned at least six times did not receive any connections above the cut-off number and were therefore eliminated from the consensus map. The resulting consensus map is shown in figure 1.

The map can be interpreted as the shared mental model of the interviewees regarding ambidextrous leadership. The constructs were sorted into conditions that influence an organization and its leadership, goals, values, and consequences (of conditions or goals). Figure 1 doesn't indicate the direction or effect of the connections, because this direction was not always clear from the interview data. In other cases, the interview data indicated that the connection is bidirectional.

Place Figure 1 about here

Contextual conditions influencing leadership

Seven contextual conditions reached the cut-off value of six, meaning they were mentioned by at least six interviewees. The most frequently mentioned conditions were Calcified or Strictly Regulated Processes, which was mentioned in $n = 11$ interviews (65%), followed by Organizational Culture ($n = 10$, or 59%), and Competition ($n = 8$ or 47%). Accordingly, those were the contextual conditions that influenced leaders and their decision-making the most. Regarding connections to other concepts within the mental map, most Conditions were

connected to only one other concept, with the exceptions of Calcified or Strictly Regulated Processes (connected to three other concepts), and Lack of Adequate/Innovative Mindset (connected to two other concepts).

Goals

Three goals reached the cut-off value of six. Among those, Effectiveness and Efficiency and Profitability were both mentioned by 11 interviewees (65%), whereas the third goal, Satisfy Customer Desires was mentioned by eight interviewees (47%). This indicates that the interviewees were mostly motivated by the company's continued economic survival and by an effective use of its resources and potentials in their decision-making. Regarding their connectivity, both Effectiveness and Efficiency and Profitability were connected to two other concepts in the consensus map, while Satisfy Customer Desires was connected to one other concept.

Values

Only one value reached the cut-off value of six. Achievement was mentioned by nine interviewees (53%). This is congruent with the findings regarding leaders'/organizational goals. Achievement was connected to three other concepts in the consensus map.

Consequences of conditions and goals

Twenty conditions met the cut-off value of six. Among these Opening Room for Innovation: Small Projects (ORI-SP) and Individual Consideration Required (ICR) were the most frequently mentioned consequence ($n = 14$, or 82%). The former construct in particular can be regarded as the most central in the thinking and decision-making of leaders with regards to ambidextrous leadership, as reflected by the sheer number of connections of this construct with other constructs, as well as by their relative thickness (see figure 1). Compared to ORI-SP, ICR does not show the same amount of connections, and the connections are thinner on average, indicating that ICR is not as central to the ambidextrous leadership of the leaders in this sample as ORI-SP.

Other frequently mentioned constructs were Need for Innovation ($n = 12$, or 71%), Creating Guardrails: Providing Rules and Clarity ($n = 11$, or 65%), and (Lack of) Psychological Safety ($n = 10$, or 59%). Among these, Need for Innovation in particular appears to be central for ambidextrous leadership, since it is connected both to Conditions and to Goals.

Leadership Dilemma: Learning vs. Performing (LD-LP) was also mentioned frequently ($n = 12$, or 71%) and shows a high degree of connectivity. This construct is different from all other constructs (except for Leadership Dilemma: Playing by the Rules vs. Creating a Competitive Edge) in that it encapsulates the dilemma of ambidextrous leadership. It should therefore be regarded as a central construct of the mental model, too. In particular, the constructs connected to LD-LP show how leaders solve this dilemma. As can be seen in figure 1, successfully navigating this dilemma requires a leader to be ambidextrous on the individual level, and to recognize which individual employees are well-suited for any particular (explorative or exploitative) task. Furthermore, leading innovation in small projects or on a small scale (for example, in an isolated division of the company) is a main tool to navigate the dilemma between the need for innovation (learning) versus the need for successfully managing the day-to-day business (performing).

This is also where the pictures which the interviewees brought to their interviews provided helpful additional data. Specifically, participants often linked ambidextrous leadership to a dynamic balancing act. For example, interviewee no. 14 selected a picture of a gymnast balancing on a beam, and explained his thinking as follows:

“I come up with a lot of rules, I build a lot of frameworks. I see myself as the organizer. I build the framework, I also create the tools so that people can work with them, and the people themselves are the professionals.”

With this statement the leader thus expressed his conviction that successful ambidextrous leadership depends on a balance between creating guardrails (the beam) and relinquishing control to employees that are appropriate for the task in question (the gymnast). This is also reflected in figure 1 in the connections of LD-LP and Leader Ambidexterity Required.

Similarly, interviewee no. 19 brought a picture showing the two hemispheres of the brain, and explained:

“On the left, you have this – let’s call it a robotic arm – [and on the right] this artistic stuff, and I have to reconcile them both in my everyday life and my everyday work.”

Using yet another metaphor, interviewee no. 2 linked ambidextrous leadership to the process of juggling, and interviewee no. 7 invoked tightrope walking as a metaphor, explaining:

“On the one hand, letting things happen – giving up the reins and just seeing what happens, and on the other hand, setting rules and deadlines and things like that, and somehow imposing your will, so to speak [...] sometimes you decide to favor one side a little more, sometimes one side jerks around a little more, and sometimes the other side asserts itself a little.”

Yet another interesting metaphor came from interviewee no. 13, who likened ambidextrous leadership to the distinctive architecture of the train station in the German town of Uelzen:

“[The train station] has to fulfill a function, it has to be a train station. And it has to be suitable for that, has to meet all the requirements... safety requirements and so on. [...] But this specific building still clearly deviates from the norm. You know, usually you have this functional box [as a train station]. But here, there is room to [...] use the space differently and to deviate from the norm. Sure, the stairs are straight, but the corridor downstairs is a bit crooked, a bit wavy or something like that – it’s a bit more playful or something like that. In other words, that thing fulfills its purpose, but offers enough space to [...] unfold yourself [as an architect] and present a different look.”

This need for dynamic balance in order to successfully lead ambidextrously was evoked in one form or another in most of the interviews. In the common mental map, it is most closely associated with the LD-LP construct, and the rest of the constructs in the Consequences category of the consensus map and the connections between them essentially show specific ways in which leaders navigate this dilemma/need for dynamic balance.

Furthermore, the consensus map shows where this dilemma originates. Namely, there appears to be a tension between the Conditions on the one hand (such as Organizational Culture, Calcified or Strictly Regulated Processes, Requirement to Keep Operating Cost Down and so on), and the Goals and Values (Effectiveness and Efficiency, Profitability, Achievement, and so on) on the other hand. Whereas the Conditions are the main sources of the day-to-day and mostly exploitative demands (with the exception of Competition, which was a driver for innovation in the present study), the Goals and Values can be regarded as the main drivers of the more innovative/explorative demands. For example, strictly regulated procedures call for tight control by the leader. However, the goal of continued profitability calls for opening rooms for innovation.

Leaders have different ways of navigating these tensions, as the consensus map shows. One of the most common ways is to restrict innovation to a small scale (ORI-SP) or to incrementally

(as opposed to disruptively) change existing processes (Opening Room for Innovation: Unfreezing Existing Processes; ORI-UP). That way, the inherent risks of innovation can be mitigated, while a large part of the potential benefits of innovation can be reaped at the same time. Another way is to assign different tasks to different individual employees (Individual Consideration), based on what the leader knows about their individual preferences for exploitation versus exploration. One interviewee (Interviewee no. 1) used an image of a DISC-personality profile as a metaphor for this way of dealing with the tensions of ambidextrous leadership.

A sort of meta-way to manage the tension between managing innovation and managing the day-to-day business is to cultivate an explorative/innovative mindset among employees. Employees as a whole are fundamentally less motivated and able to engage in explorative behavior than in exploitative behavior (Eisenhardt, 1989; Gasda & Fueglistaller, 2016; Jensen & Meckling, 1979). Therefore, it makes sense to cultivate a more explorative mindset among employees (by building mutual trust, recognizing and providing opportunities to learn and experiment, and so on), so that individual employees become increasingly capable of thinking innovatively and recognizing and using opportunities for innovation. That way, some of the burden of navigating the tension between innovation and day-to-day business can be delegated from leaders to employees. Agile teams and agile work in small, innovative projects are one major way in which this sort of innovative/explorative mindset can be cultivated in employees by leaders.

Taken together, the results show different ways how ambidextrous leaders find a dynamic balance between the opposing demands for leading innovation and leading day-to-day demands, and how these are reflected in their mental models. Since this consensus map is abstracted from individual leaders and from specific leadership situations, it can be assumed that decisions about which way of balancing these opposing demands is the most adequate in any given situation will probably hinge on contextual factors that are not included in the consensus map.

Discussion

The purpose of this study was to gain a deeper understanding of how leaders manage the complex demands of ambidextrous leadership by examining the structure of their mental models. The results show that ambidextrous' leaders' thinking and decision-making is shaped by two opposing forces: the organizational and contextual conditions of the organization on the

one hand, and the goals of the organization on the other hand. This results in tensions that leaders can navigate in multiple ways, from restricting innovation to smaller scales, to delegating some of the demands that come with these tensions to employees by cultivating an explorative/innovative mindset.

