TECHNISCHE UNIVERSITÄT MÜNCHEN

TUM School of Management

# Feedback in Entrepreneurship:

## How Entrepreneurs Are Challenged by and Benefit From Opportunity-Related Feedback

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Vollständiger Abdruck der von der TUM School of Management der Technischen Universität München zur Erlangung des akademischen Grades einer Doktorin der Wirtschafts- und Sozialwissenschaften (Dr. rer. pol.) genehmigten Dissertation.

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Die Dissertation wurde am 23.04.2024 bei der Technischen Universität München eingereicht und durch die TUM School of Management am 15.06.2024 angenommen.

## Acknowledgements

I would like to extend my sincere gratitude to several individuals whose invaluable contributions have been pivotal in the completion of my doctoral thesis. Foremost, I wish to express my deepest thanks to my supervisor, Prof. Dr. Dr. Holger Patzelt, and my mentor, Prof. Dr. Nicola Breugst. Holger, your guidance, support, and expertise have been invaluable throughout this journey. I am deeply appreciative of your ability to maintain optimism during challenging times and to illuminate the joys of research. Your unwavering support, whether in research or teaching, has been a constant source of strength. Nicki, I am profoundly grateful for your mentorship and co-authorship. Your steadfast support, both intellectually and emotionally, has been an unwavering source of inspiration. Your invaluable assistance with my papers and your presence through every challenge have been deeply appreciated.

I am also immensely thankful to Prof. Dr. Rebecca Preller for her guidance and support throughout my entire PhD process. Rebecca, your contributions and insights have been instrumental to my academic growth. Thank you for your unwavering motivation and for generously sharing your knowledge of research and academia. Your intellectual and emotional support have been truly invaluable. Special thanks are also owed to my co-author, Prof. Mirjam Knockaert. Mirjam, your invaluable assistance with my research projects and your hospitality during my research stay in Ghent are deeply appreciated. Thank you for dedicating time to review my work and providing feedback throughout my entire PhD journey.

I extend my appreciation to Prof. Dr. Anne Tryba, Prof. Dr. Veroniek Collewaert, and Prof. Amy Zhao-Ding, PhD, for their commitment and contributions as members of my committee. I am thankful for their dedication in reviewing and discussing my work. I am also grateful to all members of the DFG network “Venturing Together”, in particular Dr. Isabell Stamm as the principal investigator, for the enriching experiences and valuable insights they provided during my involvement.

During my time at ERI, I had the privilege of collaborating with many exceptionally talented and supportive individuals who made my PhD journey truly special. Therefore, I wish to express my gratitude to my (former) colleagues-turned-friends, especially Lieke Steeghs, Julia Kirsch, Dr. Kristina Koch, and Dr. Eva Weissenböck, for their camaraderie and support. A heartfelt thank you goes to Madeleine Kutschbach for her unwavering support and encouraging words during challenging times. I also wish to thank Prof. Dr. Oliver Alexy, Prof. Hana Milanov, PhD, and Prof. Siddarth Vedula, PhD, for their attentive feedback on my research projects and for sharing insights into academia. My warmest gratitude goes to my fellow ERI

PhDs and Post-Docs who made my PhD journey a wonderful experience: (in alphabetical order) Alex Christian, Dr. Carolin Feldmeier, Niklas Hagenow, David Huber, Benedikt Jakob, Dr. Aishwarya Kakatkar, Dr. Andreas Leubner, Carmen Mayer, Dr. Alexandra Mittermaier, David Nawrath, Dr. David K. Reetz, Dr. Dominik Reuter, Lilia Stratz, Dr. Fritz Tacke, Yasmina Trautmann, Laurin Waldmann, Dr. Xian Xu.

Furthermore, I express my gratitude to my co-lecturers from Think Make Start: (in alphabetical order) Dr. Maximilian Bandle, Jessica Bielski, Nuno Miguel Martins Pacheco, Maximilian Reif, and Anabelle Thies, from whom I learned an incredible amount about coaching interdisciplinary teams. A special thank you goes to Ivana Hecimovic for her attentive listening and outstanding management as our incubator manager. I also want to express my appreciation to all the entrepreneurs who participated in my research projects.

Lastly, I am profoundly grateful to my family and friends for their unwavering support and encouragement throughout this journey. I want to extend special thanks to my parents, Philomena and Johann, and my grandparents Anna and Richard, for their unwavering support. I am also grateful to my siblings Isabella and Sebastian for their continual support. Your encouragement has been indispensable, and I am truly grateful to each of you who has contributed to my academic and personal growth.

Munich, May 2024

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## List of Abbreviations

| | |
|---|---|
| BCERC | Babson College Entrepreneurship Research Conference |
| Dr. | Doctor |
| e.g. | Exempli gratia (for example) |
| ERI | Entrepreneurship Research Institute |
| et al. | Et alii (and others) |
| i.e. | Id est (that is) |
| M | Mean |
| MVP | Minimum Viable Product |
| PhD | Doctor of Philosophy |
| Prof. | Professor |
| SD | Standard deviation |
| SE | Standard error |
| SIP | Social Information Processing |
| TUM | Technical University of Munich |

## Abstract

This dissertation presents three Chapters that deal with feedback in entrepreneurship. First, based on a systematic literature review, a theoretical framework on the entrepreneurial feedback process is developed, then, using quantitative and qualitative methods, the detrimental influence of feedback overload on entrepreneurial opportunity evaluation and entrepreneurial actors' processing of contradictory feedback information are investigated. The results of this dissertation contribute to the entrepreneurship and management literatures.

## Zusammenfassung

Diese Dissertation befasst sich mit Feedback im Unternehmertum. Zunächst wird auf der Grundlage einer systematischen Literaturrecherche ein theoretisches Modell über den unternehmerischen Feedbackprozess entwickelt. Anschließend werden mit quantitativen und qualitativen Methoden der schädliche Einfluss von Feedbacküberlastung auf die Bewertung unternehmerischer Chancen und die Verarbeitung widersprüchlichen Feedbacks durch unternehmerische Akteure untersucht. Die Dissertation trägt zur Entrepreneurship- und Management-Literatur bei.

# 1 Introduction

## 1.1 Motivation

Feedback is a much-discussed topic in the field of entrepreneurship, both in theory and in practice (Autio et al., 2013; Seyb et al., 2019a; Shepherd & Gruber, 2021). Entrepreneurial actors apply methods such as Design Thinking and Lean Start-Up to develop their opportunities to market (Blank & Eckhardt, 2023; Ries, 2011). These methods focus on developing opportunities and prototypes iteratively based on expert feedback instead of planning and developing opportunities for long periods of time without gathering feedback (Blank & Eckhardt, 2023; Leatherbee & Katila, 2020; Mansoori & Lackeus, 2020). The importance of soliciting feedback through the application of these methodologies for start-ups is underscored by Eric Ries, the renowned author of "The Lean Startup," selling over a million copies of his book worldwide (Ries, 2017). According to Harvard Business Review, two thirds of all start-ups never manage to generate a positive return for their investors and one of the main reasons for this, alongside problems in the founding team, is a lack of customer research (Eisenmann, 2021). Further, addressing problems that are interesting to solve instead of those that serve a market need is the second most common reason for start-up failure according to a study by CB Insights. The study shows that 35% of the start-ups considered (sample size 110) could not create product-market fit and therefore had to go out of business (CB Insights, 2021).

Due to its vital role in practical settings, feedback has garnered significant interest among academics. Entrepreneurship literature describes that founders need feedback to develop and evaluate their opportunities and bring them to market (Autio et al., 2013; Seyb et al., 2019a). Previous literature has primarily delved into exploring diverse feedback types (e.g. Amore et al., 2021; Burnell et al., 2023) and their implications on outcomes such as pivots (e.g. Blank & Eckhardt, 2023; Burnell et al., 2023), learning (e.g. Dyer et al., 2008; Shepherd & Patzelt, 2023), and performance (e.g. Camuffo et al., 2020; Dimitriadis, 2021). Furthermore, existing literature has scrutinized entrepreneurs' search for (Berglund et al., 2020; Drencheva et al., 2021) and handling of feedback (e.g. Grimes, 2018; Kaffka et al., 2021). Finally, studies have pinpointed factors influencing entrepreneurs' acceptance or rejection of feedback (e.g. Burnell et al., 2023; Harrison & Dossinger, 2017). While these investigations showcase progress in comprehending feedback in entrepreneurship, research on this topic is currently fragmented and conceptually ambiguous. Therefore, the first chapter in this dissertation provides an overview of the current literature on feedback in entrepreneurship, introduces a theoretical framework on the feedback process in entrepreneurship and defines feedback in entrepreneurship as

*"information provided by various stakeholders (such as customers, experts, investors, mentors, employees) to entrepreneurial actors, with the purpose of advancing their opportunities to market."*

Further, existing literature presents feedback in entrepreneurship as generally having a positive effect on opportunity development and evaluation (Autio et al., 2013; Shepherd et al., 2020). Entrepreneurs rely on external feedback to mitigate the uncertainty inherent in crafting new business opportunities for the market (Autio et al., 2013; Grimes, 2018). To advance the different aspects of their opportunities, such as technology or business models, entrepreneurial actors typically gather feedback from a variety of different feedback providers (Kirtley & O'Mahony, 2020; Shepherd et al., 2020). However, the assumption that feedback generally has a positive effect on opportunity development and evaluation is potentially problematic. When gathering feedback from many different stakeholders entrepreneurs might end up facing highly diverse feedback, which can lead to challenges in information processing (Sijbom et al., 2015) which might harm rather than benefit opportunity evaluation. To explore this problem, the second chapter of this dissertation investigates the (potential) negative effects of feedback diversity on entrepreneurs' opportunity evaluation and identifies ways how entrepreneurial actors can overcome these negative effects of feedback.

Further, when collecting feedback from a variety of different feedback providers, founders might end up not only facing highly diverse but even contradictory feedback, as stakeholders, such as investors or customers, may have different opinions on how an opportunity should be developed further (Shepherd et al., 2020). Previous research has implicitly assumed that the feedback founders receive, even if maybe diverse, is consistent rather than contradictory (Frese, 2009; Grimes, 2018). This assumption might be problematic, as venture capitalists might focus on firm growth when providing feedback (Hsu et al., 2014), while potential customers might ask for fast and pragmatically developed solutions to their problems (Ries, 2011). Indeed, the processing of contradictory information might be particularly difficult within entrepreneurial teams, as team members might differ in their background knowledge and interpretation of the information received (Dimov, 2007a) which might influence team processes and thus future opportunity development. Further, team members might acquire information from different feedback providers depending on der educational background and responsibilities within the entrepreneurial team which causes team members to possess unique sets of knowledge (Shalley & Perry-Smith, 2008). Therefore, Chapter 3 of this dissertation deals with the processing of contradictory feedback by founding teams.

In summary, my dissertation delves into broadening our theoretical understanding of the feedback process in entrepreneurship, examining potential negative effects of feedback, and investigating behaviors that can help entrepreneurial actors deal with diverse or contradictory feedback. Based on the empirical studies, this dissertation provides practical insights beneficial for founders and various stakeholders embedded within start-up ecosystems.

### 1.2 Research Gaps and Objectives

Below, I outline the distinct research issues and objectives of the three chapters presented in this dissertation.

Feedback is crucial for entrepreneurs to develop their opportunities to market (Autio et al., 2013; Grimes, 2018). Approaches like the Lean Start-Up emphasize that seeking feedback is integral to opportunity development (Blank & Eckhardt, 2023; Shepherd & Gruber, 2021). Research has explored various feedback types (e.g. Amore et al., 2021; Burnell et al., 2023) and their impact on entrepreneurial outcomes such as pivots, learning, or performance (Blank & Eckhardt, 2023; Camuffo et al., 2020; Dyer et al., 2008). Studies have also delved into how entrepreneurs seek and process feedback (Kaffka et al., 2021; Shepherd et al., 2020) and factors influencing feedback acceptance or rejection (Burnell et al., 2023; Harrison & Dossinger, 2017). However, existing research lacks coherence and clarity in conceptualizations and levels of analysis. Understanding the feedback process is crucial for our understanding about how entrepreneurial opportunities are shaped by external input (Grimes, 2018; Shepherd et al., 2020). My objective in this chapter therefore is to systematize feedback research in entrepreneurship and propose a new framework focusing on individuals and teams as feedback receivers. I focus on individuals and teams as I am mainly interested in cognitive, emotional, and social processes related to receiving and processing feedback. This approach sets the stage for future studies exploring when, why, where, and how entrepreneurs seek and utilize feedback.

Second, to advance opportunity development, entrepreneurs gather feedback from various sources, such as technical experts who help them to refine prototypes and customers who inform market positioning (Autio et al., 2013; Kirtley & O'Mahony, 2020; Seyb et al., 2019a). Previous studies have suggested that such feedback positively impacts opportunity evaluation, a process during which entrepreneurs assess opportunity feasibility and potential venture success (Autio et al., 2013; Ries, 2011). However, the assumption that feedback generally has a positive effect on opportunity evaluation is potentially problematic because entrepreneurs might face feedback which is highly diverse in terms of topics, providers, and channels, thus complicating information processing (Sijbom et al., 2015). Information

processing may be even more challenging when entrepreneurs work on their opportunities in a team as team members might differ in their interpretation of information received (Gruber et al., 2013). This diversity might harm rather than benefit opportunity evaluation (Dimov, 2007b; Sijbom et al., 2015). Investigating how feedback diversity impacts entrepreneurial opportunity evaluation is crucial for our understanding about how external input can influence opportunities and, in particular, negatively impact creative work (Grimes, 2018; Shepherd et al., 2020). Therefore, my aim in the second chapter is to adopt an information processing perspective to examine to what extent and under which conditions diverse feedback negatively affects entrepreneurs' opportunity evaluation.

Third, studies have identified that founders engage with various stakeholders to gather feedback on the validity of potential business opportunities (Grimes, 2018; Seyb et al., 2019a; Shepherd et al., 2020). These stakeholders, including prospective customers, investors, mentors, and technology experts, contribute insights into opportunity refinement (Autio et al., 2013; Seyb et al., 2019a). Scholars have also examined how founders handle opportunity-related feedback, noting their attachment to original ideas and resistance to adaptation (Toivonen et al., 2019). Despite these insights, research has presumed that feedback on potential opportunities is consistent, overlooking the likelihood of contradictory perspectives from diverse sources (Drencheva et al., 2021; Frese, 2009; Grimes, 2018). As, for example, venture capitalists prioritize growth, while customers may favor swift implementation, and technical advisors emphasize market value (Hsu et al., 2014; Ries, 2011; Shepherd & Gruber, 2021), founders might receive contradictory feedback on their opportunity development. Understanding how founding teams navigate contradictory feedback is unexplored, especially considering diverse team compositions and varied levels of expertise which can influence social information processing within entrepreneurial teams (Dimov, 2007b; Gruber et al., 2013). Investigating how entrepreneurial teams process contradictory feedback is crucial for comprehending entrepreneurial opportunity development and team dynamics (Shalley & Perry-Smith, 2008). Therefore, my objective in this third Chapter is to take on a social information processing perspective to investigate how founding teams process contradictory feedback to develop their opportunities to market.

### 1.3 Methodological Approaches and Datasets

To investigate the research questions and objectives described above, I use different methods in the three chapters of this dissertation. The selection of various methodological approaches was guided by the research questions and the existing state of research on the topic (Edmondson

& McManus, 2007). I collected the data for this dissertation specifically for each of the chapters to answer the respective research questions.

In the first chapter, following Grégoire et al. (2011), I employed criterion sampling (Patton, 1990) based on keyword searches to retrieve relevant articles. My search encompassed general management journals publishing entrepreneurship papers, supplemented by specialized entrepreneurship journals. To ensure thoroughness, I conducted searches across titles, abstracts, keywords, and full texts via Web of Science. My search employed two dimensions: "entrepreneurial" and "feedback." For the entrepreneurial dimension, I developed keywords following Shepherd et al. (2015), including terms such as entrepreneur(s), founder(s), opportunity/opportunities, entrepreneurial team(s) etc. For the feedback dimension, I included terms like feedback, advice, information seeking, etc. After eliminating duplicates, my search yielded 1,039 articles matching both dimensions. Following the exclusion criteria established by Shepherd et al. (2015), I removed articles primarily categorized as reviews, research methods papers, not focusing on entrepreneurs or entrepreneurial teams as feedback processing units, not primarily addressing feedback, or not discussing entrepreneurial opportunities. Most exclusions (over 500) were due to sentences acknowledging reviewers for feedback. Ultimately, 72 papers met my criteria and were included in the literature review. I then categorized the papers according to the individual steps of the feedback process, which I developed based on the general feedback literature (e.g. London & Smither, 2002) and my improving understanding of the entrepreneurial feedback process. The papers were assigned to the steps (1) Feedback Initiation, (2) Feedback Seeking, (3) Feedback Receiving, (4) Feedback Processing, (5) Feedback Decision-Making and (6) Feedback Outcomes. I assigned the articles to one or more of these steps, depending on what was investigated in the studies. Therefore, multiple counts occur.

In the second chapter, I collected daily data from aspiring entrepreneurs participating in a university hackathon within a European metropolitan entrepreneurship ecosystem. Hackathons are events where participants utilize entrepreneurial methodologies like Design Thinking and Lean Start-Up to identify user problems, develop solutions, and create prototypes within interdisciplinary teams (Flores et al., 2018; Flus & Hurst, 2021). I chose hackathons as a relevant context for my study due to the strong link between feedback and opportunity evaluation among novice entrepreneurs, who lack experience in evaluating opportunities (Gruber et al., 2015; Wood & McKelvie, 2015; Wood & Williams, 2014). Additionally, hackathons provide supervised environments where feedback diversity can be studied effectively, and they represent a prevalent yet understudied aspect of

entrepreneurship (Miendlarzewska et al., 2022). The data collection process remained consistent across two consecutive hackathon batches, involving 85 participants nested within 17 teams, yielding 680 daily observations. My dependent variable, opportunity evaluation, was measured using a 3-item scale (Gupta et al., 2013). Feedback diversity, the independent variable, was gauged using a tailored scale focusing on feedback topics, parties, and channels. Entrepreneurial effort and information sharing served as moderating variables, while control variables included opportunity evaluation on the day before, entrepreneurial intentions, demographics, educational background, team size, and industry focus. Hierarchical linear modeling (HLM) was employed to analyze the nested structure of my data across four levels: daily measures, individuals, teams, and hackathon batches.

In the third chapter, I adopted an inductive qualitative research method (Corbin & Strauss, 1990; Denzin & Lincoln, 2011). Therefore, I collected that data in the start-up ecosystem of a European metropolitan area, where, start-ups enjoy access to a wide network of stakeholders, including technology specialists, fellow founders, investors, coaches, and mentors, who offer valuable feedback on their ventures. To assemble my sample of founding teams, I employed purposeful sampling (Patton, 2014). I screened their online presence via websites and local entrepreneurship platforms and contacted 32 teams fitting my criteria. Subsequently, 29 teams (comprising 61 founders) agreed to participate. I gradually excluded teams in which not all founders wanted to take part in the interviews or who did not report contradictory feedback situations. My final sample comprised nine contradictory feedback incidents within seven founding teams. Over an eleven-month period, I collected comprehensive data on the teams, the contradictory feedback incidents, feedback processing, subsequent decisions, and outcomes. My approach involved two rounds of semi-structured interviews with founders, start-up consultants, and an incubator manager. This longitudinal design allowed me to delve deeper into the feedback incidents and their implications. Additionally, informal conversations supplemented my understanding. In total, I conducted 55 interviews and informal discussions. I also gathered secondary data and observational insights, employing data triangulation to cross-validate findings. This included real-time recordings of internal team meetings, audio recordings of feedback sessions with external providers, field observations, and documentation of informal conversations. Further, I examined pitch decks, business plans, and funding applications, along with internal emails and press releases, amassing nearly 4,500 pages of written and observational data. My analysis, following the recommendations by Gioia et al. (2013), involved iterative cycles of data collection and analysis, guided by an open-minded approach. I began by understanding each feedback incident, constructing tables and flowcharts

to delineate the sequence of events and team reactions. Emerging codes were identified, refined, and organized into thematic categories, with subsequent iteration leading to the development of theoretical dimensions. Ultimately, my analysis yielded a dynamic model illuminating how founding teams process contradictory feedback during opportunity development.