With regards to the leadership literature, the present results are congruent with the finding that ambidextrous leadership often involves paradoxical demands that require a cognitive balancing act, and a unification of opposing demands – both intra-individually (cognition) and inter-individually (leader behavior) (Poole & Van de Ven, 1989; Smith & Tushman, 2005; Zhang et al., 2015). Furthermore, they extend those findings by showing how these opposing demands are reflected in ambidextrous leaders' mental models. There is also a clear connection to the paradoxical leadership literature. Specifically, as Zhang et al. (2015) point out, leaders are faced with multiple paradoxes when it comes to people management. For example, leaders need to both treat all employees uniformly, but also consider their individuality, as well as their strengths and weaknesses. This paradox is similar to what some of the interviewees reported in relation to the individual consideration of employees and LD-LP.

With regards to the organizational behavior literature, the present findings corroborate the notion of paradoxical tensions on the organizational level of analysis. For example, the LD-LP posited by Smith and Lewis (2011) was clearly reflected in the present data. The current findings show how these paradoxical tensions on the organizational level are related to paradoxical tensions on the level of the team or division, through the perception of the individual leader, and how leaders attempt to maintain a balance between these tensions. This suggests that leaders' individual ambidexterity is a core component of successful ambidextrous leadership. From a cognitive perspective (which is the most appropriate perspective for the present study, since the focus is on mental models), individual ambidexterity consists of three variables that together enable an individual to successfully manage the opposing cognitive demands that are inherent to ambidextrous behavior: divergent thinking, focused attention, and cognitive flexibility (Good & Michel, 2013). As Good and Michel (2013) showed, using the Networked Fire Chief (NFC) task as a measure for task-adaptive performance (i.e., individual ambidexterity) divergent thinking as measured by the Alternative Uses Task as an operationalization for individual explorative behavior explains 3% of variance beyond general intelligence on the NFC task. Similarly, focused attention as measured by the Go/NoGo task as an operationalization for individual exploitative behavior explained 2% of unique variance beyond intelligence in the Go/NoGo task, which was used as a measure for individual

exploitation, and cognitive flexibility as measured by the Stroop task as an operationalization for switching cognitively between task demands in real time explained 6% of unique variance beyond intelligence. The concept of individual ambidexterity could therefore be the basis that explains how ambidextrous leaders use the various paths that are shown in the consensus map in figure 1 in different leadership situations.

Thus, on a theoretical level, the study contributes to the existing literature on leadership, cognition, and ambidexterity by shedding light on the cognitive processes underlying ambidextrous leadership. It shows the various strategies that leaders use to dynamically balance opening and closing leadership behavior, and achieve the cognitive balancing act mentioned in the introduction that is inherent to successful ambidextrous leadership (O'Reilly & Tushman, 2004; Schad et al., 2016; Smith & Tushman, 2005; Zhang et al., 2019).

Regarding the practical level, another interesting aspect of the present findings is that they highlight the fact that leaders seem to understand that they and their leadership behavior have a significant impact on their followers' creative and innovative thinking and performance (Mumford et al., 2023). This can be deduced from the multiple ways in which they try to cultivate a more innovative/explorative mindset among their followers (see figure 1). The leadership literature shows that servant, agile, transformational, and ambidextrous leadership fosters employees' intrinsic motivation (Caniëls et al., 2017) and sense of meaning in work (Cai et al., 2018), as well as their innovativeness and creativity (Cai et al., 2018; Mumford et al., 2023). The different ways in which leaders in the present study attempt to cultivate a more explorative/innovative mindset in their followers, such as cultivating mutual trust, recognizing and encouraging opportunities to learn, and providing opportunities to experiment and play without any specific goal in mind are consistent with these leadership paradigms and their opening approach. This highlights the idea that in small and medium-sized firms like the ones examined in the present study, many leaders recognize that to ensure the organization's continued success, it's not enough for ambidexterity to be expressed at the level of individual leaders – a level that has been examined quite frequently already (Gibson & Birkinshaw, 2004; Lubatkin et al., 2006; Mom et al., 2007). Instead, because these smaller companies do not have the same resources as larger companies, and therefore not the same risk-tolerance and capability for structural ambidexterity (Cao et al., 2009; Lubatkin et al., 2006), ambidexterity should ideally be expressed at the level of the individual employee (Gasda & Fueglistaller, 2016). Whether the leaders in this sample are aware of the literature supporting this conclusion or not, they are acting in accordance with its conclusions.

Limitations and Future Research

The generalizability of the findings is limited due to the qualitative methodology used. I applied it to understand participants' (subjective) mental models in relation to their leadership activities. Research has shown that mental models are oftentimes shared by people living in the same social context (Thagard, 2012). I interviewed leaders from different context in terms of different industries to capture diverse mental models, and then derive an overarching, shared mental model. Nevertheless, all participants in this study were from Germany, so generalizability is limited to this context.

An open question concerns ambidextrous leadership as it concerns the leading of innovation in particular. Team innovation requires repeated, dynamic switching between exploration and exploitation, or creation and implementation (Rosing et al., 2018; Zacher & Rosing, 2015). That is, the successful leading of innovation in itself requires effective ambidextrous leadership. However, the mental models underlying this form of ambidextrous leadership may differ from the mental models examined here, where the focus was on balancing innovation with day-to-day business. Since the conditions and goals driving ambidextrous leadership in both of these contexts are different, it stands to reason that there should also be differences with regards to cognition in these contexts – and therefore, different mental models.

Furthermore, the present study hints that internal contextual factors seem to play an important role for a leader's behavior and decision-making in any given leadership situation. These contextual factors were not captured here, however. So a deeper understanding of their impact on ambidextrous leadership may be a promising future research endeavor.

Future research should also be valuable in regards to leaders' individual differences regarding mental models, and corresponding differences in (ambidextrous) leadership performance. It has been shown in the past that individual differences regarding the structure and richness of mental models are associated with individual differences in creative performance (Mumford, Hester, et al., 2012). Since divergent thinking/creativity is an important part of individual ambidexterity (Good & Michel, 2013), it makes sense to expect the same to be true for ambidextrous leadership performance.

Finally, a practical implication concerns the use of mental models for the training and development of ambidextrous leaders. Effective mental models can be taught, for example, through the analysis of case studies or simulations (Davison & Blackman, 2005; Intezari & Pauleen, 2013). In the case of ambidextrous leadership, leadership development programs that

focus on mental models could not only directly improve leadership performance, but also help future leaders and less experienced leaders to better understand the paradoxical tensions that are inherent in ambidextrous leadership, as well as the cognitive competencies required to successfully manage those tensions.

Conclusion

In coping with the complex demands of ambidextrous leadership, leaders must perform a cognitive balancing act in which they have to reconcile an explorative and an exploitative leadership style. The present study aimed to investigate the mental models underlying this form of ambidextrous leadership. Through qualitative interviews with 17 leaders from German SMEs, a consensus model was developed that shows both the conditions, goals, and values that form the framework for ambidextrous leadership, as well as the core components and connections that leaders consider with regards to ambidextrous leadership. As this mental model shows, leaders have multiple ways of striking a dynamic balance between leading innovation and leading the day-to-day business. A central component that emerged is “Opening Room for Innovation: Small Projects”. This can be regarded as a prime example of a balancing strategy in which the potential benefits of innovation are in balance with the mitigation of risks. Additionally, several other balancing strategies can be gleaned from the mental models, demonstrating how leaders can adapt their behavior depending on the requirements of their current situation. On a practical level, the results show that leaders seem to be aware of the significant influence of their behavior on the creative and innovative thinking and performance of their followers. This suggests that leaders in SMEs, where structural ambidexterity is less possible due to limited resources, aim to cultivate ambidexterity at the employee level, which is in line with research highlighting its importance for business success.

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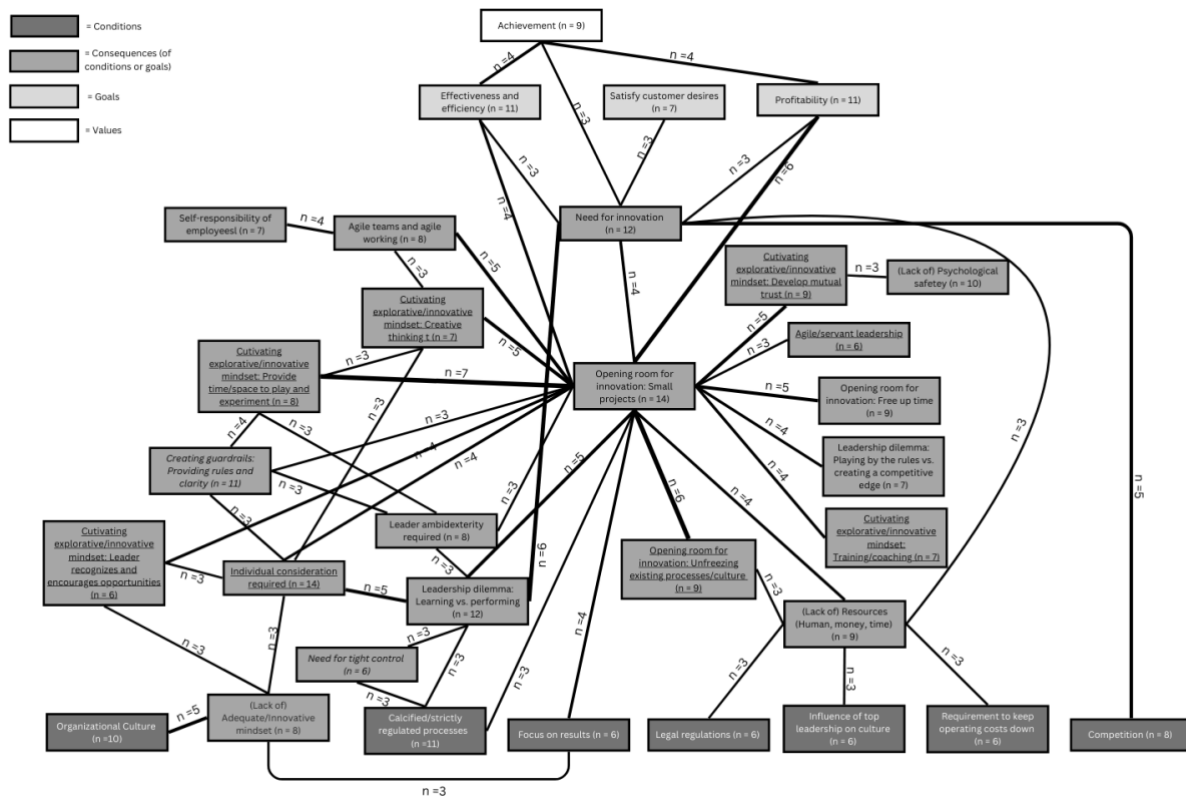
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Tables and Figures