### 1.4 Dissertation Overview

This dissertation is based on three chapters presented in Table 1. First, I present Chapter I, yielding a theoretical framework on the feedback process based on an extensive review of extant literature. My second chapter investigates the impact of feedback diversity on entrepreneurs' opportunity evaluation. My third chapter explores the processing of conflicting feedback by entrepreneurial teams[1]. Finally, I summarize the findings and contributions of the dissertation and present potential ideas for future research. Table 1 also lists the co-authors of my work and the conferences where I have presented the results of the respective chapters.

**Table 1. Overview of the Three Chapters in This Dissertation**

| Chapter | Research Question | Methodology | Submission History |
|---|---|---|---|
| **Chapter I**<br><br>Feedback in Entrepreneurship – A Systematic Literature Review | How does the entrepreneurial feedback process work and what are areas for future research? | Systematic literature review analyzing 72 articles on entrepreneurial feedback published between 1993 and 2023 | Planned for submission to Journal of Management 2026 Review Issue in June 2024 |
| **Chapter II**<br><br>Too Much of a Good Thing: When Feedback Diversity Harms Entrepreneurs' Opportunity Evaluation | To what extent, and under which conditions, does feedback diversity negatively affect entrepreneurs' opportunity evaluation? | Quantitative multilevel modeling approach to analyze daily survey data on 85 aspiring entrepreneurs, observed during a two-week hackathon resulting in 680 data points | Previous version by Baur, C., Patzelt, H., Breugst, N. & Knockaert, M. presented at BCERC (2023)<br>Current version by Baur, C., Breugst, N. & Knockaert, M. accepted at the Academy of Management Annual Meeting (2024) and submitted to the 27th Forum Gründungsforschung (G-Forum, 2024) as well as the New Venture Team Design Conference (2024) |

[1] In Chapters 1 and 5 I use first-person singular for easier readability of the dissertation. However, since Chapter I is co-authored with Holger Patzelt and Nicola Breugst, Chapter II is co-authored with Rebecca Preller, Holger Patzelt and Nicola Breugst and Chapter III is co-authored with Holger Patzelt, Nicola Breugst and Mirjam Knockaert, all three Chapters are written in first-person plural (i.e., "we").

| Chapter | Research Question | Methodology | Submission History |
|---|---|---|---|
| **Chapter III**<br><br>How Founding Teams Process Contradictory Feedback | How do founding teams process contradictory feedback to develop their opportunities to market? | Inductive, qualitative approach to analyze 55 interviews and secondary data over a timeframe of eleven months describing nine opportunity-related decision situations based on contradictory feedback | Previous versions by Baur, C., Preller, R., Patzelt, H. & Breugst, N. were published in the Academy of Management Proceedings (2023) and presented at the Babson College Entrepreneurship Research Conference (BCERC 2022), the 25th Forum Gründungsforschung (G-Forum, 2022) as well as the New Venture Team Design Conference (2022) |

# 2 Chapter I: Feedback in Entrepreneurship – A Systematic Literature Review

*A recent body of work has emerged to advance our understanding of the critical role of feedback in the entrepreneurial process. Yet, extant research is both fragmented and ambiguous with respect to conceptualizations and levels of analysis. Focusing on entrepreneurial individuals and teams, we draw on the general feedback literature to systematize existing work on feedback in entrepreneurship to offer a novel framework of the entrepreneurial feedback process. We define entrepreneurial feedback as "information provided by various stakeholders (such as customers, experts, investors, mentors, employees) to entrepreneurial actors, with the purpose of advancing their opportunities to market." Based on a systematic review of 72 articles on entrepreneurial feedback published in general management and entrepreneurship journals between 1993 and 2023, we offer a research agenda to encourage future work explaining when, why, where, and how entrepreneurial actors seek and use feedback for opportunity development.*

## 2.1 Introduction

Entrepreneurs use feedback from a diverse array of stakeholders to develop their opportunities to market (Autio et al., 2013; Grimes, 2018; Shepherd et al., 2020). Indeed, practitioner approaches such as the Lean Start-Up methodology underscore the importance of actively seeking and integrating feedback during the opportunity development process (Blank & Eckhardt, 2023; Shepherd & Gruber, 2021). Entrepreneurship researchers have focused on investigating different types of feedback (e.g. Amore et al., 2021; Burnell et al., 2023; Clausen, 2020) and their impact on various outcomes such as pivots (e.g. Blank & Eckhardt, 2023; Kirtley & O'Mahony, 2020), learning (e.g. Dyer et al., 2008; Shepherd et al., 2023), or performance (e.g. Camuffo et al., 2020; Dimitriadis, 2021). In addition, existing research has examined entrepreneurs' search for (e.g. Drencheva et al., 2021; Shepherd et al., 2020; Snihur & Clarysse, 2022) and processing of feedback (e.g. Grimes, 2018; Kaffka et al., 2021; Shepherd & Gruber, 2021). These articles describe that opportunities are developed in a complex, iterative process with the help of feedback that depends on multiple factors and that prototypes can serve as boundary objects for feedback collection (Berglund et al., 2020).

However, while these studies indicate that the progress made in our understanding of feedback in entrepreneurship is commendable, extant research is both fragmented and ambiguous with respect to conceptualizations and levels of analysis. The literature is fragmented because different theoretical lenses (e.g., identity, emotions, stakeholder theory)

focus on different aspects and actors of the feedback process while neglecting others. This also leads to different understandings of the term "feedback." Thus, to date we lack coherent understanding of the steps in the entrepreneurial feedback process, how they influence each other, and how they ultimately affect feedback outcomes. What is more, the feedback process in the entrepreneurial context likely differs from the process in existing organizations. Since founders are not integrated into organizational structures where feedback interactions are usually planned between superiors and employees (Kaehr Serra & Thiel, 2019), they must actively initiate feedback interactions themselves, including the choice of feedback providers (Shepherd et al., 2020). Moreover, the feedback that founders receive is mostly related to the future development of their opportunity, rather than past behavior or performance, as is typically the case in the organizational feedback context (Blank & Eckhardt, 2023; Grimes, 2018). And finally, the founders' close relationships with their opportunities can make it more challenging for them to deal with the feedback received than for employees (Gupta et al., 2019; Lahti et al., 2019).

Therefore, in this article we take stock of and systematize the prior literature of feedback in the entrepreneurial context to conceptualize entrepreneurial feedback and develop a framework of the feedback process in entrepreneurship. To do so, we perform a systematic literature review and analyze 72 articles on entrepreneurial feedback published in general management and entrepreneurship journals between 1993 and 2023. Based on our review, we define entrepreneurial feedback as *"information provided by various stakeholders (such as customers, experts, investors, mentors, employees) to entrepreneurial actors, with the purpose of advancing their opportunities to market."* We combine the feedback literature in organizational contexts with extant work on feedback in entrepreneurship to identify six steps of the entrepreneurial feedback process: (1) feedback initiation, (2) feedback seeking, (3) feedback receiving, (4) feedback processing, (5) feedback decision making, and (6) feedback outcomes. Importantly, the framework also considers how founders' individual characteristics and contextual factors can influence this process.

With this article we hope to make three important contributions to existing literature. First, by offering a definition of entrepreneurial feedback and identifying different feedback types, we bring conceptual clarity to a concept that has attracted the attention of scholars and practitioners alike. Second, by systematizing the fragmented literature on feedback in entrepreneurship and presenting a comprehensive framework of the entrepreneurial feedback process, we help researchers better connect and build on prior (steams of) work, thus avoiding further literature fragmentation. And third, based on our literature review and framework we

offer research opportunities for each step of the entrepreneurial feedback process and the connections of these steps. Specifically, we develop a research agenda to encourage future work explaining when, why, where, and how entrepreneurial actors (individuals and teams) seek and use feedback.

## 2.2 Framework

*Feedback in Organizations*

To systematize existing literature on feedback in entrepreneurship, we build on general feedback research from psychology, management, and education (e.g. Ashford et al., 2003; Crommelinck & Anseel, 2013; Gabelica et al., 2012; Ilgen et al., 1979; London & Smither, 2002) and enrich prior definitions of feedback by features of the entrepreneurial context. Feedback literature from these fields offers various definitions on individual and team levels, for example, it defines feedback as "information about how [individuals'] behaviors are perceived and evaluated by relevant others" (Ashford & Cummings, 1983, p.372) or "information provided by (an) external agent(s) concerning actions, events, processes, or behaviors relative to a task completion or teamwork" (Gabelica et al., 2012, p.124). Feedback at the organizational level is currently mainly understood as performance data comparing how an organization is developing relative to aspirations or to the organization's industry. Such organizational performance feedback explains if an organization refrains from or initiates various organizational actions (Kotiloglu et al., 2021). In this review, we omit literature that discusses firms reacting to organizational performance data, as this data does not align with the definitions of feedback on individual and team levels that we are utilizing. In all the articles we discuss in the following, feedback is processed by individuals or teams and does not refer solely to organizational performance data. It is important to note, however, that articles in which performance outcomes are examined, but feedback is processed by individuals or teams, and this feedback is not solely performance data, are nevertheless included in our study.

Existing feedback research on individual and team levels (e.g. Gabelica et al., 2012; London & Smither, 2002) suggests that actors in a professional context handle feedback in a process consisting of several steps, including feedback seeking, feedback processing and outcomes of feedback. Scholars have investigated isolated steps of this process in more detail such as the search for feedback (De Stobbeleir et al., 2011) or feedback outcomes (Kinicki et al., 2004). These studies, for example, suggest that employees engage either in actively asking for feedback or tend to observe their environment to gather feedback, and that the search for feedback positively impacts their creative performance (De Stobbeleir et al., 2011). Further, Kinicki et al. (2004) describe that employees are more likely to listen to and act on feedback if

it is accurate rather than imprecise. Existing literature describes, for example, learning and in turn performance as outcomes of feedback (Gabelica et al., 2012). At this point, it is important to note that previous studies have not shown consistent results for feedback improving performance. More consistent effects of feedback were achieved when it was combined with other measures such as target setting and consequences for non-acceptance. Furthermore, previous research has shown that feedback provided with a high frequency (e.g. daily) typically has a positive effect on performance and that supervisors are an effective source of feedback, while it does not seem to be relevant for feedback effectiveness whether feedback is provided in private or in public (Sleiman et al., 2020). Moreover, researchers have acknowledged factors such as the individual characteristics of the feedback recipient and the prevailing organizational feedback culture (London & Smither, 2002). For example, the support for using feedback offered in an organization (e.g. coaching) can influence the search for, processing of, and outcomes of feedback (London & Smither, 2002). Finally, more recent research has also begun to distinguish between process and outcome feedback - i.e. feedback received on a process versus feedback related to a performance outcome (Gabelica et al., 2012).

Overall, the organizational feedback literature indicates that in professional contexts, individuals and teams engage in a multi-step process of seeking, processing, and reacting to feedback, with studies highlighting variations in feedback seeking behavior, the impact of feedback accuracy on performance, and the influence of factors such as frequency, source, and organizational feedback culture.

*A Framework of the Entrepreneurial Feedback Process*

Although extant frameworks provide insights how actors process feedback in the work place, they need to be adapted to the entrepreneurial context because (1) entrepreneurs are not embedded in existing organizational structures, communication channels, and cultures shaping the feedback process (Kaehr Serra & Thiel, 2019); (2) entrepreneurs are likely to receive more holistic feedback on their firm (rather than their personal actions and performance) compared to employees (Blank & Eckhardt, 2023; Grimes, 2018), and (3) entrepreneurs' attachment to the firm (Lahti et al., 2019) and their level of discretion over it (Gupta et al., 2019) can shape their receptiveness to, and engagement with feedback (Grimes, 2018). Based on these adaptions, we offer the following definition for feedback in entrepreneurship: *"Entrepreneurial feedback is information provided by various stakeholders (such as customers, experts, investors, mentors, employees) to entrepreneurial actors, with the purpose of advancing their opportunities to market."*

By iteratively comparing the general feedback literature (Ashford et al., 2003; Crommelinck & Anseel, 2013; Ilgen et al., 1979; London & Smither, 2002) with our growing understanding of feedback in entrepreneurship we then develop a model of the feedback process consisting of six steps (Figure 1). To develop this model, we mainly compared existing frameworks from the feedback literature in management, education and psychology (Ashford et al., 2003; Crommelinck & Anseel, 2013; Ilgen et al., 1979; London & Smither, 2002) and adapted them to the entrepreneurial context. In the following, we describe the individual steps of the emerging model that we use as the basis for classifying the articles in this literature review.

The first step of the feedback process, the feedback initiation, captures *the identification of challenges or questions and formulation of hypotheses that serve as the basis for seeking external input by entrepreneurial actors*. In this step, entrepreneurial actors identify questions or challenges and formulate hypotheses about their (potential) opportunity. With the help of external feedback information, they try to answer these questions, find help with their challenges, and confirm (or reject) the hypotheses they made about their opportunities. This step is the starting point of the entrepreneurial feedback process. In particular, formulating hypotheses about the opportunity is an approach that entrepreneurial actors follow when they apply the principles of methods like the Lean Start-Up (Ries, 2014) or Design Thinking (Plattner et al., 2009). Previous research shows that for entrepreneurial actors to succeed, it is advisable to follow these approaches and, as researchers do, formulate hypotheses that can then be tested with the help of data such as feedback information from mentors, experts, customers or advisors (Zellweger & Zenger, 2023). This approach is characteristic of the entrepreneurship context and is usually not used in established organizations. That is because employees' tasks are usually not surrounded by as much uncertainty as the questions that entrepreneurial actors typically deal with (Shepherd et al., 2015), as employees' tasks are usually already predefined by precise work processes (Piccoli et al., 2004; Stewart Jr et al., 1999). In addition, feedback processes in organizations are usually not initiated by employees themselves but are part of an organizations' feedback culture through annual or performance reviews (Alvero et al., 2001).

The second step, feedback seeking, captures *the proactive effort by entrepreneurial actors to elicit opinions, perspectives, and information from relevant stakeholders*. In this step entrepreneurial actors identify relevant feedback providers from whom they want to obtain information to test their hypotheses or answer current questions about their opportunity. Entrepreneurial actors then actively approach these identified stakeholders to obtain the information they need to further develop and evaluate their opportunity. It is important for them

to come up with the right questions to ask in this step so they can efficiently test the hypotheses surrounding their opportunities. Unlike employees in established organizations, entrepreneurial actors must actively seek feedback, as they do not naturally receive feedback in pre-planned feedback meetings that are part of their organization's feedback culture (Kaehr Serra & Thiel, 2019). Therefore, seeking feedback is an activity for entrepreneurial actors that they need to approach proactively (Drencheva et al., 2021). Identifying relevant feedback providers is also important for entrepreneurial actors as they do not have direct supervisors whose feedback is relevant to them (Jaworski & Kohli, 1991) but instead they need to understand which experts can help them, for example, in building technical prototypes or identifying the right entry market.

The subsequent step, feedback receiving, denotes *the receipt of external input by entrepreneurial actors through various channels like direct communication, customer interviews, surveys, etc.* In this step, feedback interactions between stakeholders and entrepreneurial actors take place. These interactions are often enabled by environments such as incubator or accelerator programs (Cohen, Bingham, & Hallen, 2019; Cohen, Fehder, et al., 2019). Depending on different communication styles of feedback providers, the type of feedback provided and the (perceived) quality of feedback, initial emotions are triggered in entrepreneurial actors by the feedback interaction (London & Smither, 2002). In contrast to employees in established organizations, entrepreneurial actors can decide whether or not to engage in feedback interactions (Alvero et al., 2001). They can choose whether to participate in incubation or accelerator programs and which feedback providers they want to interact with and which topics they want to discuss (Kuratko et al., 2004; Lukosiute et al., 2019). This is in contrast to employees who usually cannot decide about feedback interactions because most organizations use feedback to evaluate the employee's performance on their assigned projects (Alvero et al., 2001). Since entrepreneurial actors are often closely connected to their ideas (Grimes, 2018), these feedback interactions might trigger stronger emotional reactions than for employees in established organizations.

The next step, feedback processing, captures *the cognitive and analytical activities to interpret, categorize, and integrate feedback into an entrepreneurial opportunity*. Feedback processing is about entrepreneurial actors trying to understand the meaning and value of the feedback, interpreting the information received to make it applicable to the development of the opportunity. This step also covers dealing with initial emotions triggered by the feedback. While employees in established organizations often receive specific feedback on their performance from their superiors (Alvero et al., 2001), which usually points them in a certain

direction, entrepreneurial actors tend to receive feedback from several different feedback providers (Autio et al., 2013; Shepherd et al., 2020) that is often inconsistent and suggests different potential directions for opportunity development (Kakarika et al., 2022). This makes it difficult for entrepreneurial actors to understand and interpret the feedback they receive (Sijbom et al., 2015). Due to their typically close connection between identity and idea (Grimes, 2018), entrepreneurial actors may also have to process strong emotional reactions in this step and thus face not only cognitive but also emotional challenges.

The fifth step, the feedback decision-making, refers to *the evaluation of the value and alignment of received feedback, leading to either its incorporation into the opportunity (acceptance) or its rejection*. In this step entrepreneurial actors make decisions about the feedback they received, which can be either accepted or rejected. In some cases, entrepreneurial actors postpone their decision and save the feedback received for later. Entrepreneurial actors have to make decisions about the (often inconsistent; Kakarika et al., 2022) feedback they receive on opportunities which are surrounded by a lot of uncertainty (Townsend et al., 2018), which makes decision making in entrepreneurial contexts often more complex than in established organizations (Shepherd et al., 2015). While employees involved in large projects usually have to make decisions promptly based on the feedback received (Robert Baum & Wally, 2003), entrepreneurs can, in some cases, postpone their decision making, for example, to collect more feedback about a topic before making a decision (Brand et al., 2009).

We refer to the last step of the feedback process, feedback outcomes, as *tangible results and adaptations made in response to feedback, contributing to the development of the entrepreneurial opportunity, performance, or entrepreneurial identity*. In this step, entrepreneurial actors make changes in response to feedback. This can be an adjustment of beliefs or hypotheses about the opportunity and involve changes to the entrepreneurial identity (Grimes, 2018). Changes in beliefs and hypotheses about the opportunity typically occur when applying methods such as Lean Start-Up and Design Thinking (Blank & Eckhardt, 2023; Shepherd & Gruber, 2021). While in the entrepreneurial context such adjustments can trigger a change in the venture's strategic direction, namely a pivot (Kirtley & O'Mahony, 2023), or in the entrepreneurial identity (Clausen, 2020), feedback from managers usually intends to help employees to improve their performance (Alvero et al., 2001).