Table 1: Overview of Interview Partners

Interview number	Position	Industry	Gender
1	Head of back office	Financial services	Male
2	Head of Human Resources	Financial Services	Male
3	Head of Risk controlling	Financial services	Male
4	Head of business area “SME”	Financial Services	Female
5	Head of IT	Financial Services	Male
6	Managing Director	Consulting / Auditing	Male
7	Managing Director	Consulting / Auditing	Male
8	Partner	Consulting / Auditing	Male
9	Tax consultant / team lead	Consulting / Auditing	Female
10	Managing attorney	Consulting / Auditing	Female
11	Team lead	Consumer goods / retail	Male
12	Team lead	Consumer goods / retail	Male
13	Head of Mathematics	Insurance	Male
14	Head of Sales	Insurance	Female
15	Team lead value engineering	Manufacturing	Male
16	Team Lead Marketing Machine Automation	Manufacturing	Male
17	Director Engineering Project Portfolio Management	Manufacturing	Female

Illustration 1: Consensus Map



Underlined text denotes constructs related to opening leader behavior, italicized text denotes constructs related to closing leader behavior. The thickness of a connection corresponds to the number of mentions of the respective connection.

4.3 Navigating Leadership in Uncertain Times: The Role of Personality and Context

Vergossen, H. (2024). Navigating leadership in uncertain times: The role of personality and context. *Research in Business and Social Science*, 13(5), 366-376.

ABSTRACT

This study examines the relationship between contextual and personality factors and leadership behavior. Understanding the dynamics of explorative and exploitative leadership behavior is critical in today's organizations. Data from an empirical study of N=139 German leaders from different industries show significant positive correlations between emotional stability, openness to experience and explorative leadership behavior. In addition, perceived environmental uncertainty and autonomy are significant factors that positively influence explorative leadership behavior. These findings offer recommendations for leaders and organizations in turbulent times and highlight the complex interplay of context, personality and leadership behavior.

Introduction

Companies today are faced with the challenge of having to adapt to a constantly changing environment (Birkinshaw & Gibson, 2004; Crossan & Apaydin, 2010; Javed et al. 2020). Rapid

technological advances and dynamic changes in consumer demand have become the norm (Cennamo, 2021; Cronin et al. 2019; Howard, 2022; Matsunaga, 2022). This requires companies to be able to proactively anticipate future developments and find innovative solutions while managing their current business processes efficiently. This balancing act is referred to as ambidexterity and requires ambidextrous leadership (O'Reilly III & Tushman, 2013; Rosing, Frese & Bausch, 2011; Gibson & Birkinshaw, 2004). Ambidextrous leadership encompasses a range of leadership activities, from open and exploratory to closed and exploitative (Zacher & Rosing, 2015). It involves the ability to manage conflicting activities within the leadership role (Rosing et al. 2010).

Ambidextrous leadership is critical to fostering innovation, but it also poses significant challenges for leaders (Zacher & Rosing, 2015; Rosing et al, 2011; Gebert & Kearney, 2011; Chang & Hughes, 2012; Gibson & Birkinshaw, 2004; Lin et al, 2012; O'Reilly & Tushman, 2004). This study aims to investigate which personality factors and which contextual factors particularly influence the explorative leadership side. For the theoretical basis of the selection of contextual factors, I draw on Johns' (2006) categorical framework. Within this framework, I identify two contextual factors that I consider particularly relevant in today's world and that are related to open and closed leadership activities. The first context factor is environmental uncertainty. In an environment characterized by change and uncertainty (Matsunaga, 2022), people tend to follow familiar, proven behaviors. They exhibit closed behaviors to reduce their perceived uncertainty (Jauch & Kraft, 1986; Hogg, 2007; Cooper & Thatcher, 2010). However, too strong a focus on closed behaviors can be detrimental, as the example of Kodak shows, who were unable to manage the transition to the digital age (Lucas & Goh, 2009; O'Reilly & Tushman, 2004). The second contextual factor is perceived job autonomy, which is crucial in today's uncertain environment (Nie et al. 2023). Job autonomy allows employees the freedom to make their own decisions and choose different ways of approaching their tasks, thus fostering a sense of ownership and empowerment. Perceived autonomy might significantly enhance open leadership behavior, as leaders with high autonomy are more likely to experiment and act more proactive (Frese et al. 1996). Thus, at first glance, perceived uncertainty seems to hinder open leadership activities, while autonomy seems to promote open leadership activities.

To fully understand what influences open, explorative and closed, exploitative leadership behavior, it is important to also consider personality factors, as these have a major influence on leadership behavior (Judge & Bono, 2000; Phipps & Prieto, 2011; Kornør & Nordvik, 2004;

Özbag, 2016). In an environment characterized by change, emotional stability is an important personality factor (Bradley et al. 2013). This factor reflects the ability to cope with stress and uncertainty (Costa & McCrae, 1992; Halim et al. 2011). Another important personality trait in an innovation-oriented environment is openness to experience (Bass, 1990). Previous research shows that openness means actively and flexibly engaging with new stimuli and it is considered a catalyst for innovation (Yukl; 1998; DeYoung et al. 2005).

Building on the contributions of Ghoshal & Bartlett (1994) and Judge & Bono (2000), this research addresses the following question: **To what extent do certain contextual and personality factors influence open and closed leadership activities?** Thus, this study makes several key contributions. It extends the literature with insights into how contextual and personality-related factors influence leadership. Researchers argue that context has a significant influence on leadership and the existing literature in the field of leadership does look at the mentioned influencing factors to some extent (Fiedler, 1978; Raisch et al. 2009; Gallardo-Gallardo et al. 2020). However, there is a particular research gap in the influence of contextual factors on opening and closing leadership, with the exception of Keller & Weibler (2014). With the two contextual factors of autonomy and uncertainty, I focus on two important, under-researched variables. As part of the personality factors, I consider emotional stability and openness to experience, two variables that have so far been little researched in relation to explorative or exploitative leadership behavior. I also highlight an important oversight in the current debate by focusing on the person-situation-interaction theory (Keller & Weibler, 2014; Judge & Zapata, 2015). For example, I look at the conditions under which emotionally stable people can lead in a particularly explorative way. Here, this study provides interesting findings and encourages scholars to set a focus in future studies on the combined effect of context and personality to understand the root causes of explorative and exploitative leadership.

Literature Review

In the following, leadership, context and personality are first brought together before the individual factors examined in this study (Uncertainty, Autonomy, Openness to Experience, Emotional Stability) are described and the hypotheses developed.

Leadership, Context and Personality

Ambidextrous leadership describes a leader's ability to balance exploration through opening behavior and exploitation through closing behavior (Gebert & Kearney, 2011). Rosing et al. (2011) identify opening leader behavior as "a set of leader behaviors that includes encouraging

doing things differently and experimenting, giving room for independent thinking and acting, and supporting attempts to challenge established approaches” (p. 967) and closing behaviors as “a set of behaviors that includes taking corrective action, setting specific guidelines, and monitoring goal achievement.” (p. 967) Researchers debate the extent to which exploration and exploitation should be separated (O’Reilly & Tushman, 2004) and the degree to which such a separation is even possible. Rosing et al. (2011) argue that, even if teams are specialized in exploration, they are required to exploit to some degree because they need tangible results. On the contrary, teams primarily focused on exploitation may need to explore when faced with unexpected challenges or failures. For the purpose of this study, my primary focus is on explorative leadership behavior, a domain that presents particular challenges to leaders and is important in today’s changing landscape (Jauch & Kraft, 1986; Hogg, 2007; Cooper & Thatcher, 2010; Matsunaga, 2022).