This six-step feedback process is influenced by characteristics and the feedback orientation of the entrepreneurial actors. This includes how strongly entrepreneurial actors tend to seek feedback, how open they are to feedback, how well they understand, process, and apply feedback, how much they trust their feedback providers, and what value they generally attach

to feedback (London & Smither, 2002). Further, contextual factors such as uncertainty surrounding the opportunity (Packard et al., 2017) and environmental hostility (Kreiser et al., 2020) influence the feedback process. For example, if uncertainty surrounding an opportunity is higher, it might be more difficult to find useful feedback providers, as well as decision making based on the feedback received might be more complex (Shepherd et al., 2015). Further, for high growth (Siegel et al., 1993) and high-tech ventures (Gimmon & Levie, 2010) the process might differ as the complexity of the development of high-tech products typically requires more intense feedback gathering (Shepherd et al., 2020). Finally, the support structures available to entrepreneurial actors such as access to entrepreneurship courses, mentors, experts, incubators etc. influence the feedback process, as actors that are trained in using feedback might be better able to understand and integrate feedback received (London & Smither, 2002) and access to a variety of feedback providers might make it easier to find useful experts for opportunity advancement (Cohen, Bingham, & Hallen, 2019).

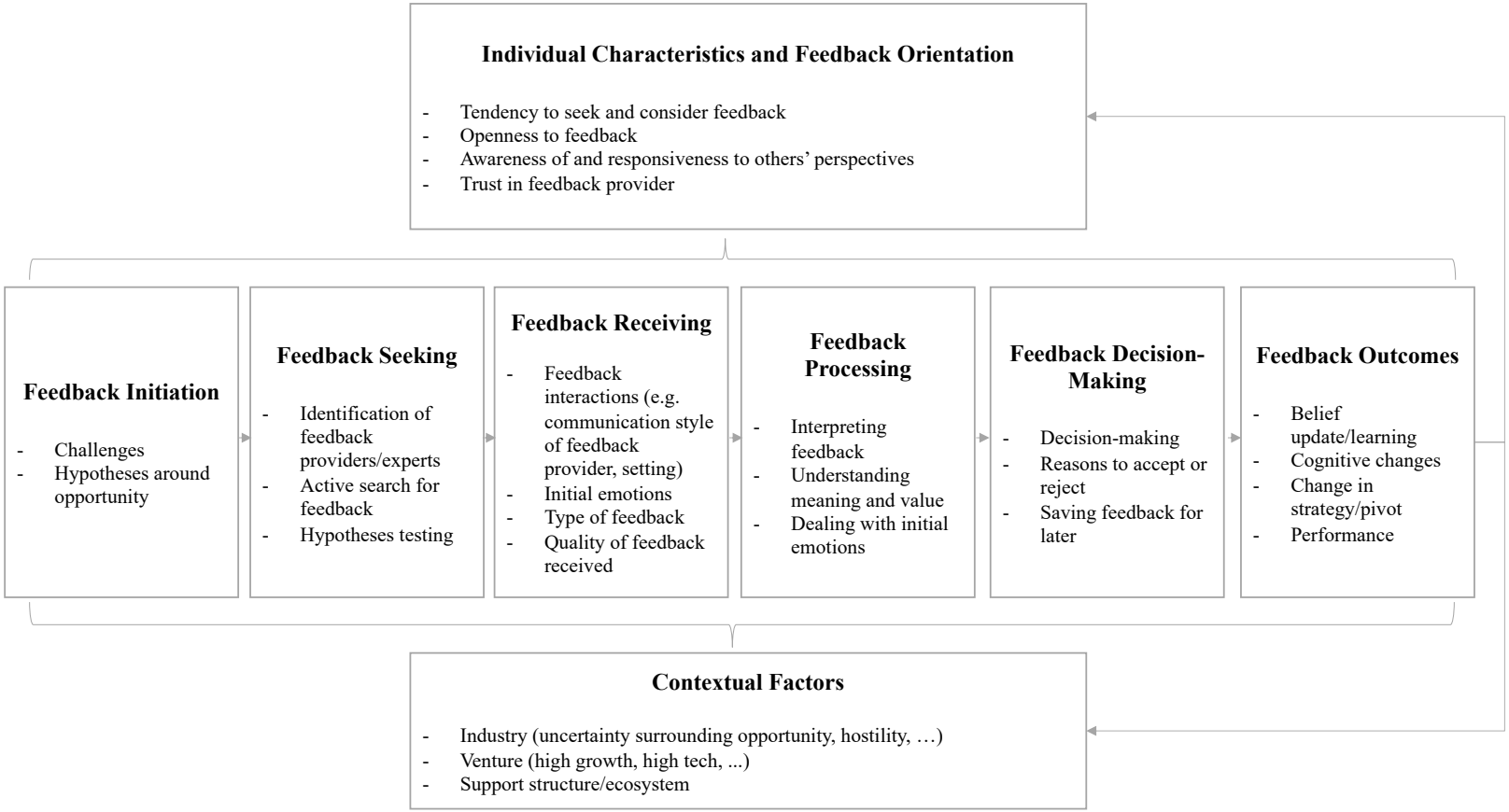



**Figure 1. A Framework of the Entrepreneurial Feedback Process**

### 2.3 Research Methods

Following Grégoire et al. (2011), we use criterion sampling (Patton, 1990) utilizing keyword searches. We searched general management journals that publish papers on entrepreneurship and supplemented these with selected journals that focus on entrepreneurship. These journals included Academy of Management Journal, Academy of Management Review, Administrative Science Quarterly, Journal of Management, Journal of Management Studies, Management Science, Organization Science, Strategic Management Journal, Academy of Management Annals, Entrepreneurship Theory and Practice, Journal of Business Venturing, Journal of Small Business Management, Strategic Entrepreneurship Journal, Small Business Economics, Entrepreneurship and Regional Development, International Small Business Journal, Journal of Applied Psychology, Journal of Organizational Behavior, Research Policy, and Journal of International Business Studies.

To make our search as comprehensive as possible, we used the search in titles, abstract, keywords and full text via Web of Science. We used two dimensions of search terms to ensure that the articles are on both entrepreneurship and feedback. To do so, we followed the approach of Shepherd et al. (2015) for developing our keywords for the "entrepreneurial" dimension and searched our database for papers with any of the words entrepreneur(s) (entrepreneur*), founder(s) (founder*), opportunity/opportunities (opportunit*). Since we were interested not only in individual founders but also in founding teams, we expanded the keywords to include the following terms: entrepreneurial team(s) (entrepreneurial team*), founding team(s) (founding team*), start-up(s) (start-up*), startup(s) (startup*), venture(s) (venture*), new venture team(s) (new venture team*). For the feedback dimension, we searched for articles that, in addition to any of the "entrepreneurial" words, also contained any of the following terms: feedback, advice, information seeking, information searching, information gathering, information processing, community/ies of inquiry (communit* of inquiry), co-creation, co creation, lean start-up, lean startup, pivot, opportunity evaluation, co-construction/ing (co-construct*), opportunity development, pitch/ing (pitch*), opportunity assessment/ing (opportunity assess*), hypothesis/es test/ing (hypothes* test*), tutor/ing (tutor*), mentor/ing (mentor*), coach/ing (coach*). To come up with these keywords, we supplemented the more general terms that could lead to the identification of articles about searching and processing feedback with specific terms from the entrepreneurship field, such as community/ies of inquiry, pivot, or lean startup/lean startup. We also made sure to include the different spellings used for start-up/startup or co-construction/co construction etc. in our search. Finally, we added potential feedback providers such as mentors, coaches, or tutors. The terms "information" and

"investor" combined with one of the terms from the "entrepreneurial" dimension led to very broad search results, so we decided to exclude them. However, by including information searching/seeking/gathering and processing as well as other terms from the information searching and processing dimension, we could identify relevant papers using these terms.

Our search resulted in 1693 articles. After removing all duplicates, we found 1039 articles that contained our search terms for both dimensions (entrepreneurial and feedback). Following the criteria outlined by Shepherd et al. (2015), we proceeded to refine our selection by excluding articles that (1) were primarily reviews and/or research agendas, (2) were focusing on research methods (3) did not consider the entrepreneur or entrepreneurial team as the feedback processing unit, (4) did not focus on feedback as one of the main topics of the article, and (5) were not about the "opportunity" as an entrepreneurial opportunity. Most articles (over 500) were excluded based on exclusion criterion (4). This large number is due to the fact that many papers in our search contained a sentence similar to "We thank our reviewers for their valuable feedback". At this point, it is important to note that feedback at the organizational level is commonly viewed as performance data assessing the organization's progress relative to its goals or industry standards. This type of feedback informs organizational decisions and actions. However, for the purposes of this literature review focusing on cognitive, emotional, and social aspects of feedback, we specifically exclude articles where feedback solely pertains to organizational performance data shaping strategic direction. Instead, we concentrate on articles where feedback is processed by individuals or teams, encompassing broader aspects beyond organizational performance data. Notably, articles examining performance outcomes but where feedback is processed by individuals or teams, and not limited to performance data, are still considered in this review. After we had categorized all papers according to the described criteria, 72 papers remained in our sample. The papers are listed in Table 10 (see Appendix 7.1).

### 2.4 Findings and Research Opportunities

The identified articles are unevenly distributed across the different steps of the entrepreneurial feedback process, with several articles covering more than one step. By far most articles investigate feedback outcomes (42), followed by feedback receiving (24), feedback seeking (14), feedback processing (9), feedback decision-making (8), and feedback initiation (7). Feedback providers are mentioned in 38 articles and different types of feedback are described in 23 articles. Only 13 of the 72 articles in this review focus on the founding team as the feedback processing unit; five include both teams and individuals, and all remaining

articles focus on individual founders. Notably, more than 65 % (47) of the articles were published in the last five years (2019-2023). In the following, we summarize the results or prior research for each step of the entrepreneurial feedback process and identify blind spots to derive future research opportunities based on our theoretical framework.

*Feedback Initiation*

For the first step of the feedback process, the feedback initiation, we found seven articles. According to these articles, founders follow the Lean Start-Up process to develop hypotheses around their Business Model Canvas (Blank & Eckhardt, 2023; Camuffo et al., 2020) and test them based on feedback (Shepherd & Gruber, 2021). The Lean Start-Up framework advocates for prioritizing customer interactions and prototype development over extensive planning. Accordingly, founders actively engage with customers, seeking to understand their needs and refining prototypes before fully committing resources to establish an organization around a potential product. To effectively grasp customer needs, founders begin by formulating hypotheses about the opportunity, encompassing various aspects of the Business Model Canvas. Subsequently, founders systematically test these hypotheses through interactions with potential customers, manufacturers, suppliers, and investors. It is imperative that these hypotheses are formulated in a testable manner, allowing for clear determination based on empirical evidence whether a hypothesis is confirmed or rejected. This process enables founders to minimize risks and optimize resource allocation as they navigate the uncertainties inherent in the entrepreneurial process (Blank & Eckhardt, 2023; Shepherd & Gruber, 2021).

Supporting the Lean Start-Up Methodology, Camuffo et al. (2020) demonstrated that founders who adopt a scientific approach and formulate hypotheses about their opportunity tend to outperform those who rely solely on intuition. These hypothesis-driven founders exhibit a greater propensity to pivot to new ideas and are less likely to prematurely terminate their ventures. Zellweger and Zenger (2023) underscore the importance of formulating hypotheses before embarking on market testing, emphasizing the need for founders to address doubts surrounding product-market fit and feedback validity. During this process, founders often encounter doubts and challenges, prompting them to seek practical strategies for resolution (Zellweger & Zenger, 2023). Meurer et al. (2022) highlights how these challenges serve as catalysts for initiating the feedback process, as founders actively seek assistance to overcome obstacles and refine their strategies. Entrepreneurs operating in impoverished non-Western contexts face unique challenges in implementing Lean Start-Up principles. However, Bruton et al. (2023) suggest that they can adapt by leveraging local information, aligning with

existing market practices, and leveraging kinship networks. Additionally, they can utilize Minimum Viable Products (MVPs) and diversify income sources within families to navigate resource constraints.

Finally, Mansoori and Lackeus (2020) advocate for combining methodologies such as effectuation, design thinking, and Lean Start-Up to address the inherent weaknesses of individual methods. This integrative approach enables entrepreneurs to harness the strengths of each methodology, fostering resilience and innovation in the face of uncertainty.

*Research Opportunities.* To gain deeper insights into entrepreneurs' hypothesis testing, it is essential for future research to examine how various actor characteristics influence this aspect of the entrepreneurial feedback process. For instance, factors such as prior knowledge (Shane, 2000), learning orientation (De Clercq et al., 2013), and overconfidence (Invernizzi et al., 2017) could impact how entrepreneurs formulate and test hypotheses. Understanding the interplay between these characteristics and the hypothesis testing phase can provide valuable insights into how entrepreneurs perceive their opportunities and prioritize different elements of their business models.

Moreover, investigating the content of hypotheses formulated by entrepreneurs and the methods employed to test them can yield valuable insights. Analyzing the specificity and breadth of hypotheses, as well as the rigor with which they are tested, can provide clues about entrepreneurs' strategic thinking and problem-solving approaches. Furthermore, examining how entrepreneurs adapt their hypotheses and testing strategies in response to feedback can shed light on their ability to iterate and pivot effectively in the face of uncertainty (Kirtley & O'Mahony, 2020). Additionally, future research should explore the role of mentoring in facilitating entrepreneurs' initiation of the feedback process. Mentors can offer valuable guidance and support in formulating hypotheses, designing experiments, and interpreting feedback, thus enhancing entrepreneurs' learning and decision-making processes (Memon et al., 2015).

Finally, while previous research on Lean Start-Up methodologies has primarily focused on individual entrepreneurs, it is crucial for future studies to consider potential differences when applying these methodologies in team contexts. Formulating hypotheses and addressing challenges within an entrepreneurial team setting may differ significantly from the processes undertaken by solo entrepreneurs. Diverse skills and perspectives within teams can lead to varying interpretations of information and differing priorities (Dimov, 2007b; Gruber et al.,

2013) highlighting the need for tailored approaches to hypothesis testing and feedback processing in entrepreneurial teams.

*Feedback Seeking*

Fourteen articles describe which entrepreneurs seek feedback, how they do so, and to what effect. Central to this endeavor is the Lean Start-Up methodology, which emphasizes iterative experimentation and rapid prototyping to achieve product-market fit. Founders leverage Minimum Viable Products (MVPs) and employ customer feedback loops to iteratively refine their offerings, aligning them with customer preferences (Blank & Eckhardt, 2023). However, successful application of this method is contingent upon prior market knowledge (De Cock et al., 2020).

Entrepreneurs employ a myriad of strategies to solicit feedback, ranging from questioning and observing to experimentation, and engaging in idea networking (Dyer et al., 2008). Whether through presenting mock products or engaging in collaborative open innovation processes with customers, the aim is to glean insights that reduce uncertainty surrounding the opportunity (Berglund et al., 2020). When seeking feedback, entrepreneurs often decide between an experimental or a planning approach to develop their opportunities. While experimental learning involves quickly incorporating market feedback to modify products and business models, planning approaches focus on executing chosen strategic directions efficiently (Contigiani, 2023). Interestingly, feedback-seeking intensity appears to be unaffected by prior entrepreneurial experience (Westhead et al., 2009), emphasizing the universal nature of this entrepreneurial behavior. In impoverished non-Western contexts, founders face additional challenges in seeking feedback, often relying on family members or children to obtain necessary information (Bruton et al., 2023).

Importantly, seeking feedback in entrepreneurship is an active process and entrepreneurs need to engage with their stakeholders to get feedback (Ramoglou et al., 2023; Shepherd et al., 2020; Snihur et al., 2017; Yin & Zhou, 2023). Founders need to maintain the engagement of different actors (such as customers, investors, partners, etc.) that help them develop their opportunity over time, which they can do by choosing how and when to interact with them. Consistent communication and engagement with stakeholders, along with incorporating their feedback, are essential for maintaining stakeholders' interest and reducing uncertainties during opportunity development (Snihur et al., 2017). Moreover, the breadth of stakeholder engagement significantly impacts opportunity development outcomes (Ramoglou et al., 2023; Shepherd et al., 2020). While teams with diverse specialists engage openly, exploring multiple

alternatives and receiving varied information, generalist teams tend to engage narrowly, seeking confirmation and generating fewer alternatives (Shepherd et al., 2020). Further, when searching feedback founders often mainly focus on customers, but they should rather consider a broader range of stakeholders and their needs which could lead to more responsible and ethical entrepreneurial practices according to Ramoglou et al. (2023). Focusing on customers is especially dangerous as founders risk losing them as feedback providers if founders perform a pivot (Hampel et al., 2020).

Finally, personal attributes and environmental contexts can influence feedback-seeking behaviors. For example, curious individuals search feedback by asking broader questions, enabling them to receive more feedback (Harrison & Dossinger, 2017). Social entrepreneurs search feedback based on their psychological proximity to the social challenge they address. When closely connected, they search feedback to enhance their venture and entrepreneurial skills. Conversely, when the issue is psychologically distant, they search feedback to establish their identity as a "social entrepreneur" (Drencheva et al., 2021).

*Research Opportunities*. To enrich our understanding of drivers and inhibitors of feedback seeking, future studies could investigate the role of entrepreneurial persistence (Caliendo et al., 2020), which can help founders to reach out to different feedback providers, but might also make it harder to act upon the feedback. Previous research on persistence indicates that individuals tend to pursue their goals with greater endurance and determination when they derive enjoyment from the pursuit or when they strongly identify with the values linked to those goals (Cardon & Kirk, 2015). For instance, scholars have previously employed a resource-based view to explore entrepreneurial persistence (Boss et al., 2023). This theoretical framework suggests that entrepreneurs' cognitive resources play a crucial role in the success of startups. Entrepreneurial persistence studies extend this perspective by asserting that the availability of cognitive resources forms the foundation upon which founders make decisions to either persevere or abandon their endeavors. It is only when founders have access to sufficient resources that they opt to persist (Boss et al., 2023). Following this theoretical idea, future studies could investigate whether the availability of cognitive resources also encourages founders to seek more feedback or whether the absence of such resources discourages founders from seeking feedback.

Environmental factors such as uncertainty (Bylund & McCaffrey, 2017) could trigger entrepreneurs to collect more or less feedback, but also complicate feedback processing because they might be unsure if the feedback is accurate. Future studies could therefore

examine such contextual factors and their influence on individual steps of the feedback process. Researchers could investigate how feedback seeking of entrepreneurial actors differs under different levels of uncertainty, for example in different sectors or industries.

Moreover, support structures, such as accelerators, play a significant role in facilitating feedback interactions (Cohen, Bingham, & Hallen, 2019; Cohen, Fehder, et al., 2019). Investigating the enduring effects of accelerators on feedback-seeking behavior post-program can offer valuable insights. Do entrepreneurs continue to actively seek feedback, or do they become reliant on the support structures provided during their accelerator experience? Understanding how accelerators shape feedback-seeking behaviors can inform the development of future entrepreneurial support programs. Furthermore, examining entrepreneurs' strategies for selecting and engaging potential feedback providers presents another avenue for exploration. Contrasting feedback-seeking behaviors of entrepreneurs within and outside entrepreneurship programs can yield valuable insights. While participation in such programs may instill a more systematic approach to feedback seeking, it may also inadvertently narrow the focus to internal networks, potentially neglecting valuable perspectives from external stakeholders (Hallen et al., 2020).

Further, previous studies have highlighted the importance of feedback providers' experience in fostering opportunity development. For instance, research by Roelandt et al. (2022) suggests that board members with extensive experience and longer collaboration history tend to offer more effective support in opportunity development. Thus, future research could derive significant value from exploring how entrepreneurial individuals consider previous experience of feedback providers when soliciting feedback, and how this influences subsequent steps in the entrepreneurial feedback process and, consequently, opportunity development outcomes.