Understanding the root cause of behavior is mainly based on the study of personality variables (Judge & Bono, 2000; Phipps & Prieto, 2011). Personality research provides a well-structured framework, the Big Five model, which divides personality into five key factors (Judge & Bono, 2000). Two personality traits that have been well studied are conscientiousness and extraversion (Dudley et al. 2006; Barrick & Mount, 1991; Bono & Judge, 2004). Conscientiousness has been shown to be one of the most stable predictors of work-related outcomes, including job performance (Dudley et al., 2006; Barrick and Mount, 1991). Bono & Judge (2004) argue that extraversion has the strongest correlation with transformational leadership behavior. Extraverts tend to actively seek and enjoy change (Bono & Judge, 2004). Agreeableness is also strongly associated with transformational leadership (Judge & Bono, 2000). Within the Big Five traits, openness to experience is a more debated and less researched topic related to leadership (Judge & Bono, 2000). One of the challenges is the limited association of Openness to Experience with various applied criteria, with some exceptions such as Creativity (McCrae & Costa, 1997). At the same time, there is also limited research on neuroticism or its counterpart, emotional stability. Neuroticism correlates negatively with leader appearance and effectiveness (Judge et al. 2002; Cavazotte et al. 2012) and shows a negative relationship with concepts such as ethical leadership (Özbağ, 2016). On the contrary, emotional stability is particularly important in resolving interpersonal conflicts and representing an organization. Emotionally stable leaders tend to view stressful events as interesting growth opportunities and perceive that they can influence the outcome (Kirkpatrick and Locke, 1991). Furthermore, recent research by Park et al. (2022) suggests that emotional stability indirectly influences creative processes, highlighting its importance for leadership and innovation.

At the same time, the role of context has gained importance in understanding leadership (e.g. Gallardo-Gallardo et al. 2020). Fiedler was the first to emphasize that leadership does not happen in isolation (Oc, 2018; Fiedler, 1978). In management research, there were then long-standing appeals to consider the organizational context. Only recently has there been renewed interest in research (Dinh et al. 2014; Gardner et al. 2010). Despite this, there is no consensus on what exactly constitutes context for leadership (Ayman & Adams, 2012). This has also led to challenges with leadership theories such as transformational leadership, which initially had little regard for contextual factors. Johns (2006) attempts to bring structure to the multitude of contextual factors as part of his categorical framework. He defines context as a composition of the overall context and the discrete context. The overall context includes answers to the questions *where*, *who* and *when*. The discrete context, on the other hand, concentrates on more specific elements, for example the task context, the social context or the physical and temporal context. The context significantly influences which type of leadership is effective (Liden & Antonakis, 2009). This means that personal characteristics of the leader can be weakened by contextual factors in the development of leadership and its effectiveness (Sternberg & Vroom, 2002). Meanwhile, various leadership fields, such as contingency models, substitute for leadership models, implicit leadership theories and modern approaches, consider contextual factors as explanations or influencing factors (Oc, 2018). In examining the role of context in open, closed, and ambidextrous leadership, Mom et al. (2015) emphasize the importance of selecting leaders with long overall tenure but limited functional affiliation for roles that require ambidextrous behavior. In addition, Brion et al. (2010) address how management can cultivate an organizational environment that is conducive to both the exploration of new knowledge and the use of existing knowledge. They identify performance management, formalization, creativity, and risk-taking as key components of such an environment. In further research, Bledow et al. (2011) argue that the manifestation of ambidextrous leadership varies according to contextual conditions, highlighting culture as an important factor. Building on these studies, this study examines how relatively understudied contextual factors influence leadership style, particularly with regard to open, explorative or closed, exploitative approaches.

In addition, studies look at the interaction of context and personality variables. These studies engage that the extent to which personality predicts job performance and behavior depends on contextual variables (Barrick & Mount, 1993). For example, openness to experience has been found to be a stronger predictor of job performance in occupations with high creative demands

(Judge & Zapata, 2015). In another study, the relationship between employees' proactive personality and proactive behavior was moderated by innovation climate (Cormick et al. 2019). As such, behavior and performance develop from the complex interaction between individual characteristics and the context or situation (Judge & Zapata, 2015). However, when examining research, this topic is often debated and the role of context in particular is overlooked in the literature (Griffin, 2007; Rosseau & Fried, 2001; Oc, 2018; Johns, 2006).

When selecting the context factors for this study, I use two important factors of today's leadership environment: perceived uncertainty with regard to the omnibus context and perceived autonomy with regard to the discrete leadership context. In selecting personality factors, I consider the variables that might be particularly important in promoting explorative leadership behavior in an ever-changing landscape (openness to experience and emotional stability). All of the selected variables are characterized by the fact that they have not yet been sufficiently studied in relation to explorative leadership behavior. In the following sections, I will describe the selected variables in detail and explain the reasons for their selection.

Uncertainty

A key element that arises primarily in the context of constant change is uncertainty (Matsunaga, 2022). To define uncertainty, Walker et al. (2003) describe an uncertain environment as any situation that deviates from determinism and involves unpredictability. From the individual's perspective, uncertainty is the perceived inability to accurately predict an outcome (Milliken, 1987). Individuals face uncertainty when confronted with complex situations and/or conflicting information (Brashers, 2001). Uncertainty thus manifests itself in scenarios characterized by ambiguity and complexity when people feel uncertain about their knowledge (Babrow, Hines & Kasch, 2000). In the world of work, uncertainty encompasses a range of situations, e.g. the feeling of uncertainty regarding the execution of a task or the management style of a supervisor. Uncertainty can have a negative impact on employees' work performance by triggering anxiety and depleting their mental resources (Cullen et al. 2014). As a natural reaction, people often try to reduce uncertainty. The concept of uncertainty reduction was originally developed in the context of communication science and was mainly concerned with interactions between strangers. The core message is that people are confronted with uncertainty when interacting with unknown partners and strive to minimize this uncertainty (Berger & Calabrese, 1974). However, the concept of uncertainty reduction has also found application in various other areas, such as entrepreneurship (Deng et al. 2019), human resource management and leadership.

While these findings tend to suggest that closure behavior is used to reduce uncertainty, reducing uncertainty is only one possible response (Brashers, 2001). Rather, uncertainty can enable people to maintain hope or optimism. People in organizations are motivated differently to reduce uncertainty, which is partly determined by their evaluation of uncertainty as a challenge or threat (Kramer, 1999). There are different ways of acting: avoiding new information or actively searching for new information. In the first case, information is gathered that confirms the previous world view. This is an attempt to make sense of a particular event and reduce uncertainty. Therefore, in this case, closing leadership behavior is more likely to be applied (Griffin & Grote, 2020). However, information gathering can also intentionally increase uncertainty by seeking information that contradicts current beliefs (Frey et al. 1996). Thus, in this case, it is more likely that an opening leadership behavior is applied (Griffin & Grote, 2020). Similarly, Griffin & Grote (2020) proposed a model of uncertainty regulation stating that individuals with a high tolerance for uncertainty engage in opening leadership behaviors to further increase uncertainty. Specifically, leaders, the target population of this research, must constantly deal with ambiguity and uncertainty and make decisions in such an environment (White & Shullman, 2010). Keller & Weibler (2014) find that environmental dynamism is positively associated with engagement in exploration. With this in mind, I hypothesize that leaders in particular have a high tolerance for uncertainty and adopt opening behaviors in order to keep up in a dynamically changing environment. Therefore, I hypothesize the following:

H1. Under conditions of perceived high environmental uncertainty, the leader will act more explorative than under conditions of perceived low environmental uncertainty.

Autonomy

Building on Karasek's (1979) classical work on job strain, Hambrick et al. identified job demands and lack of job autonomy as key challenging elements in the leader's work context that have been understudied in leadership research (Ng et al. 2008). Job autonomy refers to the degree of latitude individuals have in making job-related decisions, such as what tasks to perform, how to do the work, and how to handle work exceptions (Hackman & Oldham, 1975). High levels of job autonomy are associated with increased job satisfaction, motivation, and performance, because individuals feel empowered to take initiative and make decisions that affect their work outcomes (Nguyen et al. 2003). In leadership roles, autonomy is particularly important because it allows leaders to explore and implement innovative strategies without being constrained by rigid procedures. However, autonomy can be a double-edged sword, as

high levels of job autonomy might also lead to an increase in unethical behavior (Lu et al. 2017). The freedom associated with autonomy can lead to more creative problem-solving and adaptive responses to changing environments (Lu et al. 2017). Leaders who perceive high levels of autonomy might be more likely to engage in open leadership behavior, seeking out new opportunities and experimenting with new approaches. Leaders with greater autonomy might be able to tailor their leadership style to the unique needs of their teams and projects, fostering a culture of creativity and flexibility (Lu et al. 2017). On the other hand, perceived low autonomy can stifle creativity and lead to more conservative, risk-averse behaviors, hindering a leader's ability to adapt and innovate. In light of these insights, I propose the following hypothesis:

H2. Under conditions of perceived high autonomy, the leader will act more explorative than under conditions of perceived low autonomy.

Openness to Experience

Openness to experience is one of the dimensions of the five-factor model of personality (Costa & McCrae, 1992). It encompasses a number of traits such as imagination, curiosity, originality, open-mindedness, intelligence and artistic inclination. Openness to experience comprises two main dimensions: Intellect and Openness/Aesthetics. Intellect reflects a person's tendency towards intellectual curiosity, creativity and engagement with abstract or complex ideas. Individuals with high Intellect tend to explore intellectual areas and engage in abstract thinking. Openness and Aesthetics show a desire for new experiences (McCrae & Costa, 1997). Previous research considers exploration and exploitation as two types of learning behavior and studies show that openness to experience is strongly linked to learning behavior. It therefore makes sense to consider this personality factor (Mom et al. 2015; Keller & Weibler, 2014). Research shows that it is associated with active and flexible engagement with new stimuli and acts as a catalyst for creativity and exploration (DeYoung et al. 2005). In the work context, openness to experience has been identified as an important predictor of innovative work behavior, where employees actively explore and implement new ideas (Javed et al. 2020). Leaders who exhibit high openness to experience are more likely to take employees' opinions into account and readily embrace change (Detert & Burris, 2007). Based on person-situation interaction, the importance of openness to experience may become more apparent in environments characterized by change and uncertainty. In such environments, leaders are encouraged to experiment with new approaches and explore alternative options, a trait that is particularly

conducive to individuals with high openness to experience (De Hoogh et al. 2005). In these challenging contexts, this trait may act as a driving force and motivate leaders to adopt open leadership behaviors. In addition, Mischel's (1997) situational strength argument proposes that jobs characterized by greater autonomy place fewer constraints on behavior, resulting in a weaker situation that allows individual personality traits to have a more significant influence on behavior. Therefore, when job autonomy is high, leaders with high levels of openness might be better able to leverage their intrinsic qualities for open leadership (H5). Therefore, I hypothesize the following:

H3. Leaders scoring high on openness will act more explorative than leaders scoring low on openness.

H4. Under conditions of perceived high environmental uncertainty, the relationship between openness and explorative behavior will be stronger than under conditions of perceived low environmental uncertainty.

H5. Under conditions of perceived high job autonomy, the relationship between openness and explorative behavior will be stronger than under conditions of perceived low job autonomy.

Emotional stability

Emotional stability refers to a person's ability to deal effectively with negative emotions such as anxiety or stress (Costa & McCrae, 1992). Li (2012) engages that emotionally stable individuals exhibit consistent, adaptable and self-confident characteristics that enable them to recover quickly from negative emotional states caused by workplace stressors (Mmc et al. 2017). Liu and Yu (2019) suggest that individuals with high levels of emotional stability show remarkable adaptability when they are in challenging and unfamiliar environments. Emotional stability enables people to navigate uncertain and unpredictable environments with confidence (Bradley et al. 2013; Halim et al. 2011). Similarly, Driskell et al. (2006) emphasize the tendency of emotionally stable leaders to successfully adapt to new and challenging environments, combined with a lower tendency to perceive stressful situations as threatening (Gallagher, 1990). The fact that open leadership behavior is characterized by a willingness to embrace and accept uncertainty (Griffin & Grote, 2020) leads to the reasonable hypothesis that individuals with high levels of emotional stability are more likely to exhibit open leadership behavior. Furthermore, building on Ng et al. 2008, I argue that neurotic individuals may feel insecure in

jobs where they perceive high autonomy, leading them to engage in more exploitative leadership behavior.

H6. Leaders scoring high on emotional stability will act more explorative than leaders scoring low on emotional stability.

H7. Under conditions of high autonomy, the relationship between neuroticism and exploitative behavior will be stronger than under conditions of low autonomy.

Methodology

The methodology includes the study sample followed by the measures, including reliability and validity.

Study Sample

The sample frame included leaders from all industries in Germany. To qualify, participants had to work in a managerial position. I collected the data in the Spring and Summer of 2023 and recruited participants through my home universities' institute. Quota-sampling techniques (Singleton, Straits & Straits, 1993) were applied to recruit participants from different industries. After translating and back translating all the instruments described below, I distributed the German version of the questionnaire online.

I received a total of 189 responses, 139 of which were fully completed, allowing me to draw on an N=139. 75% was male, 25% female. The majority of leaders (68%) had a leadership range of less than 10 people reporting directly to them. 23% had a span of 10 to 19 people, 4% had a range of 20 to 29 people, and the remaining 5% of more than 30 employees. Overall, participants came from the automotive (2%), mechanical engineering (10%), electrical engineering (2%), chemical and pharmaceutical (7%), financial services (4%), retail (7%), IT (7%), logistics and transportation (2%), energy (5%), media (1%) and public sector (16%) industries; all other leaders (37%) reported coming from an industry other than those listed.

Measures, Reliability and Validity

Environmental Uncertainty. I captured environmental uncertainty by technology uncertainty and demand uncertainty, taken from Atuahene-Gima and Li (2004), who adapted the measures for these two constructs from Jaworski and Kohli (1993). Technological uncertainty ($\alpha=.80$)

was measured on a four-item scale that assesses the (perceived) speed and extent of technological change, as well as the diversity of new product introductions resulting from technological change (*1= does not apply to 5= applies*). The three-item scale measuring demand uncertainty ($\alpha=.64$) represents the speed of change in customer demands, product preferences as well as the development of new customer segments in the industry (*1= does not apply to 5= applies*).

Autonomy. I measured autonomy using the 3-item scale from Schwenk et al. (2014) (*1= does not apply to 5= applies*). The items were: “Within my scope of responsibility, I can decide for myself how to get a job done.”, “I am generally free to decide how I should achieve my goals” and “I decide myself as to how to plan my working day.” ($\alpha=.82$)

Personality. The Big Five Inventory-10 (BFI-10) (Rammstedt & John, 2007; Rammstedt, 2007) was applied to measure personality (*1=completely disagree to 5= completely agree*). This is explicitly intended for research contexts that are subject to strong time and financial restrictions, such as company surveys. It is a short version of the Big Five Inventory (John, Donahue & Kentle, 1991; John, Naumann & Soto, 2010; German adaptation: Rammstedt, 1997), which measures the prototypical five factors of personality. It consists of 10 items, two for each dimension of personality. The dimensions are neuroticism ($\alpha=.74$), extraversion ($\alpha=.84$), openness ($\alpha=.72$), agreeableness, ($\alpha=.58$), conscientiousness ($\alpha=.77$) (Rammstedt & John, 2007).

Explorative and exploitative leadership behavior. Leadership behavior was captured by two scales developed by Rosing and Zacher (2015) (*1=not at all to 5=frequently*). Example items for opening leadership behavior were „Allow different ways of accomplishing a task” and “Give possibilities for independent thinking and acting” ($\alpha=.89$). Example items for closing behavior were “Monitor and control goal attainment” and “Sanction errors” ($\alpha=.85$).

Control variables. To ensure that respondents gave honest answers, I used the Social Desirability-Gamma Short Scale (Nießen et al. 2019). This scale presents respondents with characteristics that are considered positive or negative in society. The questions are designed in such a way that the characteristics considered positive do not apply to most people, while the characteristics considered negative apply to almost everyone. The aim is to identify the need for social desirability in people who agree with the traits considered positive but disagree with the traits considered negative.

To ensure content validity, items were selected and adapted from established scales and verified through expert review and pilot testing to ensure comprehensive coverage of the constructs.

The external validity of the study was increased by using a cross-industry and demographically diverse sample, which improved the generalizability of the results. However, the study relied on self-reported measures, so common method bias might have been a problem. In future studies, self-reports of managers should be compared to the ratings of their employees.

Results

I used hierarchical regression analysis to test the hypotheses. As the managers in my data sample come from different industries, I used Analysis of Variance (ANOVA) to investigate whether this has an impact on their engagement in exploration and exploitation tasks. The analysis resulted in no significant differences in activity patterns across industries. This suggests that industry does not influence or bias the results. The means and standard deviations for all the variables, as well as the correlations for the sample are shown in [Table 1](#).

Table 1. Means, standard deviations and correlations among variables

Variable	Means	SD	2	3	4	5	6
1. Explore	4.215	.531	.212*	.173*	.265**	.293**	-.032
2. Openness	3.688	.859					
3. Emotional Stability	3.576	.849	-.130				
4. Environ. Uncertainty	3.343	.798	.057	.150			
5. Autonomy	4.297	.729	.076	.133	.040		
6. Exploit	3.133	.643	-.056	.033	-.048	.115	

In H1, I proposed that high environmental uncertainty positively relates to explorative behavior. H1 was supported because perceived high environmental uncertainty positively related to explorative behavior ($b=0.176$, $t(137)= 3,219$, $p < 0.05$, $R^2 = 0.070$). In H2, I suggested that under conditions of perceived high autonomy, the leader would act more explorative than under conditions of perceived low autonomy. This hypothesis was supported. In H3, I proposed that Openness to Experience positively relates to explorative behavior. The analysis revealed that openness was indeed positively related to explorative behavior ($F(1,136) = 5.578$, $p < 0.05$). Specifically, the linear regression analysis showed a significant linear relationship between openness and exploratory behavior ($b = 0.123$, $t(137) = 2.362$, $p < 0.05$, $R^2 = 0.039$). These results provide support for Hypothesis 3. H4 concerns moderating effects. It postulates that under conditions of perceived high environmental uncertainty, the relationship between

openness and explorative behavior will be stronger than under conditions of perceived low environmental uncertainty. To test this moderation effect, the Process program by Hayes was utilized. The interaction was found to be non-significant ($p=0,6199$). Hence, there was no support for H4. According to H5, under conditions of perceived high job autonomy, the relationship between openness and explorative leadership behavior will be stronger than under condition of perceived low job autonomy. Again, the Process program by Hayes was used and the interaction was found to be non-significant ($p=0,0541$). As predicted by H6, Emotional Stability was significantly related to explorative behavior ($F(1,137) = 4.215, p < 0.05$). Linear regression analysis supported this relationship, showing a significant linear connection between Emotional Stability and explorative behavior ($b=0.108, t(137)=2.053, p < 0.05, R^2 = 0.030$). H7 postulates that under conditions of high autonomy, the relationship between neuroticism and exploitative leadership behavior will be stronger than under conditions of low autonomy. This interaction was found to be non-significant ($p=0,4772$).