Finally, even if the Lean Start-Up literature does not distinguish between individual and team levels, there may be differences in the search for feedback between these levels. Initial articles such as Shepherd et al. (2020) and Contigiani and Young-Hyman (2022) already examine the search for feedback at the team level and show, for example, how team composition can influence the search for feedback. If there are several team members, they can divide up the feedback search or hand over the task to one team member. In both cases, it is important that information sharing (Bunderson & Boumgarden, 2010) works well in the team, but the underlying team processes may differ. Indeed, feedback information may not reach the right team member and therefore cannot be processed and used for opportunity development. Future research should therefore focus on the influence of team hierarchies (Patzelt et al.,

2021), fixed role allocation (Patzelt et al., 2021), or information sharing and elaboration (Bunderson & Boumgarden, 2010; Harvey, 2015a) on the search for feedback by entrepreneurial teams.

*Feedback Receiving*

24 articles describe feedback receiving, with nine articles dealing with feedback interactions and 23 out of the 24 articles mentioning different types of feedback. 25 different types of feedback providers offer these different types of feedback. These include, for example, venture capitalists (Park & Tzabbar, 2016; Rosenstein et al., 1993; Sapienza et al., 1996), customers (Bhave, 1994; Blank & Eckhardt, 2023; Cohen, Bingham, & Hallen, 2019), suppliers (Blank & Eckhardt, 2023; Clausen, 2020) or peers (Greenman & Holstein, 2023; Kadile & Biraglia, 2022; Kuhn & Galloway, 2015; Lefebvre & Redien-Collot, 2013). Table 2 shows a complete listing of the feedback providers mentioned in all articles.

Feedback interactions within entrepreneurship often occur in specialized environments such as accelerators, which serve as hubs for entrepreneurial development (Cohen et al., 2019a; Chatterji et al., 2019; Yu, 2020; Hallen et al., 2020a; Cohen et al., 2019b; Krishnan et al., 2021). Additionally, online communities like Reddit have emerged as valuable feedback platforms for entrepreneurs (Schou & Adarkwah, 2023). These diverse settings offer unique opportunities for entrepreneurs to engage with feedback providers and refine their strategies. Accelerators, play a crucial role in facilitating peer-to-peer feedback interactions among entrepreneurs. However, the effectiveness of these interactions hinges on the environment fostered during social events within accelerator programs (Krishnan et al., 2021). Depending on the nature of this environment, entrepreneurs may either collaborate and support one another or engage in competitive behavior, influencing the dynamics of feedback exchange within the accelerator setting.

The dynamics of feedback interactions in these environments are multifaceted, with studies focusing on communication strategies employed by feedback providers and the corresponding reactions elicited from entrepreneurs (Greenman & Holstein, 2023; Lefebvre & Redien-Collot, 2013). Greenman and Holstein (2023) highlight the importance of “productive” dialogue, characterized by interactions with a diverse group of relevant feedback providers, including academics, practitioners, peers, and consultants. Such dialogue stimulates founders to reconsider their growth strategies and innovate new approaches. Conversely, “degenerative” dialogue occurs when founders resist change and remain entrenched in their current mindset, inhibiting strategic development. Further, Lefebvre and Redien-Collot (2013) delineate

between consensual and conflictual communication strategies. Consensual strategies, such as offering guidance and motivation, foster compliance and commitment among founders. In contrast, conflictual strategies, including critical feedback and provocative remarks, tend to elicit resistance from recipients.

However, feedback interactions in entrepreneurship extend beyond mere communication strategies; they often involve the use of boundary objects such as prototypes or business models (Seyb et al., 2019b; Shepherd et al., 2023). Boundary objects serve as tools facilitating interactions among various stakeholders. For instance, prototypes can bridge the gap between stakeholders' wishes and needs, fostering consensus and communication (Seyb et al., 2019b). Similarly, business models can function as conceptual models, enhancing the coherence and understanding of entrepreneurial ventures (Shepherd et al., 2023).

Further, a significant portion of the literature in our review (23 out of 24 articles) delves into different types of feedback and their outcomes. These feedback types span a spectrum from negative to positive, covering aspects such as product features, feasibility, pitches, and more (Amore et al., 2021; Bhave, 1994; Blank & Eckhardt, 2023; Burnell et al., 2023; Clausen, 2020; Clingingsmith et al., 2023). To provide a comprehensive overview, we have categorized these feedback types into four clusters, facilitating a better understanding of the diverse feedback landscape within entrepreneurship. Specifically, we cluster the feedback described in the different articles into the following four types: (1) venture offering related feedback, i.e. feedback that helps founders or founding teams to improve their product or service; (2) strategic feedback, i.e. feedback that helps founders or founding teams to develop the strategy for their opportunity, e.g. to understand the market (Blank & Eckhardt, 2023), how to build an organization around the opportunity (Blank & Eckhardt, 2023) or how to secure funding (Quignon, 2023); (3) operational feedback, i.e. feedback that helps founders or founding teams to manage operational challenges such as pitching (Clingingsmith et al., 2023), managing employees (Chatterji et al., 2019) or the production process (Kuhn & Galloway, 2015); and (4) evaluative feedback, i.e. feedback that is either positive or negative and evaluates something related to the venture (e.g. Haynie et al., 2012). It is important to note that clusters (1), (2) and (3) refer to future-oriented feedback and are intended to help founders or founding teams to further develop their products/services and the organization created around them. Cluster (4) captures past-related feedback that evaluates the performance of a product, founder, or founding team in the past. An overview of all feedback types and how we have classified them is given in Table 3.

## Table 2. Feedback Providers

| Source | Feedback provider |
|---|---|
| Ahsan et al. (2018)<br>Assenova (2020)<br>Cohen, Bingham and Hallen (2019)<br>Cohen, Fehder, et al. (2019) | mentors |
| Arregle et al. (2015)<br>Clausen (2020) | family |
| Assenova (2020)<br>Snihur et al. (2017) | investors |
| Bammens and Collewaert (2014) | business angles |
| Bhave (1994)<br>Blank and Eckhardt (2023)<br>Clausen (2020)<br>Cohen, Bingham and Hallen (2019)<br>Snihur et al. (2017) | (potential) customers |
| Blank and Eckhardt (2023)<br>Clausen (2020) | suppliers |
| Chatterji et al. (2019)<br>Kadile and Biraglia (2022)<br>Kuhn and Galloway (2015)<br>Greenman and Holstein (2023)<br>Krishnan et al. (2021)<br>Lefebvre and Redien-Collot (2013) | peers/other entrepreneurs |
| Clausen (2020) | clients |
| Greenman and Holstein (2023) | practitioners |
| Greenman and Holstein (2023) | academics |
| Greenman and Holstein (2023) | consultants |
| Grimes (2018)<br>Sapienza and Korsgaard (1996)<br>Rosenstein et al. (1993) | VCs |
| Kaffka et al. (2021)<br>Shepherd and Gruber (2021)<br>Seyb et al. (2019a) | stakeholders |
| McCarthy et al. (1993) | market |
| Meurer et al. (2022) | online communities |
| Miller et al. (2024) | advisors |
| Nair and Blomquist (2021) | business coach |
| Shepherd and Gruber (2021) | early employees |
| Shepherd et al. (2020) | community of inquiry |
| Snihur et al. (2017) | regulators |
| Snihur et al. (2017) | business partners |

## Table 3. Types of Feedback

| Source | Description of Feedback Provided | Type of Feedback |
|---|---|---|
| Amore et al. (2021)<br>Burnell et al. (2023)<br>Clausen (2020)<br>Holland and Shepherd (2013) | valence: negative | evaluative |
| Arregle et al. (2015) | business advice, emotional support, business resources | strategic, operational |
| Autio et al. (2013) | technical information and social information about user needs | venture offering related |
| Barney et al. (1996) | business management or operational | strategic, operational |
| Bhave (1994) | on product features and quality or affecting business concept | strategic |
| Bhave (1994) | strategic feedback (perception of vs. actual customer needs) and operating feedback (operational changes but not threatening business) | venture offering related |
| Blank and Eckhardt (2023) | if market exists and how to establish a venture to serve this market | operational |
| Blank and Eckhardt (2023) | if product or service is technologically feasible | operational |
| Blank and Eckhardt (2023) | feedback on cost effectiveness | venture offering related |
| Chatterji et al. (2019) | advice about managing employees | evaluative |
| Clausen (2020) | viability of venture offering | strategic |
| Clausen (2020) | valence: positive = external actors believe that the presented idea can be build and commercialized | venture offering related |
| Clingingsmith et al. (2023) | pitch training | strategic |
| Cohen, Bingham and Hallen (2019) | customer development, product development, validating idea | strategic, evaluative |
| Drencheva et al. (2021) | improvement of venture offering | evaluative |
| Drencheva et al. (2021) | how to be perceived as social entrepreneur | evaluative |
| Greenman and Holstein (2023) | venture growth strategies | evaluative |
| Haynie et al. (2012) | cognitive feedback = task information and outcome feedback = performance oriented | strategic, evaluative |
| Kadile and Biraglia (2022) | valence: positive | evaluative |
| Kaffka et al. (2021) | critical feedback | strategic, operational |
| Kakarika et al. (2022) | valence: positive or negative | strategic |
| Kakarika et al. (2022) | feedback consistency: consistent vs. inconsistent | venture offering related |
| Kakarika et al. (2022) | feedback on role performance = fulfillment of role obligations and expectations | strategic |
| Kotha et al. (2023) | how to build a business model, use networks and build a team | operational |
| Kuhn and Galloway (2015) | around production and social support or concerning operational business and sales | Strategic operational |
| Quignon (2023) | survival and securing seed funds | strategic |
| Sapienza et al. (1996) | strategic involvement (i.e., financial & business advice) | evaluative |
| Yu (2020) | information about the probability of success | operational |

*Research Opportunities.* While general feedback literature has acknowledged that feedback elicits emotional responses in the receiver (Choi et al., 2018), the realm of entrepreneurial

feedback research has not adequately addressed the role of emotions. Thus, there is a need for future studies to delve into the emotions experienced by entrepreneurs in response to various feedback interactions and types of feedback received from diverse providers. Understanding these emotional reactions is crucial because emotions have been shown to significantly influence entrepreneurial decision-making processes (Shepherd et al., 2015), thereby potentially shaping subsequent steps in the entrepreneurial feedback and opportunity development process. For instance, exploring how entrepreneurs experience emotions such as frustration, anxiety, or elation in response to feedback can provide insights into how these emotions impact their receptivity to feedback and their subsequent actions. Negative emotions, for example, may strain relationships with feedback providers, yet they may also serve as catalysts for entrepreneurs to recognize the need for adaptation and ultimately accept feedback as valuable input for improvement.

While Hallen et al. (2020) and Krishnan et al. (2021) already examine accelerators as an environment for feedback interactions between feedback providers and entrepreneurial teams, most other articles focus on the individual level. Future investigations should extend their focus to examine feedback reception within entrepreneurial teams, as team dynamics can either mitigate or amplify emotional reactions. For instance, team members may provide support to one another, either buffering (Ortiz-Bonnin et al., 2023) or amplifying (Barsade et al., 2018) emotional reactions. Understanding these dynamics at the team level an offer a more comprehensive insight into how emotions influence the feedback process and subsequent entrepreneurial outcomes.

*Feedback Processing*

Nine articles describe how founders process the feedback received (Kaffka et al., 2021; Vaghely & Julien, 2010) and the challenges that accompany this process (Barney et al., 1996; Baron, 1998; Ciuchta et al., 2018; Grimes, 2018; Haynie et al., 2012; Kuhn & Galloway, 2015; Shepherd et al., 2023). According to Vaghely and Julien (2010), entrepreneurs use external feedback to identify and create opportunities. They do this through two main processes: “opportunity recognition” and “opportunity construction”. Opportunity recognition involves systematic data processing to uncover new opportunities, while opportunity construction entails interpreting information to innovate through trial and error. Delving deeper into the micro-level dynamics, Kaffka et al. (2021) shed light on how critical feedback influences shared cognition during opportunity development. The authors describe how feedback aimed at founders induces ‘sensebreaking’, prompting a reassessment of prevailing perceptions about

opportunities. Sensebreaking unfolds through redirecting attention, reframing interpretations, and questioning existing understandings, ultimately leading to novel sensemaking and alterations in shared cognition among entrepreneurs and stakeholders.

However, processing feedback isn't always straightforward. Several challenges and influencing factors come into play, as highlighted by various studies. Founders whose ideas are strongly linked to their self-concept often struggle to integrate critical feedback (Grimes, 2018). Moreover, entrepreneurs frequently encounter scenarios marked by elevated levels of uncertainty, novelty, emotional intensity, and time constraints. These factors can overwhelm their cognitive processing capabilities, resulting in cognitive biases that impact their decision-making and judgments (Baron, 1998). Additionally, entrepreneurs often have doubts about the validity of feedback received, which might make it challenging to accept it (Zellweger & Zenger, 2023). Interestingly, Barney et al. (1996) found that extensive industry experience might diminish the value placed on certain types of feedback, particularly in business management and operations, among founding teams. Conversely, teams with prior cross-industry experience tend to be more receptive to broader business advice. This is attributed to the entrenched operational expertise of more tenured teams, making it challenging for them to adapt their methods. Yet, they may be more open to broader business advice as they navigate a new industry.

However, there are also factors that have a positive influence on feedback processing: entrepreneurs who are cognitively more flexible are better able to adapt to feedback and make changes to their business models accordingly to improve the coherence of their business model (Shepherd et al., 2023). Adding to this, according to Haynie et al. (2012), metacognitive knowledge, defined as "understanding of cognitive matters as they relate to people, tasks and strategy" (Haynie et al., 2012, p. 242), i.e. a person's awareness and understanding of their own cognitive processes, thinking strategies, and problem-solving abilities, enables entrepreneurs to more effectively learn from feedback. Further, the type of motivation for one's own business can influence the value that founders attach to feedback from their peers: when founders are motivated by personal benefits, this positively impacts the value they place on feedback relevant to production and social support. In contrast, being motivated by making money has a positive impact on the value founders place on feedback and support to business operations and sales (Kuhn & Galloway, 2015).

*Research Opportunities.* While processing feedback can be challenging for individual entrepreneurs, it is likely even more complex at the team level. Given the prevalence of

founding teams (Patzelt et al., 2021), future research needs to consider their role in processing entrepreneurial feedback (for an exception, see Barney et al., 1996). For example, while team diversity may complicate efficient feedback processing in the founding team, teams might benefit from diversity when seeking and receiving feedback because of their more diverse networks (Mannix & Neale, 2005). Team members often process information in different ways stemming from their varied educational backgrounds (Dimov, 2007b; Gruber et al., 2013). On the one hand, this diversity could be advantageous, as it broadens the spectrum of information comprehension within the team. On the other hand, it may also pose challenges, as achieving consensus and interpreting feedback uniformly could prove more arduous for team members. However, previous research has shown that in a phase of the start-up life cycle in which the working and living conditions of team members begin to change, founding team members develop shared entrepreneurial cognition that influences their decision-making behavior (Tryba & Fletcher, 2020). When shared cognition is already present in founding teams, feedback may be processed and understood more similarly than in very early phases of team collaboration. Future research should therefore look at how the respective phase in the life cycle of an entrepreneurial team influences feedback processing.

Another significant factor influencing feedback processing at the team level is the dynamics and culture that develop, particularly in the later stages of the startup lifecycle (Patzelt et al., 2021). For instance, team hierarchies (Lahiri et al., 2019) may exert influence on feedback processing. If a team member in a higher hierarchical position, extremely or selectively values external feedback, it could sway the entire team's approach to processing such feedback. This could lead to teams ignoring certain sources of feedback because they are not valued by the spokesperson or relying too heavily on a particular source of feedback. Further, if a team habitually disregards feedback, it can become an entrenched dynamic. Conversely, teams may invest substantial time and effort in processing feedback due to cultural norms dictating its importance.

At both individual and team levels, investigating how specific sources of feedback affect feedback processing is intriguing. For instance, founders may grapple more with investor feedback than with customer input. This could pose challenges since listening to customer feedback is crucial for developing marketable products (Ries, 2011; Shepherd & Gruber, 2021). Connected with this, exploring mechanisms like "perspective taking" (Ku et al., 2015), where individuals try to understand the feedback provider's standpoint, could enhance feedback comprehension and processing.

Moreover, also the nature of the feedback received could impact entrepreneurial actors' feedback processing. For example, the diversity of feedback received can impact processing ease or difficulty (Sijbom et al., 2015). If founders or teams receive highly diverse feedback, they may encounter challenges in processing it, potentially leading to information overload (Eppler & Mengis, 2004; Schroder et al., 1967; Sijbom et al., 2015). This could mean that parts of the feedback received cannot be processed. Therefore, future studies should focus more on the micro-mechanisms of feedback processing by entrepreneurial actors and investigate different factors influencing this process.

*Feedback Decision-Making*

The next step in the entrepreneurial feedback process is about whether feedback is accepted or rejected - in other words, about the use or non-use of feedback. The eight articles we found about this step in our review deal either with whether feedback is accepted or rejected (Burnell et al., 2023; Harrison & Dossinger, 2017; Miller et al., 2024) or with the factors influencing why feedback is accepted or rejected (Amore et al., 2021; Bhave, 1994; Burnell et al., 2023; Harrison & Dossinger, 2017; Sapienza & Korsgaard, 1996). One article describes the potential results of feedback rejection (Snihur et al., 2017).

In the realm of feedback dynamics within entrepreneurial ventures, the type of feedback plays a significant role in its acceptance and subsequent impact on creative revision. Harrison and Dossinger (2017) illustrate that ambivalent feedback, characterized by a blend of positive and negative elements, tends to foster acceptance and creative adaptation of ideas. Conversely, Burnell et al. (2023) posit that negative feedback, particularly concerning the value proposition of a start-up team, often faces resistance and is more likely to be rejected. However, the journey from feedback receipt to implementation is seldom linear. Miller et al. (2024) unveil a pattern where entrepreneurial teams, upon receiving feedback, engage in thorough exploration and experimentation with various alternatives and markets before committing to changes.

Factors influencing feedback acceptance or rejection further enrich the narrative. Curiosity emerges as a crucial moderator, as highlighted by Harrison and Dossinger (2017). Those with higher levels of curiosity exhibit a propensity to seek feedback through open inquiry, facilitating a greater reception of feedback and a willingness to leverage it for further opportunity development. Temporal considerations also come into play. Bhave (1994) emphasizes the significance of feedback frequency, suggesting that frequent feedback loops facilitate adaptation. Similarly, Sapienza and Korsgaard (1996) underline the importance of timely investor feedback in fostering acceptance and subsequent action. Resistance to change,

stemming from a strong identity-idea linkage, poses a formidable barrier to feedback acceptance, as noted by Burnell et al. (2023). However, entrepreneurial experience coupled with effective mentoring can mitigate this challenge, enabling individuals to embrace feedback-induced alterations. Optimism emerges as a double-edged sword, as elucidated by Amore et al. (2021). While optimism fuels entrepreneurial drive, it paradoxically diminishes the acceptance of negative feedback, potentially impeding growth opportunities. The consequences of feedback rejection extend beyond the immediate developmental sphere. Snihur et al. (2017) warn that entrepreneurs who dismiss feedback risk alienating stakeholders, jeopardizing the collaborative opportunity development process.