Discussion

As part of this research, I examined personality factors and contextual factors and their relationship with leadership behavior. The question posed was: **To what extent do certain contextual and personality factors influence open and closed leadership activities?** Based on the "person-situation interaction", I also investigated the joint influence of personality and context on leadership behavior. **The first hypothesis**, according to which environmental uncertainty would lead to explorative behavior, was confirmed in the present study. This is in line with the hypotheses put forward by Griffin & Grote (2020) and the findings of Keller and Weibler (2014). Contrary to the original arguments by Berger and Calabrese (1974), Griffin and Grote (2020) argue that people with a high tolerance for uncertainty are more likely to engage in exploratory behavior and thus consciously engage in uncertainty. The potentially high tolerance for uncertainty in leaders could contribute to the result in this study. Future studies could examine personal levels of uncertainty tolerance in more detail to identify differences between various target groups. It could also be that leaders see exploration as their only viable option in times of perceived turbulence and uncertainty. This would mean that external pressure forces them to think in new and innovative ways (Keller and Weibler, 2014). **The second hypothesis** could be confirmed in the present study. It indicates a significant positive correlation between leaders' perceived level of autonomy and their explorative leadership behavior. This relationship can be logically explained by considering the nature of autonomy itself. When leaders experience greater freedom in their role, they do not feel

constrained by rigid structures or control, which allows them to approach leadership with an open and innovative mindset. Nguyen et al. (2003) supports this and points out that empowerment and the freedom to make decisions independently can increase leaders' intrinsic motivation and encourage them to pursue new and innovative solutions. Furthermore, the freedom associated with autonomy is crucial for creative problem solving and adaptive responses. Lu et al. (2017) emphasize that an environment that provides autonomy empowers individuals to be more creative and adaptive. **The third hypothesis**, according to which openness to experience would lead to explorative behavior, was confirmed in the present study. This result confirms previous research (Keller & Weibler, 2014). Open-minded individuals are characterized by a strong need for change and a strong ability to understand and adapt to the perspectives of others (Costa & McCrae, 1988). Leaders high in Openness to Experience actively listen to their team members, consider different points of view, and allow exploration from their employees. Detert & Burris (2007) found similar results, showing that leaders high in Openness to Experience are more likely to value their employees' opinions and allow for change. **The fourth hypothesis** corresponds to the third, but perceived environmental uncertainty is added as a moderating variable. According to this hypothesis, environmental uncertainty strengthens the relationship between openness to experience and explorative leadership. This relationship could not be confirmed. It is plausible that the influence of openness to experience on explorative leadership behavior is already significant. Consequently, the introduction of environmental uncertainty will not significantly increase the effect, as open individuals may be inherently predisposed to explore new ideas and approaches, regardless of external factors. Research supports the assumption that uncertainty orientation is most closely related to openness to experience compared to the other Big Five personality traits, supporting the argument that individuals high in openness are inherently well equipped to deal with uncertainty (Hodson & Sorrentino, 1999).

The fifth hypothesis states that the relationship between openness and explorative leadership behavior is strengthened under conditions of high workplace autonomy. This expectation was based on Mischel's (1997) situational strength theory, which states that high-autonomy environments characterized by fewer behavioral constraints create a weaker situation that allows individual personality traits such as openness to have a stronger effect on behavior. However, in my study, this hypothesis could not be confirmed. Leaders with high levels of openness did not show a stronger tendency towards explorative leadership behavior when they perceive high autonomy in their role. It appears that while openness as a personality trait is consistently associated with a tendency towards exploration and innovation, the context

variable of job autonomy does not reinforce this relationship in the expected way. One explanation is that the influence is more complex than assumed. It is likely that other moderating factors, such as the organizational climate, support systems, or the nature of the task itself, play a crucial role in the interaction between openness and explorative leadership behavior (Cormick et al. 2019). **The sixth hypothesis**, according to which emotional stability would lead to explorative behavior, was confirmed in the present study. This relationship can be explained by the fact that emotionally stable individuals are better able to deal with uncertainty and unpredictability (Liu & Yu, 2019), which is a characteristic of exploration. It is also plausible that emotionally stable individuals perceive potential stressors associated with explorative leadership behavior as a challenge rather than a threat (Lazarus & Folkman, 1984). This assumption is supported by the significant negative correlation between emotional stability and stress. **The seventh hypothesis** stated that perceived high job autonomy would strengthen the relationship between neuroticism and exploitative leadership behavior. This expectation was based on Ng et al.'s (2008) argument that individuals with high levels of neuroticism may feel insecure in roles characterized by high autonomy, possibly leading to more exploitative leadership behavior in order to regain a sense of control and stability. In my study, however, this hypothesis could not be confirmed. It might be possible that neurotic leaders use coping mechanisms that do not necessarily result in exploitative leadership behavior. They might seek additional guidance, rely more on their team, or find other ways to deal with their insecurity without turning to exploitative leadership strategies.

Theoretical Implications

This study contributes to existing leadership research by shedding light on the complex interplay between personality traits (Judge & Bono, 2000; Phipps & Prieto, 2011), contextual factors (Johns, 2006), and leadership behavior (Rosing et al. 2011). The results expand our understanding of the importance of openness to experience and emotional stability as personality factors that shape leadership behavior and adaptability to environmental conditions (Judge & Bono, 2000). The study also challenges conventional assumptions about the relationship between uncertainty and leadership behavior (Berger & Calabrese, 1974; Griffin & Grote, 2020). Furthermore, based on Johns' (2006) categorical framework, the study contributes to uncovering omnibus and discrete contextual factors related to explorative leadership behaviors (Mom et al. 2015; Brion et al. 2010). The lack of interaction effects found in this study is a significant result. It suggests that the expected moderating influences of perceived job autonomy and environmental uncertainty on the relationships between

personality traits and leadership behaviors may not be as straightforward. It underscores the need of a more nuanced approach to understanding how leadership behaviors are influenced. This result invites researchers to consider additional variables or mechanisms that might explain the conditions under which personality traits interact with context factors. By demonstrating that interaction effects were not present, this study underscores the importance of empirical validation in theoretical models and calls for continued investigation into the nature of leadership dynamics. The analysis of the findings contributes to the development of a more comprehensive theoretical foundation for leadership research that can better explain the dynamic nature of leadership, especially explorative leadership, in today's ever-changing world (Matsunaga, 2022).

Practical Implications

The study has practical implications for organizations in general and for leader development in particular. It emphasizes the importance of considering both personality traits and contextual factors when selecting, promoting and training leaders. Organizations that want to promote explorative leadership behavior can benefit from focusing on two important personality traits: Openness to experience and emotional stability. In addition, creating a work environment that is characterized by autonomy can help leaders reach their explorative potential. Likewise, organizations should acknowledge the role of uncertainty in leadership dynamics. The question posed by Griffin and Grote (2020), "When is more uncertainty better?" cannot be answered here. We do not know whether personal levels of uncertainty tolerance influence this relationship or whether leaders have high levels of uncertainty tolerance per se. Regardless, however, the finding that a higher level of uncertainty leads to explorative leadership behavior is beneficial. It can be helpful for companies to understand and shape uncertainty as something positive, as an opportunity and a challenge rather than a threat (Lazarus & Folkman, 1984).

Limitations and Future Research

This study used a cross-sectional approach, which limits its ability to establish causality. Future research could benefit from longitudinal approaches that track the development of leadership behaviors over a longer time period in response to varying levels of perceived uncertainty. Another critical issue that deserves research attention is how cultural and gender differences influence the relationships between personality traits, context factors, and explorative leadership behavior. How might these relationships manifest in diverse cultural and gender contexts? In regard to environmental uncertainty, it could also be examined to what extent this

leads to personal uncertainty. In this way, the omnibus factor (environmental uncertainty) would become a discrete factor (personal uncertainty), whose direct influence on leadership might be greater. It would also be valuable to investigate how different levels of uncertainty tolerance interact with openness to experience and emotional stability in driving explorative leadership behavior.