*Research Opportunities.* We advocate for future research to delve into the factors influencing entrepreneurs' decisions to accept or reject different types of feedback. For instance, exploring how different phases in the venture lifecycle (Patzelt et al., 2021) shape feedback acceptance could provide valuable insights. Entrepreneurs in early stages may exhibit greater openness to feedback on market appropriateness as they have fewer industry-lock-ins compared to those in later stages. However, they may also be more emotionally attached to their initial ideas (Grimes, 2018), which could affect their willingness to accept feedback suggesting pivots or other changes.

Connecting various steps of the entrepreneurial feedback model, researchers could investigate whether entrepreneurs demonstrate different levels of receptivity to feedback they actively sought versus unsolicited feedback (Drencheva et al., 2021). Gaining insight into this matter could enhance our ability to design more effective entrepreneurial support programs and potentially encourage founders to actively seek feedback. Additionally, the level of trust entrepreneurs place in feedback providers is likely to influence their acceptance of feedback. However, overly trusting entrepreneurs might accept feedback uncritically, potentially leading to detrimental effects on entrepreneurial outcomes (Welter, 2012). On the contrary, when entrepreneurs lack trust in their feedback providers, they may withhold critical information (Bammens & Collewaert, 2014) impeding the provision of valuable feedback. Exploring these dynamics and the mechanisms for cultivating trust between entrepreneurs and their community of inquiry could deepen our comprehension of how feedback providers influence the opportunity development process.

Moreover, future research should address the complexities of decision-making regarding feedback acceptance or rejection at the team level. Team decision-making processes are multifaceted (Shepherd et al., 2015), and differing opinions and interpretations of feedback

among team members, stemming from diverse background knowledge, especially in interdisciplinary teams (Dimov, 2007b; Gruber et al., 2013), can impede decision-making (Dimov, 2007a; Gaba, 2023). Therefore, it is essential for future research to explore how entrepreneurial teams navigate the acceptance and rejection of feedback, considering the dynamics of collaboration, communication, and knowledge diversity within teams.

*Feedback Outcomes*

For our last step, the feedback outcomes, we find the largest number of papers, namely 42. The papers for this step describe various outcomes such as pivots (e.g. Burnell et al., 2023; Kirtley & O'Mahony, 2023), belief updating (e.g. Dyer et al., 2008; Meurer et al., 2022; Shepherd et al., 2023) or the impact of feedback on performance (Camuffo et al., 2020; Dimitriadis, 2021; Drencheva et al., 2021). To get a better overview of the effects of feedback, we have divided the outcomes of feedback into four clusters: (1) hypotheses/belief updating/learning, (2) strategic change/pivot, (3) cognitive changes (e.g. entrepreneurial personality, role identity), and (4) performance. A complete overview of the described outcomes of feedback is shown in Table 4.

**Table 4. Feedback Outcomes**

| Source | Outcome | Category |
|---|---|---|
| Agrawal et al. (2021) | mentor can help entrepreneur to enlarge set of possible tests (to test opportunity) and/or to more effectively choose from existing set of tests | hypotheses/belief updating/learning |
| Ahsan et al. (2018) | decision to become entrepreneur | cognitive change |
| Arend (2016) | adapting strategy based on feedback in combination with rule breaking leads to success | strategic change/pivot |
| Arregle et al. (2015) | family ties in entrepreneurial networks have positive and negative outcomes: there is a inverted U-shape relationship of advice and emotional support with venture growth and an U-shaped relationship of business resources network with venture growth | performance |
| Assenova (2020) | high ability mentors help entrepreneurs to achieve higher revenue, higher profit, which is moderated by pre-entry knowledge and experience of entrepreneurs, benefits of mentor are more significant when entrepreneurs have less knowledge and experience | performance |
| Autio et al. (2013) | technical data influences opportunity assessment, while social insights regarding user requirements propel entrepreneurial endeavors by diminishing uncertainty in demand; technical information positively influences third person opportunity recognition; social information positively influences first person opportunity beliefs (entrepreneurial action) | hypotheses/belief updating/learning cognitive changes |
| Bammens and Collewaert (2014) | angle feedback can help entrepreneurs but angles need information from entrepreneurs to effectively give advice --> entrepreneurs will share information if they trust angles, if angles perceive that entrepreneurs trust in them they evaluate their ventures better | performance |

| Source | Outcome | Category |
|---|---|---|
| Bhave (1994) | correction action | hypotheses/belief updating/learning |
| Blank and Eckhardt (2023) | prototyping/iterating on products prior to committing resources to building the organization | strategic change/pivot |
| Blank and Eckhardt (2023) | get to know customer to prevent building products customer does not want | hypotheses/belief updating/learning |
| Blank and Eckhardt (2023) | failure, pivoting, restarting process | strategic change/pivot |
| Blank and Eckhardt (2023) | product-market fit, customer segment, means to sell and market product, predictable and repeatable sales | hypotheses/belief updating/learning |
| Blank and Eckhardt (2023) | change of unknown to known | hypotheses/belief updating/learning |
| Blank and Eckhardt (2023) | pivot | strategic change/pivot |
| Burnell et al. (2023) | pivot | strategic change/pivot |
| Camuffo et al. (2020) Dimitriadis (2021) Dimitriadis and Koning (2022) | performance (better if they behave like scientists better if they receive advice on employee management from pees with formal managerial style) | performance |
| Clausen (2020) | entrepreneurs challenge assumptions underlying venture offerings | hypotheses/belief updating/learning |
| Clausen (2020) | further opportunity development | hypotheses/belief updating/learning |
| Clausen (2020) | learning --> fix problems and improve venture offering | hypotheses/belief updating/learning strategic change/pivot |
| Clausen (2020) | positive feedback --> entrepreneurial idea becomes more real as entrepreneurial opportunity | entrepreneurial intention/cognitive changes |
| Clausen (2020) | positive feedback triggers learning | hypotheses/belief updating/learning |
| Clausen (2020) | positive feedback improves venture offering | performance |
| Clausen (2020) | negative feedback leads to higher level learning which focuses on problem solving (if entrepreneurs engage too much in higher level learning they might have problems in advancing opportunity) | cognitive changes |
| Clingingsmith et al. (2023) | improve pitch, work more on pitch, engage in additional start-up competitions and accelerator programs, and actively pursue entrepreneurial education beyond just pitching | strategic change/pivot hypotheses/belief updating/learning |
| Cohen, Bingham and Hallen (2019) | start-ups benefit from deep consultative learning prior to experimentation | performance |
| Cohen, Fehder, et al. (2019) | external mentorship exhibits a negative correlation with venture performance | performance |
| Collewaert et al. (2016) | Entrepreneurs who consistently seek feedback experience fewer declines in positive feelings (regarding founding) when they face higher role ambiguity, compared to those who search feedback less often | cognitive changes |
| Drencheva et al. (2021) | when feedback fails to confirm the central role identity, entrepreneurs are more inclined to explore alternatives | cognitive changes |
| Dyer et al. (2008) | questioning, observing, experimenting, idea networking, increase probability of generating idea for innovative venture | hypotheses/belief updating/learning |
| Hallen et al. (2020) | venture development | hypotheses/belief updating/learning performance |

| Source | Outcome | Category |
|---|---|---|
| Harms and Schwery (2020) | if entrepreneurs effectively use the Lean Start-Up methodology, their project performance (timely and cost-effective creation of a high quality solution) is better | performance |
| Haynie et al. (2012) | adaption of decision policies (more effective with cognitive feedback than outcome feedback) | hypotheses/belief updating/learning |
| Holland and Shepherd (2013) | negative feedback about current opportunity can lead to pivot | strategic change/pivot |
| Kadile and Biraglia (2022) | positive feedback from peers can stimulate entrepreneurial alertness = intentions to start a business | cognitive changes |
| Kaffka et al. (2021) | critical feedback --> sensebreaking --> novel sensemaking --> cognitive changes | cognitive changes |
| Kakarika et al. (2022) | types of passion (harmonious vs. obsessive) together with feedback received (pos/neg; consistent/inconsistent triggers role identity transitions or persistence (= modification of identity and repriorization of roles as inventors, entrepreneurs and developers) | cognitive changes |
| Kirtley and O'Mahony (2023) | pivot = strategic reorientation --> only happens when feedback contradicts or expands current beliefs; doesn't occur through a single decision, but rather gradually evolves by progressively incorporating strategic elements over time, culminating in a pivot | strategic change/pivot |
| Kotha et al. (2023) | increased venture sales revenue | performance |
| Lefebvre and Redien-Collot (2013) | encourage entrepreneurs to develop successful business, step back and reassess business project | cognitive changes<br>hypotheses/belief updating/learning |
| Mansoori and Lackeus (2020) | uncertainty management through iterative learning | hypotheses/belief updating/learning |
| Marvel et al. (2022) | pre-launch learning = market research and technological development vs. post-launch learning = pivots in reaction to market responses and customer feedback following market entry | hypotheses/belief updating/learning<br>strategic change/pivot |
| Marvel et al. (2022) | market pivots negatively influence venture performance | strategic change/pivot |
| McCarthy et al. (1993) | escalation of commitment (greater when feedback from market is negative) | cognitive change |
| Meurer et al. (2022) | addressing issues, redefining challenges, pondering circumstances, redirecting thoughts and action | hypotheses/belief updating/learning |
| Miller et al. (2024) | firm strategy | strategic change |
| Nair and Blomquist (2021) | shared comprehension of navigating the ambiguous and uncertain facets of a new venture (between coach and entrepreneur) | cognitive changes |
| Nicholls-Nixon et al. (2022) | entrepreneurial learning which helps entrepreneurs to refine opportunities and launch their businesses | hypotheses/belief updating/learning |
| Obstfeld et al. (2020) | continuous adaption of entrepreneurial projection and actions in response to feedback from diverse stakeholders | hypotheses/belief updating/learning |
| Ozgen and Baron (2007) | opportunity recognition | cognitive changes |
| Park and Tzabbar (2016) | pursuit of risking innovation in early but not late stage of venture | strategic change<br>hypotheses/belief updating/learning |
| Shepherd et al. (2023) | business model change; pivot | strategic change/pivot |
| Vaghely and Julien (2010) | opportunity identification | cognitive changes |

| Source | Outcome | Category |
|---|---|---|
| Yin and Zhou (2023) | active innovation-driven entrepreneurship --> predicted by open community engagement, hindered by focused community engagement | cognitive change |
| Yu (2020) | decision whether to shut down venture or continue to work | strategic change/pivot |
| Yu (2020) | reducing uncertainty around company quality | hypotheses/belief updating/learning |

The articles in category (1) hypotheses/belief updating/learning describe the continuous process of adapting hypotheses that founders or founding teams have made about their opportunity in response to feedback from various stakeholders (Clausen, 2020; Meurer et al., 2022; Obstfeld et al., 2020). In this process, unknown becomes known (Blank & Eckhardt, 2023) thus reducing the uncertainty surrounding the opportunity (Mansoori & Lackeus, 2020; Schou & Adarkwah, 2023; Yu, 2020). Further, Dyer et al. (2008) note that inquiry, observation, experimentation, and idea networking increase the likelihood of developing innovative ideas. Following these strategies, founders or founding teams get to know their (potential) customers to avoid building products that lack customer demand. In this way, they achieve so called product-market fit (Blank & Eckhardt, 2023), which helps them to further develop their opportunity (Clausen, 2020). Especially technical information helps to evaluate the opportunity, as the technical feasibility is better understood. In contrast, social information helps drive entrepreneurial action by reducing demand uncertainty. Thus, technical information has a positive influence on third person opportunity recognition, and social information has a positive influence on first person opportunity beliefs, i.e. entrepreneurial action (Autio et al., 2013). The process, in which founders use feedback to develop their opportunities, is also referred to as entrepreneurial learning (Marvel et al., 2022; Nicholls-Nixon et al., 2022), which according to Clausen (2020) is triggered in particular by positive feedback. Fittingly, Clingingsmith et al. (2023) and Haynie et al. (2012) demonstrate that feedback assists founders in enhancing their pitches, increasing their involvement in start-up competitions and accelerator programs, and fostering entrepreneurial learning.

The articles in category (2), strategic change/pivot, describe a strategic reorientation that occurs when new information contradicts or expands the existing ideas of founders or founding teams about their opportunities (Kirtley & O'Mahony, 2023). These strategic reorientations do not result from a single decision, but rather develop through a row of small individual adjustments to the strategy that then in sum result in a pivot (Kirtley & O'Mahony, 2023). Indeed, pivots are often the result of feedback (e.g. Burnell et al., 2023; Holland & Shepherd, 2013; Marvel et al., 2022; Miller et al., 2024; Shepherd et al., 2023). Holland and Shepherd

(2013) describe that high levels of negative feedback about their current opportunity in combination with positive information about an alternative opportunity lead entrepreneurs to pivot. Such strategy adjustments based on feedback lead to venture success, according to Arend (2016). Clausen (2020) suggests that positive feedback prompts minor adjustments to existing opportunities, while negative feedback prompts entrepreneurs to reevaluate their ideas and challenge underlying assumptions. Marvel et al. (2022) show the negative side of pivoting, namely that pivots based on feedback can have a negative impact on venture performance. Experienced entrepreneurs prioritize pre-launch learning, particularly regarding customers and technology. However, excessive focus on customer learning pre-launch may lead to frequent pivots, potentially detrimental to the business. Further, Park and Tzabbar (2016) demonstrate that feedback can influence founders to risk innovation only in the early stages of a venture but not in the later stages of the life cycle. The authors describe that in the beginning, VCs encourage founders of new ventures to take risks and pivot to daring ideas but as the venture grows older, VCs are less interested in risky innovative ideas. Finally, feedback significantly influences whether a founder or founding team continues their startup endeavor or decides to discontinue it. Accelerators offer invaluable insights into the potential success of a business, which founders leverage to make informed decisions about the future of their venture. Notably, companies enrolled in accelerators exhibit a higher frequency of earlier closures (Yu, 2020).

The articles classified in category (3) describe cognitive changes that happen on the basis of feedback, such as the decision to become a founder (Ahsan et al., 2018; Kadile & Biraglia, 2022) or changes in role identity (Drencheva et al., 2021). Vaghely and Julien (2010), Ozgen and Baron (2007), Lefebvre and Redien-Collot (2013) and Clausen (2020) describe that (positive) feedback can help to identify an opportunity or to develop an idea into a real opportunity. Investigating cognitive changes caused by feedback, Collewaert et al. (2016) show that founders who seek more frequent feedback suffer less from reduced positive feelings about the start-up. Further, feedback can help to develop a shared understanding between founder and coach about how to understand the uncertain and ambiguous aspects surrounding an opportunity (Nair & Blomquist, 2021). Additionally, different passion types — harmonious and obsessive — along with varying feedback types — positive or negative, consistent, or inconsistent — significantly influence entrepreneurial role identity. Harmoniously passionate entrepreneurs view negative feedback as growth opportunities and see positive feedback as success indicators with room for improvement. Conversely, obsessively passionate entrepreneurs react with anxiety to negative feedback, resisting change, while positive

feedback reinforces their self-concept. Further, consistent negative feedback encourages change for harmoniously passionate entrepreneurs, while consistent positive feedback maintains contentment but allows adjustments. Inconsistency in feedback leads to less confident responses. Obsessively passionate entrepreneurs defend their role identity against negative feedback and solidify it with positive feedback, potentially ignoring negative cues (Kakarika et al., 2022). Finally, McCarthy et al. (1993) show that negative market feedback can lead to escalation of commitment, i.e. entrepreneurs keep investing effort in the underperforming venture because they are emotionally attached to the initial choice and want to prove they were right with their initial assumptions about their opportunity.

The articles in the last category (4) describe the impact of feedback on performance. For example, feedback – especially when entrepreneurs focus on customer needs – can lead to higher venture revenues and profit (Kotha et al., 2023). Further, the effective use of the Lean Start-Up methodology, that means iterating ideas and products based on customer feedback, is positively related to project performance, namely timely and cost-effective creation of a high-quality solution (Harms & Schwery, 2020). Adding to this, a hypothesis-driven approach during the opportunity development process improves idea performance (Camuffo et al., 2020). In the same line, Cohen, Bingham and Hallen (2019) demonstrate that start-ups benefit from feedback before they start testing their products in the market as pre-launch feedback can help to improve the products. Further, feedback can also positively impact employee management (Dimitriadis & Koning, 2022) and opportunity development as well as venture offering (Clausen, 2020). Additionally, feedback from business angles can positively influence performance, albeit with limitations (Bammens & Collewaert, 2014). Angels need information from founders to be able to give them effective feedback. However, founders only share information if they trust the angels. This leads to angles evaluating founders who trust them better (Bammens & Collewaert, 2014).

However, feedback can also have a negative impact on performance outcomes: According to Cohen, Fehder, et al. (2019), in an accelerator setting, external mentoring is negatively related to venture performance, so internal mentoring might be the better approach when it comes to accelerator feedback. Family ties within entrepreneurial networks can both positively and negatively impact founders' receipt of feedback. Advice and emotional support initially correlate positively with venture growth, but beyond a certain threshold, excessive support can have adverse effects, forming an inverted U-shaped relationship. Conversely, the relationship between the business resource network and venture growth follows a U-shaped curve: initially,

increased family ties correlate with reduced growth, but beyond a certain point, family ties facilitate venture growth (Arregle et al., 2015).

*Research Opportunities.* Future research could delve into the potential downsides of feedback, considering its potentially overwhelming (Baron, 1998) or confusing (D'Mello et al., 2014) nature. For example, investigating how the volume and complexity of feedback received by entrepreneurs might lead to feelings of being inundated or uncertain, thereby affecting their ability to make informed decisions and take effective actions (Eppler & Mengis, 2004; Schroder et al., 1967). Understanding entrepreneurs' subjective experiences with feedback could offer valuable insights into the mechanisms through which feedback shapes entrepreneurial outcomes and the psychological impacts it may have on individuals navigating the entrepreneurial journey. Moreover, examining how entrepreneurs cope with overwhelming or confusing feedback could uncover adaptive strategies and interventions to support their resilience and effectiveness in leveraging feedback for venture success (Sijbom et al., 2015).

Considering the iterative nature of the entrepreneurial feedback process, it would be intriguing to explore how feedback outcomes influence subsequent steps in the entrepreneurial journey. For instance, while negative feedback outcomes may prompt entrepreneurs to seek additional feedback in an effort to refine their ideas or strategies, they might also experience a diminished willingness to accept further feedback due to feelings of discouragement or skepticism. Understanding these dynamics can provide valuable insights into the feedback-seeking behaviors of entrepreneurs and the factors that influence their receptivity to feedback over time. Examining how entrepreneurs navigate the balance between persistence in seeking feedback and resilience in the face of negative outcomes can illuminate adaptive strategies for effectively leveraging feedback to drive entrepreneurial innovation and success (Boss et al., 2023).

Furthermore, previous research indicates that experience, diversity, and tenure of outside board members positively affect venture performance in terms of technology and market (Vandenbroucke et al., 2016). It might therefore be interesting for future research to investigate whether this is also true for other feedback providers and if there are other feedback outcomes, such as learning or cognitive changes, that are positively (or negatively) influenced by the characteristics of feedback providers. Exploring the impact of feedback providers' characteristics on various entrepreneurial outcomes could enhance our ability to instruct entrepreneurs on selecting appropriate feedback sources and integrating valuable insights into their opportunities.

Lastly, future research should strive to understand how feedback can influence different team-level outcomes. While organizational feedback research suggests that team performance and team creativity are influenced by feedback (Gabelica et al., 2012), feedback research in entrepreneurship has not yet addressed this topic. Exploring the effects of feedback on entrepreneurial teams with regard to the evaluation of their opportunities could be an interesting avenue for inquiry. Team constellations could either exacerbate the perception of feedback from individual entrepreneurs as confusing if, for example, feedback received is randomly shared within the team (Hinsz et al., 1997; Lu et al., 2012), or they could assist in managing the flood of confusing feedback. Thus, feedback could have both positive and negative effects on the evaluation of opportunities by entrepreneurial teams.