Conclusions

The goal of my research was to identify the influences and dynamics behind explorative leadership behavior in particular and to gain insights that can guide organizations and leaders in dynamic environments. To be successful in today's fast-paced environment, leaders must not only engage in exploitative behaviors, but also explorative ones. An overemphasis on exploitative activities can be detrimental to organizations, as demonstrated by numerous examples in the business world, such as Kodak. Both contextual and personality factors play a central role in shaping leadership behavior. I have chosen variables that have received little attention in previous research, but which are becoming increasingly important today: Environmental uncertainty and autonomy as contextual factors and openness to experience and emotional stability as personality factors. The analysis resulted in environmental uncertainty, autonomy, openness to experience and emotional stability being positively correlated with explorative leadership behavior. What do these results mean for organizations operating in a dynamic environment? First, the results show that perceived uncertainty does not necessarily lead to more cohesive, exploitative behavior. Rather, it can also serve as an opportunity for leaders to embrace change, innovate and break new ground. This raises the question of when perceived uncertainty is used as an opportunity and catalyst for internal change. More generally, when can leaders be explorative in times of environmental change and uncertainty? Are leaders generally more tolerant of uncertainty? By examining dimensions such as uncertainty tolerance, we can develop a deeper understanding of what can influence a leader's ability to engage in explorative behavior. Ultimately, this knowledge can help organizations manage uncertainty effectively and drive innovation. In a broader context, it invites us to view uncertainty as a potential springboard for discovery and a paradigm shift in the way organizations perceive and use uncertainty. Second, leaders should have a certain degree of autonomy to enable explorative efforts. However, it is important not to ignore findings such as those of Lu et al. (2017), which highlight the downsides of providing too much autonomy and its potential to encourage unethical behavior. Third, in addition to viewing uncertainty as an opportunity for learning and growth and valuing autonomy, openness to experience has emerged as an important personality

trait that influences explorative leadership behavior. Fourth, emotional stability is positively correlated with explorative leadership behavior. These results are particularly interesting for companies and organizations as they provide valuable insights into the personality traits that should be considered when filling leadership positions in order to promote innovative and adaptive leadership behavior. The findings, especially the influence of person-situation-interaction (Keller & Weibler, 2014; Judge & Zapata, 2015) on ambidextrous, explorative and exploitative leadership should be extended because in an ever-changing environment, it is imperative that neither side gains the upper hand, but that leaders are able to manage the ambiguities of two-sided leadership.

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5 Integrative Discussion: Toward a Multilevel Understanding of Ambidexterity in SMEs

Despite the extensive research on organizational ambidexterity, the understanding of how organizations, especially SMEs develop and maintain this capability remains limited (Cantarello et al. 2012; Tarba et al. 2020).

5.1 From Static Views to Dynamic Multilevel Interactions

Existing studies generally categorize approaches to ambidexterity into three perspectives: structural, contextual, and leadership-based (Rosenbloom & Christensen, 1994; Tushman & O'Reilly, 1996; Gibson & Birkinshaw, 2004; Smith & Tushman, 2005; Asif, 2017). The structural and contextual perspectives focus on the organizational level, emphasizing structural separations and adaptive contexts to balance exploration and exploitation. In contrast, the leadership perspective addresses the role of (top) management in managing the tensions associated with ambidexterity and is located on the individual level. Taken together, these perspectives underscore the dual nature of ambidexterity research – organizational and individual – where each offers insights, however falls short of fully explaining how ambidexterity capabilities emerge and evolve, especially in SMEs (Cantarello et al. 2012).

Besides there exist two divergent views in ambidexterity research. The first considers exploration and exploitation to be different and opposing activities that must be addressed separately. This view, which is rooted in traditional theories of innovation management, suggests that organizations need to make strategic decisions about whether to explore or exploit at a certain point in time (March, 1991; Gupta et al. 2006). Managers and leaders are expected to choose between alternatives based on immediate organizational needs. This more static view lends itself to structural solutions, such as Tushman and O'Reilly's (1996) concept of structural ambidexterity, in which different parts of the organization are oriented toward either exploration or exploitation. In contrast, the second view assumes that organizational ambidexterity requires the simultaneous management of tensions and paradoxes. This more dynamic, processual perspective sees ambidexterity as an ongoing balancing act embedded in complex contexts (Poole & Van de Ven, 1989). Proponents of this approach suggest that the

tensions between exploration and exploitation should not be entirely resolved or eliminated; rather, they should be maintained and managed to promote organizational resilience and adaptability. This dynamic view encourages leaders to cultivate an environment that can shift back and forth between both activities as needed, embodying a more integrated and nuanced understanding of ambidexterity (Raisch & Birkinshaw, 2008).

Despite a shift towards dynamic conceptualizations, much of the research is still static in orientation. Studies tend to focus on identifying structural and contextual factors that favor ambidexterity, rather than examining the ongoing processes that underlie its development (Magnusson & Martini, 2008). However, research highlights the importance of examining how ambidexterity capabilities develop through multilevel interactions between organizational and individual factors (e.g. Cantarello et al. 2012).

5.2 Implications for theory: A Multilevel Perspective for SMEs

This dissertation advances the field by taking a comprehensive, multi-level approach that integrates insights from static and dynamic, process perspectives (Cantarello et al. 2012). In contrast to traditional studies that divide ambidexterity into either contextual (e.g. supportive context and culture), structural (e.g. separate units for exploration or exploitation) or leadership-driven (e.g. behavior or personality) phenomena, this dissertation examines how these elements interdependently shape ambidexterity in SMEs. This perspective is in line with the management stream that considers the discipline as the art of dealing with dualities, tensions and paradoxes (Lewis, 2000; Bledow et al. 2009; Raisch & Zimmermann, 2017). This stream advocates “a processual approach to dualities - a way of managing that reflects a dynamic approach that keeps tensions alive and is embedded in the complexity of the context and its relational interaction” (Janssens & Steyaert, 1999, p. 136). These processes through which ambidexterity develops are still not sufficiently understood (Raisch & Zimmermann, 2017; Tarba et al. 2020). Previous research shows that ambidextrous processes are both top-down and bottom-up and consist of several phases that influence each other. These include initiation, in which the tension is identified, contextualization, in which structures, cultures and processes are designed to manage tensions, and implementation, in which these paradoxes are actively managed (Raisch & Zimmermann, 2017). The study of practices and actors at the operational and managerial levels and their interactions can provide deeper insights into the underlying processes of ambidexterity (Cantarello et al. 2012).

This dissertation examines exactly these practices, the actors at the different levels and their interactions in order to shed light on their challenges and their role in shaping ambidexterity. The results show that ambidexterity in SMEs is not solely due to individual leaders' management skills (e.g. Gibson & Birkinshaw, 2004), organizational structures (e.g. Tushman & O'Reilly, 1996), or top management (e.g. Jansen et al., 2008). Instead, it emerges from an interplay of contextual, structural and leadership factors. The findings of this dissertation underscore the importance of contextual elements such as organizational identity and top management support; as well as of personality factors and of cognition, which all have an impact on how ambidexterity capabilities emerge at different levels.

In detail, **Study 1** examines how contextual and structural factors shape ambidextrous challenges at two different levels, the level of top and middle management (Cantarello et al. 2012). In particular, it shows the effects of a strong family context and top management's emphasis on exploitative leadership activities within the organization on explorative and exploitative activities. For example, a familial context may encourage experimentation and create an innovation-friendly environment, but it may lack the rigor necessary for systematic implementation, which is essential for sustainable innovation. When top management delegates exploitation tasks to middle management while retaining control over exploration, a dual role is created for middle management. This role can be beneficial for separating exploration and exploitation tasks, but can also lead to increased stress if the balance is not carefully managed (Jia et al. 2024). Study 1 thus shows how structural and contextual factors at the organizational level influence the ambidextrous actions and potential stressors faced by individual leaders.

Study 2 builds on this by combining the contextual and leadership perspectives to examine how leaders' cognition mediates the impact of organizational context on ambidextrous behavior. Cognition serves as a crucial micro-foundational element, as micro-foundational perspectives usually involve individual-level actors, their abilities and activities to explain higher-level concepts. A micro-level perspective suggests that the basis for the development of ambidexterity lies in the individual's ability to cope with conflicting demands (Tarba et al. 2020). The results of this dissertation show that ambidextrous leaders' cognition is shaped by two forces: the organizational context, which is (in this case) efficiency-oriented and the organizations' goals and values, which are more innovation-oriented in the companies examined. This cognitive tension influences the decision-making of leaders at the middle level who strive to balance immediate operational needs with long-term innovation goals. In this sense, cognition is the starting point for ambidextrous behavior and guides leaders' ability to

manage the paradoxes and ambiguities inherent in ambidexterity. By emphasizing cognition as a mediating factor, Study 2 establishes a link between contextual pressures and leaders' responses and offers insights into the internal, micro-foundational processes that enable leaders to balance exploration and exploitation.

Study 3 extends the findings from Study 2 by moving from cognition to concrete leadership behavior. It further integrates the leadership and contextual perspectives by examining how specific perceptions of the context (autonomy and uncertainty) influence explorative and exploitative activities (Oc, 2018). This study shows that leaders' behavior is shaped by their perceived level of autonomy and the uncertainty of their environment. Thus, it highlights the interaction between perceived contextual factors and leaders' responses and, at the same time, offers different strategies for leaders in SMEs to show explorative leadership behavior.

Taken together, these studies provide a multilevel understanding of ambidexterity that integrates contextual, structural and leadership perspectives. Study 1 demonstrates the influence of structural and cultural contexts on ambidexterity at different levels of leadership, Study 2 identifies cognition as an important mediating factor linking context and leadership behavior, and Study 3 extends this by moving from cognition to actual behavior.

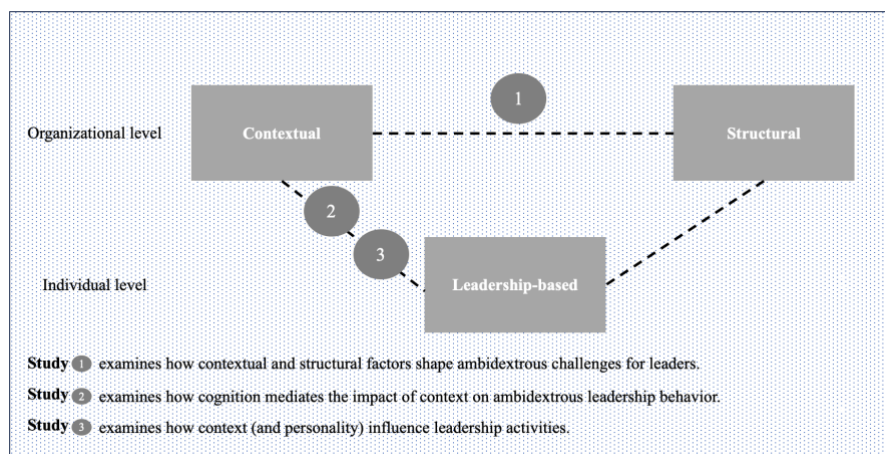


Illustration 2: Connecting the Perspectives of Ambidexterity

The ability to ambidexterity thus results from the interrelationships between perspectives, underscoring the importance of a holistic approach that addresses how structural conditions, context, leadership cognition and behavior interact to shape challenges and strategies for ambidexterity and ambidextrous leadership activities in SMEs. Building on the mentioned process-perspective of ambidexterity, this dissertation examines how the initiation phase begins through cognitive processes, how paradoxes can be contextualized specifically in SMEs, and

what structures, contextual factors, and personality traits contribute to effectively managing these tensions (Raisch & Zimmermann, 2017; Tarba et al. 2020).

5.3 Implications for Practice: Addressing Dual Demands

The practical implications of these findings are especially relevant for SMEs where resources for sustaining exploration and exploitation are limited, making it imperative to leverage the capabilities of individual managers and leaders. The comparative case analysis in Study 1 illustrates how cultural and structural contexts, such as a strong family context or top management's emphasis on exploitative activities, influence the conditions for ambidexterity seeking. For example, a familial context may encourage experimentation, however may lack the rigorous implementation practices necessary for continuous innovation. When top management delegates exploitation tasks to middle management while maintaining control over exploration activities, this results in a dual role for middle management that, while beneficial for segregation, might lead to stress if the balance is not carefully managed (Jia et al. 2024). Because Study 1 shows that exploration and exploitation seem to be significant for middle managers. On the one hand, they wish to have creative freedom with their teams, on the other hand, they need to perform and monitor day-to-day operational tasks. As a result, senior management must grant them the necessary autonomy, but could also offer external training so that they can better deal with the conflicting requirements.

Furthermore, managers seem to perceive that their behavior has a significant influence on their employees' creative and innovative actions (Mumford et al., 2023). This is reflected in the various methods they use to try to encourage a more innovative/explorative mindset in their followers (Figure 1, Study 2). This underscores the idea that in small and medium-sized enterprises (like those examined in the present study) many leaders understand that ensuring the long-term success of the organization requires more than ambidexterity at management level: ideally, this flexibility should also be evident at the individual employee level (Gasda & Fueglistaller, 2016). Following this, leaders (especially in smaller companies) must be aware of their central role in shaping the (ambidextrous) behavior of their employees and act as role models.

In terms of contextual factors, one particularly interesting element is the perception of uncertainty and its impact on leadership. The question posed by Griffin and Grote (2020) "When is more uncertainty better?" cannot be answered in a definitive way here. We do not

know whether individual uncertainty tolerance influences this relationship or whether leaders are naturally more tolerant of uncertainty. Nevertheless, the finding that a higher level of uncertainty leads to more explorative leadership behavior is valuable. It could be beneficial for organizations to view and shape uncertainty not as a threat, but as an opportunity and a challenge (Lazarus & Folkman, 1984).

6 Conclusion: Future Pathways for Ambidexterity in SMEs

This study highlights the need for a dynamic, multilevel approach to ambidexterity in SMEs. At the same time, it acknowledges that integrating different findings is challenging and suggests future research on the interactions between levels.

6.1 Critical Reflection

In summary, this study advances the field of ambidexterity by highlighting the need for a dynamic and integrative perspective that combines leadership-based and organizational perspectives. By analyzing the processes underlying ambidexterity in SMEs and highlighting the role of cognitive, personality, structural and contextual factors, this study provides a more holistic understanding of how ambidextrous capabilities are built and maintained. These findings emphasize the value of paradoxical thinking, personality factors, contextual awareness, and multilevel integration in fostering ambidexterity and provide both theoretical contributions and practical guidance for leaders seeking to manage the complexity of innovation and efficiency in an SME context.

Like any other study, this study does not come without any drawbacks. First of all, although the three studies were carefully designed to answer the central research question and the three detailed research questions mentioned in chapters 4.1 and 4.2, it cannot be denied that the results of the three studies are somewhat lacking in integration. This can be explained by the fact that the research project as a whole intended to be both explorative and comprehensive (see chapter 4.1), which led to a relatively diverse set of studies. Similarly, the results of these studies are also quite diversified and focus on different aspects of ambidexterity and ambidextrous leadership, which makes it difficult to integrate them in any straightforward, yet theoretically stringent way.

However, this was a deliberate choice that appears adequate, given the current state of research on ambidexterity: It is a complex phenomenon that spans multiple levels of analysis, and some of these levels of analysis are currently under-researched, despite the fact that they are just as crucial for understanding ambidexterity as the other levels of analysis. This is especially true for the individual levels of analysis, which hasn't received as much attention as some of the other levels (Gasda & Fueglistaller, 2016; Good & Michael, 2013), although it is crucial, as the present research confirms. In view of this situation, a broad research approach appeared to be the most suitable choice. As Ahmad et al. (2019) point out, it is typical for a newer field of research to progress in a 'broad strokes' in initial phases. There is no point in developing detailed theories or analyzing specific phenomena in detail until there is sufficient clarity about the general "lay of the land" – that is, the central constructs and the relationships between them. For this reason, such a 'broad strokes', rather explorative approach was adopted in the present research.

Similarly, in the present research I used some methodologies that, to the best of my knowledge, have never been used before to explore ambidexterity and ambidextrous leader behavior, such as the ZMET, which was used in study 2. It should be obvious that the result of using novel approaches such as this one cannot be predicted beforehand. Nevertheless, despite this risk, I believe that there is always value in trying a new approach, as the potential benefits of using it cannot be fully predicted.

6.2 Future Research Directions

The present results open up several promising avenues for further research. First, it seems important and useful (both from a theoretical and from a practical perspective) to better integrate the results *within* the different levels of analysis, and then further explore any links *between* the individual and organizational levels. Let's take the level of the individual leader as an example: As the present research shows, their decision making and leadership behavior is dependent on their mental models, as well as on their personality characteristics. This result raises the question: How do these two categories of individual characteristics interact to produce ambidextrous leader behavior?

In order to answer this question, it is necessary to consider interactions between these categories. For example, as pointed out in chapter 5.3, research shows that openness to experience influences cognitive processes such as creativity and the exploration of novel ideas (DeYoung et al., 2005; Javed et al., 2020). In light of these findings, it can be hypothesized that

this should also have an impact on the type of the mental models which leaders construct and rely on for decision-making (for example, mental models of leaders high in openness might include more atypical means-end paths). Since the quality of decision making and thus the effectiveness of a leader hinges crucially on the quality and elaborateness of mental models (Albert et al., 2022; Combe & Carrington, 2015; Mumford et al., 2017), that, in turn, would lead to the hypothesis that there are systematic differences between the effectiveness of leaders in ambidextrous contexts or regarding innovative performance, which depend on their personality as a distal factor, and on their mental models as a proximal factor. This idea could then be validated using structural equation modelling, for example. Not only could this have important implications for the selection of leaders and development for leadership position, where a high degree of individual ambidexterity is required. It would also be relevant for cross-level phenomena like Nonexploitative Exploitation – and thus for organizational ambidexterity. Specifically, since the leadership context is different for middle managers compared to leaders at the top of the organization, and the findings with regards to Nonexploitative Exploitation suggest that a particularly high degree of individual ambidexterity is required at these middle management positions, this would suggest middle managers should be selected to be high in openness, but also receive training that supports them in developing adequate and effective mental models. Furthermore, by examining and integrating the various cross-level relationships, organizational change could be implemented more effectively, as it would be more obvious what factors are particularly relevant at each level, and how these factors interact across the levels.

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