**2.5 Discussion**

Based on our review, we take an individual and team-level of analysis to conceptualize entrepreneurial feedback as *"information provided by various stakeholders (such as customers, experts, investors, mentors, employees) to individual entrepreneurs or entrepreneurial teams, with the purpose of iteratively improving their opportunities"*. By providing a clear definition of entrepreneurial feedback and delineating various types of feedback, we enhance conceptual clarity surrounding a concept that has garnered increasing attention from both scholars and practitioners.

Drawing upon insights from the feedback literature in management, psychology, and education (Ashford et al., 2003; Crommelinck & Anseel, 2013; Gabelica et al., 2012; Ilgen et al., 1979; London & Smither, 2002), combined with our synthesis of existing entrepreneurship research, we suggest that the entrepreneurial feedback process can be delineated into six distinct steps. These steps are intricately influenced characteristics of the founders and the founding team as well as environmental factors (Figure 1). This framework can facilitate better integration and synthesis of prior research efforts, thereby preventing further fragmentation within the literature. This framework serves as a roadmap for researchers to navigate the complexities of the feedback process in entrepreneurship, fostering a more cohesive and nuanced understanding of this critical aspect of entrepreneurial activity. Future studies could, for example, try to categorize their research according to these steps of the entrepreneurial feedback process to make it easier for the reader to understand which process step is being investigated to avoid conceptual confusion.

Our review further identifies four different types of feedback. In particular, while evaluative feedback is backward-oriented and assesses past performance, opportunity-related feedback

(venture offering related, operational, strategic) is forward-oriented and designed to help founders bring their opportunities to market. This contribution holds significant importance as it elucidates the unique characteristics of feedback within the context of entrepreneurship, underscoring its divergence from feedback practices observed in other disciplines. Such clarification underscores the imperative for additional research within the specialized domain of entrepreneurship to comprehensively understand the nuances and intricacies of feedback processes.

Further, we divide the feedback outcomes described in previous literature into four clusters: (1) hypotheses/belief updating/learning, (2) strategic change/pivot, (3) cognitive changes (e.g. entrepreneurial personality, role identity), and (4) performance. In scrutinizing feedback outcomes, it is essential to recognize that the impact of feedback on entrepreneurial outcomes is not exclusively positive or negative; rather, both scenarios are plausible (e.g. Clausen, 2020; Marvel et al., 2022). Furthermore, through our review, we challenge the implicit assumption in existing literature that more feedback is always better. Thus, we advocate for future research endeavors to explore instances where entrepreneurial actors encounter excessive or ambiguous feedback, highlighting the need for nuanced investigations into the quantity and quality of feedback received.

Lastly, drawing from our literature review and framework, we present research opportunities for each stage of the entrepreneurial feedback process and elucidate the interconnections among these stages. By identifying gaps and areas ripe for exploration, we aim to inspire future research endeavors that contribute to advancing knowledge in the field. Specifically, we outline a research agenda to stimulate future inquiry into the timing, rationale, context, and modalities of entrepreneurial actors' (both individuals and teams) seeking and utilizing feedback, thus paving the way for deeper insights and implications in entrepreneurial practice.

*Conclusion*

As an emerging research stream is starting to advance our knowledge of feedback in entrepreneurship, we hope that our review helps bring together these fragmented pieces of work and a more comprehensive picture highlighting missing and incomplete parts. We have outlined a research agenda that may be addressed not only by drawing on novel theory from communication science (e.g., Mabbe et al., 2018), but also by using novel research methods (e.g., using automated text analysis; Humphreys & Wang, 2018) for exploring

feedback content. As a result of such studies, we expect important novel insights for academic and practitioners alike.

# 3 Chapter II: Too Much of a Good Thing: When Feedback Diversity Harms Entrepreneurs' Opportunity Evaluation

*Entrepreneurs use feedback from various sources to evaluate and develop their opportunities. However, both research and practice have so far assumed that feedback mainly has a positive effect on opportunity evaluation. This assumption is potentially problematic because entrepreneurs may be confronted with highly diverse feedback, which can lead to challenges in processing the information received. We build on information processing and information overload as theoretical perspectives to investigate the conditions under which diverse feedback positively or negatively affects opportunity evaluation. Our results show that high feedback diversity has a negative overall impact on opportunity evaluation, and that this effect is conjointly moderated by entrepreneurial effort at the individual level and team information sharing. Specifically, our study suggests that entrepreneurial effort helps entrepreneurs to process diverse feedback, particularly when the team also engages to a large extent in information sharing. Our study challenges the assumption that more feedback is always better for opportunity evaluation and identifies important behavioral contingencies of the feedback-opportunity evaluation relationship.*

## 3.1 Introduction

Entrepreneurs use external feedback to reduce uncertainty associated with developing new business opportunities to market (Autio et al., 2013; Grimes, 2018). In order to advance the different areas of opportunity development, entrepreneurs need feedback acquired from various sources (Autio et al., 2013; Kirtley & O'Mahony, 2020; Shepherd et al., 2020). For example, feedback providers with technical expertise can provide information on how to develop and refine prototypes (Autio et al., 2013; Seyb et al., 2019a), and customer feedback can provide insights into how the product should be positioned in the market (Autio et al., 2013; Kirtley & O'Mahony, 2020). Thus, previous research has suggested that feedback has a positive effect on the evaluation and development of opportunities (Autio et al., 2013; Ries, 2011). By opportunity evaluation, we refer to an entrepreneur's appraisal of the feasibility of a given opportunity and their ability to establish a venture capable of leveraging said opportunity (Dimov, 2010).

However, the assumption that collecting feedback generally has positive effects on opportunity evaluation is potentially problematic because entrepreneurs may be confronted with a high diversity of feedback in terms of topics, feedback providers, and channels, which can lead to challenges in processing the information received (Sijbom et al., 2015). Information

processing may be even more complicated when entrepreneurs work on their opportunities in a team as team members might differ in their interpretation of information received (Dimov, 2007b). Further, founding team members often differ in their prior knowledge (Gruber et al., 2013) which can influence information processing within the team (Dimov, 2007a). These observations suggest that receiving diverse feedback can lead to challenges in processing information for entrepreneurs (Dimov, 2007b; Sijbom et al., 2015) that may harm, rather than benefit, opportunity evaluation. Therefore, we ask the following research question: *To what extent, and under which conditions, does feedback diversity negatively affect entrepreneurs' opportunity evaluation?*

To answer this question, we build on information processing and information overload as theoretical perspectives (Eppler & Mengis, 2004; Schroder et al., 1967; Sijbom et al., 2015) to explain potential challenges individuals and teams face when processing diverse information (Eppler & Mengis, 2004; Schroder et al., 1967; Sijbom et al., 2015). In particular, our theorizing suggests that, while feedback diversity implies information processing challenges, these challenges can be alleviated by specific processes at both individual and team levels. Our model suggests that the potential challenges for processing diverse feedback in opportunity evaluation can (partly) be overcome when individuals invest high entrepreneurial effort (Gielnik et al., 2015), and that this moderating effect of effort is even stronger when teams extensively engage in team information sharing (Bunderson & Boumgarden, 2010; Dimov, 2007b). We largely find empirical support for our model based on the analysis of daily survey data on 85 aspiring entrepreneurs that we observed during a two-week university hackathon. In total, our analysis is based on 680 data points. The hackathon presents a particularly relevant context for our study, as the aspiring entrepreneurs involved are highly engaged in collecting and processing feedback to repeatedly evaluate their early-stage opportunities.

Our study informs our theoretical understanding of how feedback influences opportunity evaluation (Grimes, 2018; Shepherd et al., 2020) by challenging the assumption that more feedback is always better for opportunity development and evaluation. In particular, we identify important behavioral contingencies of the feedback-opportunity evaluation relationship. For scholars studying entrepreneurial effort (Gielnik et al., 2015; Uy et al., 2015), we illustrate that the founding team environment is a key contingency of how effort impacts entrepreneurial outcomes. We thus call for future studies to consider effort at the individual level in conjunction with processes at the team level.

### 3.2 Theoretical Background

In Figure 2, we illustrate our conceptual model explaining feedback diversity as a key factor influencing entrepreneurs' opportunity evaluation (i.e. whether the exploitation of the new business opportunity is feasible; Gupta et al., 2013). In developing our model, we initially elaborate why more diverse feedback in terms of topics, parties, and channels negatively influences opportunity evaluation. We then explain the role of entrepreneurial effort and team information sharing as contingencies of the feedback diversity-opportunity evaluation relationship.

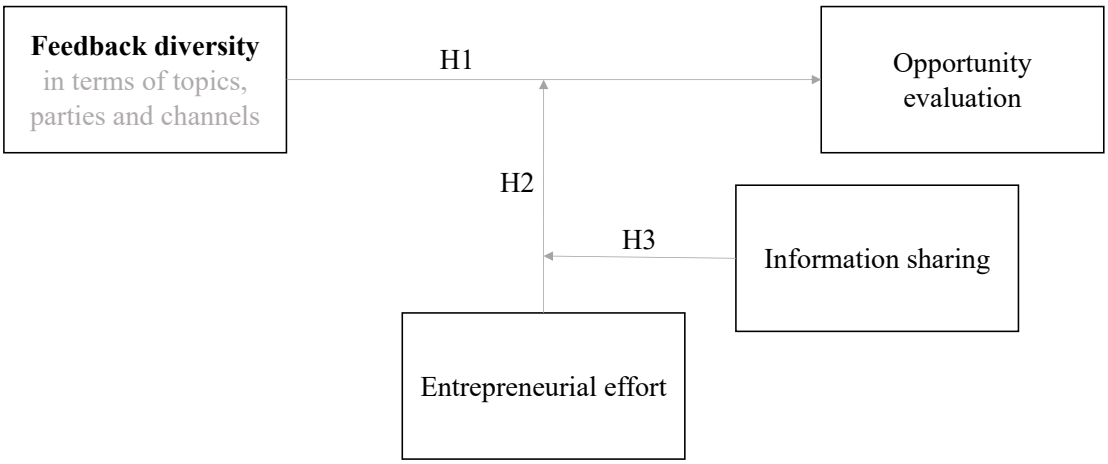



**Figure 2. A Model of Feedback Diversity Influencing Opportunity Evaluation**

*Feedback Diversity and Opportunity Evaluation*

Feedback can be useful for entrepreneurs to evaluate their opportunities, reduce uncertainties about them, and finally develop them to market (Autio et al., 2013; Kirtley & O'Mahony, 2020; Seyb et al., 2019a; Shepherd et al., 2020). Entrepreneurs can use feedback to test hypotheses they hold about their opportunities, evaluate opportunity feasibility, and potentially adjust opportunities according to the information received, also known as pivoting (Gupta et al., 2013; Kirtley & O'Mahony, 2020; Shepherd & Gruber, 2021). The multitude of external sources that entrepreneurs often rely on can trigger feedback diversity – the feedback received is diverse in terms of topics, parties, and channels (Grimes, 2018; Kirtley & O'Mahony, 2020; Seyb et al., 2019a; Shepherd et al., 2020). First, entrepreneurs collect and receive feedback on multiple *topics* needed for future opportunity development, such as technological development of the prototypes (Autio et al., 2013; Seyb et al., 2019a), markets (Autio et al., 2013; Kirtley & O'Mahony, 2020), and the venture's business model (Sort & Nielsen, 2018). Second, entrepreneurs use feedback gathered from diverse external *parties* (Autio et al., 2013; Grimes,

2018; Seyb et al., 2019a). These external parties typically include (potential) customers, investors, mentors, and technology experts (Autio et al., 2013; Seyb et al., 2019a) with each of them representing different perspectives on the problem faced (Nae et al., 2015; van Ginkel et al., 2017). Such a group of feedback providers with whom entrepreneurs communicate on a regular basis to further develop their ideas is also referred to as a community of inquiry (Seyb et al., 2019a; Shepherd et al., 2020). Third, entrepreneurs receive feedback through multiple *channels*. Channels denote the ways through which feedback is obtained, such as emails, telephone, or face-to-face meetings (Ries, 2011). For example, since face-to-face meetings or telephone calls are not always possible for all experts consulted, the entrepreneurs may turn to collecting feedback by e-mail or in other written form. Indeed, although the facial expressions and gestures in face-to-face conversations may convey important meaning (Ries, 2011), providers of written feedback may invest more time and effort in writing up a meaningful text.

Even though diverse feedback in terms of topics, parties, and channels can be helpful for entrepreneurs' opportunity development, an information processing perspective suggests substantial challenges associated with processing diverse information (Sijbom et al., 2015). The information-processing perspective explains how actors transform and use sensory inputs (Swanson, 1987). Specifically, this perspective suggests that the interpretation and integration of diverse feedback require the activation of cognitive resources (Sijbom et al., 2015). For example, cognitive resources are needed so that feedback information can be analyzed more closely for usefulness and meaning, so that actors can weed out irrelevant information and use only valuable information (Sijbom et al., 2015). However, processing diverse feedback is not only challenging but can be overwhelming if there is more information available than the information processing capacity of an actor can handle, causing information overload (Eppler & Mengis, 2004; Schroder et al., 1967). Information overload is a state in which an actor does not have enough cognitive resources to process, extract, and assimilate the information available (Bawden & Robinson, 2009). Information overload can thus lead to problems in extracting valuable information from the overall information received (Greyson, 2018). The most common causes of information overload are a too high quantity of information, a too high number of information sources, and low quality of information, i.e. inappropriate or irrelevant information (Benselin & Ragsdell, 2016). Further, the diversity, complexity, and novelty of information can make a person feel overwhelmed or overloaded (Bawden & Robinson, 2009, 2020; Eppler & Mengis, 2004). Also, information overload can occur when processes are complex and based on non-recurring routines (Eppler & Mengis, 2004), and when

limited time for processing information (Bawden & Robinson, 2020) creates a high cognitive load which has a negative impact on creative thinking (Redifer et al., 2021).

It appears that the conditions entrepreneurs face in their work environment, namely high levels of uncertainty, novelty, and time pressure, are consistent with the idea that feedback diversity can create information overload (Baron, 1998). First, opportunity development is a complex process involving high levels of novelty (Snihur et al., 2017) and cannot be considered a routine activity (Schjoedt & Kraus, 2009). This can result in diverse feedback leading to information overload due to the processing of novel information and information about unfamiliar and new tasks (Bawden & Robinson, 2009, 2020; Eppler & Mengis, 2004). Further, entrepreneurs often act under conditions of time pressure (Bakker & Shepherd, 2017; Baron, 1998; Baron, 2008; Shepherd et al., 2015) because they need to react quickly to changing enviornments (Smith, 2014) in order to gain competitive advantages in commercializing new technologies (Bird & West, 1998; Sarma, 2018). With limited time but an urgent need to process novel information about unknown tasks, overload from high feedback diversity becomes likely to occur (Anseel et al., 2009; Baron, 1998; Sijbom et al., 2015).

Therefore, our arguments suggest that although feedback is important for developing their opportunities to market (Autio et al., 2013; Grimes, 2018; Seyb et al., 2019a), feedback diversity may cause information overload for entrepreneurs. Information overload has important consequences. Particularly, people overloaded with information are less satisfied with their decisions, less confident, and more confused (Keller & Staelin, 1987; Lee & Lee, 2004; Lu et al., 2012; Malhotra, 1982; Scammon, 1977), and they are less able to integrate new and valuable information into their ideas (Di Gangi et al., 2010). They also exhibit inferior judgement (Hilton, 2001; Ketron et al., 2016) and lower decision-making performance (Bawden & Robinson, 2009; Gupta et al., 2013; Roetzel, 2019).These results of information overload negatively influence opportunity quality and thus make it difficult for entrepreneurial actors to see a positive future for the opportunity, leading to a negative opportunity evaluation. Thus, we expect entrepreneurs confronted with high levels of feedback diversity and experiencing difficulties in decision making, feelings of confusion, and low confidence to evaluate the feasibility of their opportunities more negatively when compared to entrepreneurs receiving less diverse feedback. We therefore put forward the following hypothesis:

> *Hypothesis 1: Feedback diversity is negatively related to entrepreneurs' opportunity evaluation.*

*Feedback Diversity, Entrepreneurial Effort, and Opportunity Evaluation*

We theorize that by investing effort, entrepreneurs can overcome information overload from diverse feedback. Entrepreneurial effort is defined as the intensity of work entrepreneurs put in the tasks they perform (Foo et al., 2009; Gielnik et al., 2015). We argue that effort is particularly relevant for dealing with feedback diversity, as the interpretation and integration of diverse feedback require the activation of cognitive resources (Sijbom et al., 2015). Processing diverse feedback cognitively demands time and effort (Anseel et al., 2009). The effect of feedback is therefore determined by how deeply an individual engages with diverse feedback (Anseel et al., 2009; Sijbom et al., 2015).

In particular in situations in which they receive diverse feedback, entrepreneurs may resort to various coping strategies in order to manage and mitigate the effects of information overload (Neben, 2015; Savolainen, 2007; Stevens, 2019; Sweeny et al., 2010). One such coping strategy is "filtering" which involves actively and systematically evaluating and selecting relevant information from the available sources (Savolainen, 2007). Filtering enables individuals to avoid overlooking critical information and ensure that all relevant information is taken into account. However, filtering information requires effort on the part of the individual, as they need to actively engage with the information and cognitively process it (Timmers et al., 2013). Entrepreneurs who invest effort into information filtering to cope with diverse feedback may, for example, categorize and sort the acquired information according to the reliability of the feedback source, disregard pieces of information from less reliable stakeholders, and use matrices or other tools to prioritize information pieces deemed more important to develop the opportunity in line with the desired target market (Bawden & Robinson, 2020). Thus, the more effort entrepreneurs invest in these tasks when facing diverse feedback, the less they are overwhelmed by this feedback and the less feedback diversity diminishes opportunity evaluation.

Moreover, it is important for entrepreneurs to not only filter diverse feedback, but also to make the effort to integrate this filtered information into the development and improvement of the focal opportunity (Baer & Brown, 2012; Grimes, 2018; Timmers et al., 2013). For example, integrating feedback into an idea can lead to changes in certain functions and features of prototypes; if entrepreneurs implement customer feedback showing that a certain, previously unimplemented, function is particularly important for the prototype, they may start constructing a new prototype entailing this function to satisfy customer needs. Implementing feedback from technology experts can lead entrepreneurs to use a different technological solution than the one originally envisioned (Autio et al., 2013; Kirtley & O'Mahony, 2020), thereby improving the

product. Thus, investing more effort into integrating diverse feedback into the opportunity can positively impact entrepreneurs' perception that the developed opportunity will successfully make it to market.

In contrast, if entrepreneurs invest little effort into filtering and integrating diverse feedback into their opportunity, they are likely to remain in a state of information overload (Bawden & Robinson, 2020). Because they are unable to identify and adequately process the most important information embedded within the diverse feedback, they are unable to (partly) resolve the uncertainty of their opportunity's future development path (Neben, 2015; Sweeny et al., 2010). These entrepreneurs investing little effort are unlikely to evaluate the feasibility of their opportunity based on the received feedback as high. We therefore put forward the following hypothesis:

> *Hypothesis 2: The negative relationship between feedback diversity and opportunity evaluation is moderated by entrepreneurial effort, such that this relationship is less negative at high levels of entrepreneurial effort compared to low levels of entrepreneurial effort.*

*Feedback Diversity, Entrepreneurial Effort, Team Information Sharing, and Opportunity Evaluation*

Although our theorizing suggests that individual effort helps entrepreneurs to counteract potential information overload from diverse feedback, studies have shown that individuals' information processing is also contingent on their social environment (Salancik & Pfeffer, 1978). For example, co-workers' attitude can impact an employee's attitude; if co-workers talk negatively about their job and explain how bad the work is, this will affect the employee's thinking and their attitude towards the job. In addition, if co-workers mention certain aspects of a job more frequently, these aspects will be more salient in an employee's evaluation of the job because their attention has been focused on them (Salancik & Pfeffer, 1978). Further, social context can influence group polarization: when people process information about a topic in a group, their initial opinions can become more extreme after the group discussion. This effect occurs because individuals tend to gravitate towards information that aligns with their preexisting opinions and ignore information that contradicts them, leading to more extreme or biased information processing (Myers & Lamm, 1976).

In this study, we specifically focus on the founding team as the entrepreneur's social context. We theorize that, while individuals' effort can diminish the negative impact of feedback diversity on the evaluation of opportunities, this will be particularly the case if aspiring

entrepreneurs engage in information sharing within their team. Founding team members often possess unique, relevant, and diverse information that must first be shared within the team to make it available for effective decision making (Mesmer-Magnus & Church, 2009). Therefore, we argue that individual entrepreneurial effort will be more effective when the entrepreneur perceives team members to engage in information sharing, which is defined as the "degree to which team members share information with each other" (Johnson et al., 2006, p. 106). Through information sharing, diverse perspectives are integrated, leading to more informed decision-making processes (van Veen et al., 2020) and to more in-depth information processing due to discussing information in greater breadth (Mesmer-Magnus & Church, 2009). Therefore, information sharing allows team members to collectively make use of the information available to them (Stasser & Stewart, 1992).

When aspiring entrepreneurs believe that information sharing in the team is low, they need to filter diverse feedback and integrate it into their opportunities all by themselves. That is, the extent to which these entrepreneurs can cope with diverse feedback in opportunity evaluation is completely dependent on their own entrepreneurial effort. This can lead to the challenge of an entrepreneur having to deal with information on topics they are not familiar with because they lack the background knowledge needed. For example, an entrepreneur with a management background may receive diverse feedback containing information about technological aspects of the prototype that they cannot process effectively because they lack the knowledge to use the information to further develop the opportunity (Gruber et al., 2015; Wood & McKelvie, 2015; Wood & Williams, 2014). However, the same diverse feedback may contain information about the business model, from which the entrepreneur learns, for example, that it is more interesting for the customer to pay a monthly fee instead of a fixed price. The entrepreneur could deal with this information well, since it falls in their own domain of expertise (Ericsson & Lehmann, 1996; Kalyuga, 2007; Machiels-Bongaerts et al., 1993; Wyer Jr, 2008). Thus, the effort this entrepreneur spends on filtering and integrating information would be effective for certain, but not all, of the information pieces they receive from diverse feedback. The more diverse feedback provides information outside the entrepreneur's knowledge domain, the more likely the entrepreneurs will face information overload that diminishes their opportunity evaluation.

In contrast, when aspiring entrepreneurs assess team information sharing as high, they perceive that information can be assigned to, or discussed with, the team member that has the appropriate background knowledge to handle the information so that it can be processed and integrated into the opportunity (Tryba et al., 2023). Thus, each team member can focus on the

processing of information they are best at. For example, an entrepreneur with a management background can share information (from diverse feedback) they have received on the technical development of the prototype with their team members so that it can be processed and integrated into the prototype by an entrepreneur with a technical background. By sharing the information, those information pieces outside the entrepreneur's own domain of expertise can be filtered and processed by another team member with the appropriate knowledge to integrate it into the opportunity (Freitas et al., 2019; Kozlowski & Ilgen, 2006), avoiding information overload of the focal entrepreneur. Thus, the entrepreneur can direct their efforts more effectively if they believe the team engages in information sharing.

It is important, however, that individual founders make an effort to share information in an effective and structured way. If this is not the case, randomly sharing information can even exacerbate information overload for individual team members (Hinsz et al., 1997; Lu et al., 2012). That is, if entrepreneurs put little effort into activating cognitive resources and filtering information before it is shared, information sharing makes information overload even worse and thus, entrepreneurs are likely to evaluate opportunity feasibility even lower. If, however, entrepreneurs invest a great deal of effort into cognitively processing and filtering of information which is then shared in a structured and effective manner within the team, information that is difficult to process for individual founders can be passed onto other team members, thereby reducing information overload for all team members.

Taken together, our arguments suggest that the benefits of individual entrepreneurial effort for reducing potential information overload from high feedback diversity are strongest when information sharing is high. We therefore offer the following hypothesis:

> *Hypothesis 3: There is a three-way interaction between feedback diversity, entrepreneurial effort, and information sharing: the relationship between feedback diversity and opportunity evaluation is least negative when both entrepreneurial effort and information sharing are high.*

### 3.3 Research Methods

*Research Setting*

To test our hypotheses, we collected data on a sample of 85 aspiring entrepreneurs in two batches of a university hackathon embedded in an entrepreneurship ecosystem of a European metropolitan area. Hackathons are events in which participants apply entrepreneurial methods such as Design Thinking and Lean Start-Up (Flores et al., 2018; Flus & Hurst, 2021) to identify problems in (often interdisciplinary) teams, develop solutions to the problems, and build prototypes representing these solutions. We consider hackathons a particularly relevant context

for investigating our research questions, due to several reasons: first, the link between feedback and opportunity evaluation is particularly strong for novice entrepreneurs because they lack experience that can help in evaluating opportunities (Gruber et al., 2015; Wood & McKelvie, 2015; Wood & Williams, 2014). Hence, these entrepreneurs must dedicate considerable effort in terms of energy, attention, and time to filter the feedback they receive and incorporate it into their opportunities (Grimes, 2018; Savolainen, 2007; Timmers et al., 2013). Second, this process is intensely supervised by coaches and mentors, which makes it a particularly relevant context to study the impact of feedback diversity. Finally, hackathons represent a frequently occurring, yet understudied phenomenon in entrepreneurship (Miendlarzewska et al., 2022). Indeed, inside and outside the university context, every year more than 5600 hackathons are organized globally (Quenardel, 2019). One of the major goals of these hackathons is to form teams that continue with their project and build a venture, as reflected in the dependent variable of this study (opportunity evaluation).

As to what the specific hackathon of our study is concerned, 35 start-ups have emerged since it happened for the first time in 2015; these startups have raised more than 38.8 million $US and employ about 300 employees as of February 2023. Since then, the hackathon takes place twice a year, and we recruited our sample from batch #14 (35 participants) and batch #15 (50 participants). The aim of the hackathon is to present a technically fully functional prototype consisting of a combination of hardware and software, together with a possible business model within two weeks. Following a peer voting procedure, the organizing team chooses participants through a competitive selection process, evaluating their enthusiasm for embracing novel learning methodologies, diverse approaches, disciplines, and work styles. Consideration is given to their proficiency in project management, product development, Design Thinking, interdisciplinary collaboration, communication abilities, creativity, and problem-solving capabilities. In their applications, the aspiring entrepreneurs also have to indicate whether they would see themselves, based on their prior experience, as a team member in the role of a "problem expert," "business developer," or "technology developer."

Before our sample hackathon event started, we agreed with the organizing team that the coaches of the hackathon would support us in conducting our study. Throughout the hackathon, prospective entrepreneurs collaborated in teams of five individuals to develop their ideas. Specifically, the teams engaged in the following stages: (1) identifying a customer problem through problem interviews; (2) validating the problem via interviews; (3) devising a solution and constructing prototypes to visualize potential resolutions; and (4) refining the prototype through iterative processes involving customer and expert interviews. The teams had free access

to a makerspace to build their prototypes. In addition, each team received 400 euros of financing for buying material needed to build their prototypes.

The event started off with a "pre-event" (day 0) on a Friday, during which coaches explained to aspiring entrepreneurs the Design Thinking process and made an introduction to the other aspiring entrepreneurs participating. The pre-event was followed by a weekend, during which the aspiring entrepreneurs were encouraged to get to know each other better through leisure activities. On Monday after the weekend (day 1), the aspiring entrepreneurs self-assembled into teams. One prerequisite for team building was that one "problem expert," one "business developer" and three "technology developers" formed a team. In some teams in our sample, there were six instead of five team members, as a few participants could not take part in the hackathon last minute due to sickness, meaning that remaining participants were able to join the teams of five.

The following first week of the hackathon focused on finding and validating a customer problem and ended with the midterm event including an interim presentation in front of an industry expert jury which provided feedback on the ideas presented. After another weekend, five more days of the hackathon followed, mainly focusing on building and iterating prototypes as well as validating the proposed solution. The hackathon ended with the DemoDay, during which the aspiring entrepreneurs presented the developed prototypes and business models in front of a jury of industry experts. During both weeks, every second evening an interim presentation took place, during which the aspiring entrepreneurs presented their progress to coaches and to each other. Further, the aspiring entrepreneurs received feedback from customers, experts, their peer group, and the hackathon coaches on the development of their ideas. Besides that, various coaching sessions by the organizing team took place. The coaching sessions were intended to ideally prepare the aspiring entrepreneurs for their final presentations on the DemoDay.

*Data Collection and Sample*

Given the early stage of the entrepreneurial projects, during the hackathon the aspiring entrepreneurs changed their ideas with high frequency (up to several times within the first days), obtained feedback multiple times a day, and continuously exchanged information and made decisions within the team. Thus, feedback that teams received one day might have become irrelevant by the next day. In order to capture this fast pace of development, we decided to collect data on a daily basis, and always in the evening around 6 p.m. Participants filled in a questionnaire within a time window of about ten minutes. On day 1, as the participants had not yet worked not a concrete idea, we collected mainly data on participants' demographics and

personality traits. On days 2-9, the aspiring entrepreneurs received the same questionnaire in which we gathered information about our dependent and independent variables. Given the high pace of idea development, responses always referred to the day the entrepreneurs completed their survey (i.e., we captured opportunity development at the end of a day based on the feedback the team had received the same day). On day 10, which was the day of the final presentation with no more collection of feedback and no more major changes to the ideas, the survey focused mainly on team and project performance. All aspiring entrepreneurs took part in the daily surveys, so we could collect an almost complete data set with very few missing values (0.05 % of data). During the completion of the surveys, the coaching team observed participants in order to prevent them from copying responses from their team members or observing each other when filling out the survey.

The data collection procedure was identical in two consecutive hackathon batches. There were seven teams (35 participants) in the first batch and ten teams (50 participants) in the second batch. Therefore, our data covers 85 aspiring entrepreneurs nested in 17 teams nested in two batches. In addition to the survey data, we collected an update of the Business Model Canvas (on paper) from all teams every day in order to better understand any changes to the ideas and the implementation of feedback. Our final sample consisted of 680 daily observations from participants.

Aspiring entrepreneurs in our study were on average 24.8 (SD = 2.02) years old, 27.0% were female, 7.8% reported A-levels as their highest educational qualification, 84.7% had a bachelor's degree, and 8.2% had a master's degree. Further, 58.8% of the aspiring entrepreneurs had the same nationality as the university where the hackathon took place; the rest indicated a different nationality. Moreover, 34.1% of the aspiring entrepreneurs had a business background and 65.9% had a technical background. The average team size was 5.1 (SD = 0.54) team members, which was consistent with the target set by the hackathon organizers. Nine of the 17 teams worked on a business-to-business idea, the remaining eight teams worked on a business-to-consumer idea. The ideas that the teams worked on came from a wide range of industries, such as robotics, construction, sustainability, retail, health, hotel, and consumer goods.

*Measures and Variables*

***Dependent variable.*** Our dependent variable is an aspiring entrepreneur's *opportunity evaluation*. We used a 3-item scale from Gupta et al. (2013) to measure how aspiring entrepreneurs evaluated their opportunity at the end of each hackathon day. We asked aspiring entrepreneurs to what extent they agreed with the statements "I want to pursue the idea (I am working on)", "I can turn the idea into a real business" and "I can successfully start a new

business based on the idea". We used a 7-point Likert scale with the anchors "not at all" and "completely." The Cronbach's alpha of the scale was 0.88 indicating high reliability (Hair et al., 2010).

***Independent variable***. We determined the diversity of the feedback an aspiring entrepreneur received on each day. To capture *feedback diversity*, we developed a scale tailored to the specific setting of the hackathon. Specifically, we asked the aspiring entrepreneurs how diverse the received feedback was in terms of topics (technology, market, business model, etc.), parties (investors, coaches, potential customers, etc.) and channels (phone, email, face-to-face meeting, etc.). These three diversity dimensions were particularly important in our context. First, the opportunity development process during the hackathon covered a wide range of topics including, e.g., technology, prototyping, market assessment, business model, and stakeholder presentations, for which the aspiring entrepreneurs had to collect feedback. Secondly, to ensure that the collected feedback was relevant, it had to be obtained from valid sources (Nae et al., 2015; van Ginkel et al., 2017). To guarantee this, hackathon participants were instructed to gain feedback from experts in different fields including potential customers as well as technology developers and coaches. Third, in order to reach such a wide range of feedback providers, the aspiring entrepreneurs had to employ various channels. Although participants were instructed that face-to-face meetings or online calls are preferable as facial expressions and gestures can also be interpreted in real face-to-face conversations (Ries, 2011), an exchange by e-mail or in other written forms was sometimes chosen. We used a 7-point Likert scale with the anchors "little diverse" and "very diverse". The Cronbach's alpha of the scale was 0.84 indicating high reliability (Hair et al., 2010).

***Moderating variables.*** As moderator variables, we recorded *entrepreneurial effort* and *information sharing*. To measure how much effort an aspiring entrepreneur invested on a given hackathon day, we used an adapted 2-item scale from Gielnik et al. (2015). We asked aspiring entrepreneurs to what extent they agreed with the statements "Today I put effort into the tasks in this project" and "Today I put good effort into the tasks I was given in this project." We used a 7-point Likert scale with the anchors "not at all" and "completely." The Cronbach's alpha of the scale was 0.88 indicating a very good reliability of the scale (Hair et al., 2010).

To measure to what extent aspiring entrepreneurs engaged in sharing information within their teams, we used a slightly adapted 4-item scale based on Bunderson and Boumgarden (2010). We asked the aspiring entrepreneurs to what extent they agreed with the statements: "Information is shared freely among members of my team," "When a member of my team receives information that affects the team, he or she quickly shares it," "Members of my team

work hard to keep each other informed about their activities," and "All members of my team are kept 'in the loop' about important issues affecting the team." We used a 7-point Likert scale with the anchors "not at all" and "completely." The Cronbach's alpha of the scale was 0.91 indicating high reliability (Hair et al., 2010).

***Control variables.*** Consistent with previous research (Uy et al., 2015), we controlled for opportunity evaluation by aspiring entrepreneurs on the previous day by creating a lagged variable for opportunity evaluation on day t-1 because participants may vary in their overall tendencies to evaluate a given opportunity as feasible. Further, since participants with higher entrepreneurial intentions may be more likely to assess their developed opportunity as feasible, we also controlled for participants' entrepreneurial intentions at the start of the hackathon (day 1) using the Chen et al. (1998) 5-item scale. The items used were "How interested are you in setting up your own business?", "To what extent have you considered setting up your own business?", "To what extent have you been preparing to set up your own business?", "How likely is it that you are going to try hard to set up your own business?", "How soon are you likely to set up your own business?" We used a 7-point Likert scale with the anchors "never" and "as soon as possible" for the last item and "not at all" and "completely" for all other items. The Cronbach's alpha of the scale measuring entrepreneurial intentions was 0.92 indicating high reliability (Hair et al., 2010). Further, we included age (Bitler et al., 2005) and gender (Foo et al., 2009; Uy et al., 2015) as they were found to influence entrepreneurial decision making and behavior (Scherer et al., 1990). We also included participants' nationality because one's national culture may impact how they perceive opportunities (Laspita et al., 2012). Gender and nationality were both operationalized as dummy variables (0 denoting male and 1 female; 0 denoting that the entrepreneur was from the country where the hackathon took place and 1 otherwise). We also controlled for how many hackathons the aspiring entrepreneurs had participated in before, how many start-up ideas they had worked on before, and how many start-ups they had worked in before participating in the hackathon because previous experience can influence opportunity evaluation (Baron & Ensley, 2006; Ucbasaran et al., 2008). We also controlled for whether the aspiring entrepreneurs had a technical background (dummy variable = 0) or business background (dummy variable = 1) because educational specializations can influence strategic evaluations (e.g. Colombo & Grilli, 2005). Finally, at the team level of analysis, we controlled for team size due to the potential advantages larger teams may have under time constraints. Previous studies have indicated that team size is associated with creative team processes and outcomes (Gray et al., 2020; Hmieleski & Ensley, 2007) and the industry of the teams' final ideas because industry characteristics can influence opportunity

evaluation (Keh et al., 2002). We included industry as a dummy variable and distinguished between business-to-business (coded as 1) and business-to-consumer projects (coded as 0).

*Data Analysis*

Our data analysis is based on the assumption that the variables we capture, even if they cover the consecutive days of the hackathon, do not continuously increase or decrease over time. Rather, given the specific organization of the hackathon (see above), our data is subject to daily fluctuations such that feedback received on one day might impact opportunity evaluation on the evening of the same day (rather than the next day). Moreover, our data is nested in nature: daily measures are nested within individuals who are nested within teams that are nested in batches. To analyze such data,, Schonfeld and Rindskopf (2007) recommend the use of hierarchical linear modeling (HLM), as it accommodates nested data structures effectively. We used the mixed command in STATA 17. This approach allowed us to consider variance components for all observed levels – in our case, the measurement repetitions (level 1), the individuals (level 2), the teams (level 3) and the hackathon batches (level 4). Since we were interested in within-person effects, we group-mean centered all important predictor variables based on the recommendation of Hofmann and Gavin (1998).

In the first step of our analysis, we investigated the variance distribution across four levels concerning opportunity evaluation: 30% of the variance occurred at level 1 (within individuals across different days), 52% at level 2 (between individuals), 18% at level 3 (between teams), and less than 1% at level 4 (between batches). Although less than 1% of the total variance is at the batch-level, we consider a 4-level model appropriate for both theoretical and empirical reasons. First, given that the instructors of the two batches were not identical, there might be different advice on how to collect and evaluate feedback. Second, when we analyzed whether the two batches differ in terms of variable means, we found that the mean for opportunity evaluation was somewhat higher for batch #15 than for batch #14 (mean batch #14 = 5.1, mean batch #15 = 5.3, $p = 0.1$). HLM4 accommodates for these differences between batches.

### 3.4 Findings

*Descriptive Statistics and Multicollinearity*

Table 5 presents the descriptive statistics and correlations among the variables examined in our analysis. There is a positive correlation between effort and opportunity evaluation ($r=0.28$, $p<0.001$) and a positive correlation between information sharing and opportunity evaluation ($r=0.33$, $p<0.001$). The correlations provide an initial indication that aspiring entrepreneurs evaluate their opportunities as more feasible when they invest more effort and engage more in information sharing. To rule out multicollinearity, we calculate variance inflation factors (VIFs)

using ordinary least square regression. All VIFs are below the cut-off criterion according to Hair et al. (2010) (highest VIF = 1.39), indicating that multicollinearity is unlikely to have a substantial effect on our analysis.

*Hypotheses Testing*

Table 6 shows the models that explain opportunity evaluation by the aspiring entrepreneurs. Model 1 comprises solely the control variables, while in model 2, we introduce the independent variable feedback diversity. Model 3 incorporates the moderator variables entrepreneurial effort and team information sharing. In model 4, we introduce the hypothesized two-way interaction term between feedback diversity and entrepreneurial effort. Finally, model 5 encompasses the three-way interaction among feedback diversity, entrepreneurial effort, and information sharing. The statistics describing the model fit (-2 log likelihood and Akaike's information criterion) show that the model fit improves when more predictors are included (Vrieze, 2012). Our first hypothesis posits a negative association between feedback diversity and opportunity evaluation. As demonstrated in Table 6, all models indicate a consistent negative and significant relationship between feedback diversity and opportunity evaluation, thereby supporting Hypothesis 1.

Our second hypothesis suggests that the adverse association between feedback diversity and opportunity evaluation is moderated by entrepreneurial effort. Specifically, this relationship is less negative at high levels of entrepreneurial effort compared to low levels. Models 4 and 5 in Table 6 demonstrate that the interaction term for feedback diversity and entrepreneurial effort is both positive and significant ($b = 0.13$, $p < 0.001$ or $b = 0.14$, $p < 0.001$). To illustrate this interaction, we present it graphically in Figure 3, where the x-axis represents feedback diversity, and the y-axis indicates opportunity evaluation. At low levels of entrepreneurial effort (represented by the solid line, indicating one standard deviation below the group mean) and high levels of entrepreneurial effort (illustrated by the dashed line, indicating one standard deviation above the group mean), the slope for the relationship between feedback diversity and opportunity evaluation varies significantly. For low levels of entrepreneurial effort, the slope of this relationship is negative and significant (simple slope at one standard deviation below the group mean = -0.14, $p < 0.001$). Conversely, for high levels of entrepreneurial effort, the slope is positive and significant (simple slope at one standard deviation above the group mean = 0.04, $p < 0.001$). A slope difference test (Dawson & Richter, 2006) reveals a significant difference between the slopes for high and low levels of effort ($p < 0.001$). These results align with Hypothesis 2.

## Table 5. Descriptive Statistics and Correlations

| | | Mean | SD | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| (1) | Opportunity evaluation on day t | 5.19 | 1.43 | - | | | | | | | | | | | | | | |
| (2) | Feedback Diversity on day t | 3.21 | 1.58 | 0.23*** | - | | | | | | | | | | | | | |
| (3) | Entrepreneurial effort on day t | 6.17 | 1.06 | 0.28*** | 0.15*** | - | | | | | | | | | | | | |
| (4) | Information sharing on day t | 6.08 | 0.96 | 0.33*** | 0.20*** | 0.35*** | - | | | | | | | | | | | |
| (5) | Opportunity evaluation on day t-1 | 5.19 | 1.43 | 0.57*** | 0.29*** | 0.16*** | 0.30*** | - | | | | | | | | | | |
| (6) | Nationality | 0.41 | 0.49 | -0.09* | -0.03 | -0.09* | -0.02 | -0.07 | - | | | | | | | | | |
| (7) | Highest degree | 0.08 | 0.28 | 0.08* | 0.23*** | -0.01 | -0.02 | 0.07 | 0.10** | - | | | | | | | | |
| (8) | Start-ups founded | 0.38 | 0.69 | -0.09* | 0.10** | -0.07 | -0.05 | -0.06 | 0.06 | -0.10** | - | | | | | | | |
| (9) | Start-ups worked in | 0.80 | 0.98 | 0.03 | 0.08* | -0.00 | -0.06 | 0.01 | -0.05 | -0.11** | 0.50*** | - | | | | | | |
| (10) | Work experience | 2.41 | 1.97 | 0.01 | 0.11** | 0.10** | 0.05 | 0.02 | 0.14*** | 0.07 | 0.14*** | 0.34*** | - | | | | | |
| (11) | Hackathons | 1.60 | 1.99 | -0.02 | 0.05 | 0.00 | -0.00 | -0.02 | 0.17*** | 0.15*** | 0.22*** | 0.20*** | 0.41*** | - | | | | |
| (12) | Age | 24.75 | 2.02 | -0.08* | -0.00 | 0.07 | 0.03 | -0.07* | 0.20*** | 0.06 | 0.01 | 0.09** | 0.58*** | 0.24*** | - | | | |
| (13) | Industry | 0.55 | 0.50 | -0.31*** | -0.17*** | -0.13*** | -0.28*** | -0.32*** | -0.21*** | -0.16*** | -0.06 | 0.18*** | 0.07 | -0.15*** | 0.01 | - | | |
| (14) | Team size | 5.12 | 0.54 | -0.04 | -0.13*** | -0.03 | 0.05 | -0.02 | -0.01 | 0.01 | 0.01 | -0.07 | -0.03 | -0.03 | 0.02 | -0.11** | - | |
| (15) | Background | 0.66 | 0.47 | -0.02 | -0.27*** | -0.07* | -0.10** | -0.05 | -0.05 | -0.06 | -0.11** | -0.25*** | -0.15*** | 0.07 | -0.25*** | 0.05 | -0.07* | - |
| (16) | Entrepreneurial intention | 4.81 | 1.50 | 0.19*** | 0.23*** | -0.02 | -0.00 | 0.16*** | 0.12** | 0.06 | 0.38*** | 0.14*** | 0.22*** | 0.27*** | 0.09* | -0.12*** | -0.04 | -0.03 |

*** p<.001, ** p<.01, * p<.05

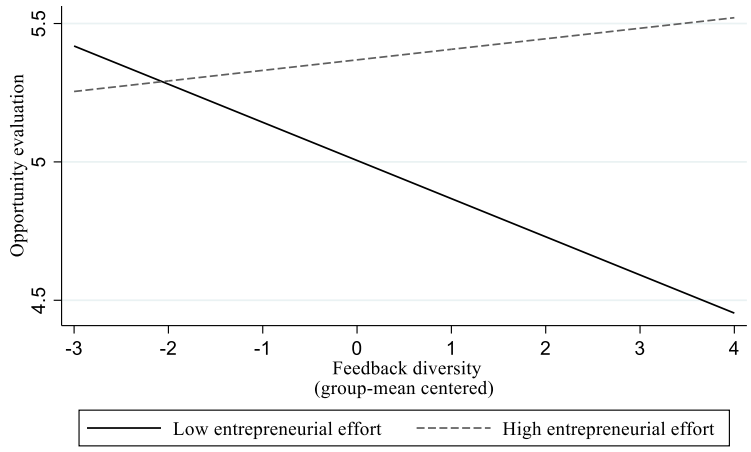
**Table 6. Hierarchical Linear Model to Predict Opportunity Evaluation**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Constant | 3.69*** (12.83) | 1.61*** (24.71) | 1.63*** (21.20) | 1.65*** (44.84) | 1.67*** (542.74) |
| Opportunity evaluation on day t-1 | 0.22*** (42.89) | 0.64*** (31.88) | 0.64*** (37.72) | 0.64*** (30.93) | 0.64*** (25.44) |
| Nationality | -0.30 (-0.60) | -0.22 (-1.10) | -0.22 (-1.10) | -0.20 (-1.03) | -0.20 (-1.04) |
| Highest degree | 0.19 (1.30) | 0.02 (0.25) | 0.03 (0.31) | 0.03 (0.28) | 0.01 (0.13) |
| # of start-ups founded | -0.43*** (-3.96) | -0.20*** (-6.67) | -0.19*** (-5.95) | -0.21*** (-8.94) | -0.21*** (-8.88) |
| # of start-ups worked in | 0.24* (2.09) | 0.11 (1.88) | 0.11 (1.81) | 0.11* (2.06) | 0.10* (2.21) |
| Years of work experience | 0.04 (0.98) | 0.03 (0.76) | 0.03 (0.77) | 0.03 (0.84) | 0.03 (0.90) |
| # of hackathons participated in | -0.06*** (-39.35) | -0.02* (-2.54) | -0.02* (-2.07) | -0.02** (-3.05) | -0.02*** (-3.40) |
| Age | -0.05*** (-3.31) | -0.02*** (-6.18) | -0.02*** (-10.18) | -0.02*** (-50.14) | -0.02*** (-5.91) |
| Industry | -0.89*** (-691.67) | -0.31*** (-127.95) | -0.31*** (-93.52) | -0.32*** (-20.12) | -0.32*** (-22.68) |
| Team size | -0.11 (-0.56) | -0.03 (-0.69) | -0.03 (-0.58) | -0.03 (-0.62) | -0.04 (-0.70) |
| Background | 0.11 (0.82) | 0.05 (1.00) | 0.05 (0.96) | 0.06 (0.97) | 0.05 (0.87) |
| Entrepreneurial intention | 0.18*** (14.55) | 0.09*** (7.86) | 0.09*** (8.49) | 0.08*** (12.11) | 0.08*** (16.51) |
| Feedback diversity | | -0.05*** (-7.74) | -0.07*** (-10.43) | -0.06*** (-7.22) | -0.07*** (-15.01) |
| Entrepreneurial effort | | | 0.21*** (13.96) | 0.23*** (11.79) | 0.22*** (12.95) |
| Information sharing | | | 0.14*** (4.60) | 0.13*** (3.39) | 0.15*** (6.44) |
| Feedback diversity x Entrepreneurial effort | | | | 0.13*** (10.12) | 0.14*** (26.61) |
| Feedback diversity x Information sharing | | | | | -0.04*** (-4.00) |
| Entrepreneurial effort x Information sharing | | | | | 0.04 (1.02) |
| Feedback diversity x Entrepreneurial effort x Information sharing | | | | | 0.11*** (8.19) |
| *AIC* | 2,271.87 | 1,959.14 | 1,928.98 | 1,925.53 | 1,914.58 |
| LL | -1133.94 | -977.57 | -962.49 | -960.77 | -955.29 |

*t* statistics in parentheses; * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Our third hypothesis states that there is a three-way interaction between feedback diversity, entrepreneurial effort, and information sharing: the relationship between feedback diversity and opportunity evaluation is least negative when both entrepreneurial effort and information sharing are high. Model 5 in Table 6 shows that the interaction term between feedback diversity, entrepreneurial effort, and information sharing is positive and significant (b=0.11, p<0.01). We

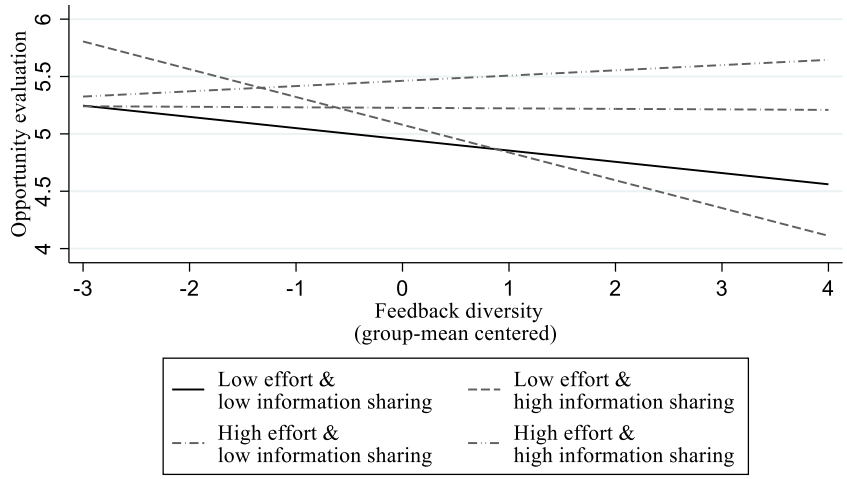
illustrate the relationships in Figure 4. On the x-axis we plot feedback diversity, on the y-axis opportunity evaluation. We plot separate lines for low entrepreneurial effort and low information sharing (solid line), high effort and low information sharing (line pattern: -.-.), low effort and high information sharing (dashed line) and high effort and high information sharing (line pattern: ..--..--). The slope of the relationship between feedback diversity and opportunity evaluation is negative and significant for low levels of effort and low levels of information sharing (simple slope at one SD below group mean for effort and information sharing = -0.10, $p<0.001$). The slope for high levels of effort and low levels of information sharing is also negative but not significant (simple slope at one SD above group mean for effort and one SD below group mean for information sharing = -0.01, $p=0.66$). For low levels of effort and high levels of information sharing the slope is also negative and significant (simple slope at one SD below group mean for effort, and one SD above group mean for information sharing = -0.24, $p<0.001$).




| Feedback diversity at | Contrast dy/dx | Delta-method std.err. | Unadjusted Z | P>\|z\| | Unadjusted [95% conf. interval] | |
|---|---|---|---|---|---|---|
| 2 vs 1 | .1759301 | .0116403 | 15.11 | 0.000 | .1531155 | .1987447 |

1: Low effort, 2: high effort

**Figure 3. Simple Slope Comparison of Feedback Diversity on Opportunity Evaluation Under High and Low Levels of Entrepreneurial Effort**




| Feedback diversity at | Contrast dy/dx | Delta-method std.err. | Unadjusted Z | P>\|z\| | Unadjusted [95% conf. interval] | |
|---|---|---|---|---|---|---|
| 2 vs 1 | .1441022 | .0001355 | -1063.80 | 0.000 | -.1443677 | -.1438367 |
| 3 vs 1 | .09341 | .0190333 | 4.91 | 0.000 | .0561054 | .1307146 |
| 4 vs 1 | .1436701 | .0045754 | 31.40 | 0.000 | .1347026 | .1526377 |
| 3 vs 2 | .2375122 | .0188978 | 12.57 | 0.000 | .2004731 | .2745513 |
| 4 vs 2 | .2877723 | .0047108 | 61.09 | 0.000 | .2785392 | .2970054 |
| 4 vs 3 | .0502601 | .0236087 | 2.13 | 0.033 | .003988 | .0965322 |

1: Low effort & low information sharing, 2: Low effort & high information sharing, 3: High effort & low information sharing, 4: High effort & high information sharing

**Figure 4. Simple Slope Comparison of Feedback Diversity on Opportunity Evaluation Under High and Low Levels of Entrepreneurial Effort and High and Low Levels of Information Sharing**

Finally, for high levels of effort and high levels of information sharing the slope is positive and significant (simple slope at one SD above group mean for effort and information sharing = 0.05, $p<0.001$). Pairwise comparison of the simple slopes (Dawson & Richter, 2006) showed that all slopes differed significantly from each other (Figure 4). While these findings align with Hypothesis 3, what is particularly notable is that at high levels of entrepreneurial effort and information sharing, the previously negative relationship between feedback diversity and opportunity evaluation becomes positive. We will discuss this finding below.

*Supplementary Analyses*

We conducted several robustness checks (Table 7). First, because most other papers using multilevel modeling approaches (e.g. Breugst et al., 2020) include a maximum of 2 or 3 levels in their model, we checked whether our models also work if we do not use batch as a level but as a fixed control variable. Model 1 in Table 7 shows that the interaction term between feedback diversity, entrepreneurial effort and information sharing is still statistically significant ($p<0.01$).

**Table 7. Robustness Checks**

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| Constant | 1.66*** (4.69) | 1.61*** (28.86) | -0.41*** (-7.24) | 2.29*** (5.26) | 1.71*** (20.80) |
| Feedback Diversity | -0.07* (-2.39) | -0.06*** (-6.79) | -0.07*** (-5.11) | -0.08*** (-8.23) | -0.07*** (-69.79) |
| Entrepreneurial effort | 0.22*** (4.42) | | 0.09 (1.83) | 0.20*** (13.17) | 0.22*** (13.11) |
| Feedback diversity x Entrepreneurial effort | 0.14** (2.99) | | 0.13*** (17.72) | 0.14*** (7.67) | 0.14*** (24.45) |
| Information sharing | 0.15* (2.02) | | 0.09*** (6.47) | 0.11*** (44.31) | 0.15*** (6.11) |
| Feedback diversity x Information sharing | -0.04 (-0.80) | | -0.06*** (-22.02) | -0.02 (-1.52) | -0.04*** (-4.56) |
| Entrepreneurial effort x Information sharing | 0.05 (1.04) | | 0.03 (0.94) | 0.06 (1.12) | 0.04 (1.01) |
| Feedback diversity x Entrepreneurial effort x Information sharing | 0.12** (3.06) | | 0.09* (2.48) | 0.10*** (6.75) | 0.11*** (8.89) |
| Opportunity evaluation day t-1 | 0.64*** (9.40) | 0.63*** (24.38) | 0.51*** (19.63) | 0.60*** (16.62) | 0.64*** (27.58) |
| Nationality | -0.20 (-1.95) | -0.22 (-1.04) | -0.16 (-0.65) | -0.14 (-0.55) | -0.20 (-1.07) |
| Degree | 0.01 (0.09) | 0.05 (0.39) | 0.02 (0.80) | 0.08 (0.35) | 0.01 (0.12) |
| # of start-ups founded | -0.21** (-2.99) | -0.19*** (-4.44) | -0.26*** (-10.81) | -0.21*** (-8.00) | -0.21*** (-15.99) |
| # of start-ups worked in | 0.11** (2.88) | 0.11* (1.99) | 0.14 (1.79) | 0.10** (3.27) | 0.11* (2.08) |
| Years of work experience | 0.03 (1.39) | 0.03 (0.74) | 0.01 (0.26) | 0.04* (2.02) | 0.03 (0.85) |
| # of hackathons participated in | -0.02 (-1.14) | -0.02** (-2.90) | -0.03 (-1.44) | -0.01 (-0.51) | -0.02** (-3.03) |
| Age | -0.02 (-1.15) | -0.02* (-2.51) | -0.02* (-2.46) | -0.04* (-2.45) | -0.02*** (-9.94) |
| Industry | -0.32** (-2.88) | -0.34*** (-12.77) | -0.25** (-2.76) | -0.33*** (-6.12) | -0.33*** (-20.94) |
| Team size | -0.04 (-0.99) | -0.04 (-1.71) | -0.05** (-2.93) | -0.06 (-1.63) | -0.04 (-0.78) |
| Background | 0.05 (0.57) | 0.06 (1.09) | 0.11* (2.25) | 0.02*** (43.68) | 0.04 (0.91) |
| Entrepreneurial intention | 0.08* (2.40) | 0.09*** (10.44) | 0.09*** (4.92) | 0.08*** (8.97) | 0.08*** (22.13) |
| Batch | 0.03 (0.31) | | | | |
| Feedback diversity x Feedback diversity | | 0.03 (0.97) | | | |
| Positive affect | | | 0.63*** (11.21) | | |
| Negative affect | | | | -0.25 (-1.72) | |
| Motivation to use feedback | | | | | -0.01 (-0.54) |
| AIC | 1,944.47 | 1,957.52 | 1,808.86 | 1,888.08 | 1,914.50 |
| LL | -955.23 | -976.76 | -902.43 | -942.04 | -955.25 |

*t* statistics in parentheses
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Second, we examined potential non-linear relationships to consider the possibility that some levels of feedback diversity may enhance opportunity evaluation, while the drawbacks of diversity might only become apparent beyond a certain threshold. Model 2 in Table 7 shows that the coefficient for the quadratic term of feedback diversity is not significant (b = 0.03 p = 0.33). Next, we controlled for positive and negative affect because individuals' affective experiences can impact their judgments (Blanchette & Richards, 2010), including opportunity

evaluations (Klaukien et al., 2013). Models 3 and 4 demonstrate that, although positive affect exhibits a significant positive correlation with opportunity evaluation, there is no significant relationship between negative affect and opportunity evaluation. The inclusion of either of the two variables did not fundamentally change our results. We also checked whether aspiring entrepreneurs' motivation to use feedback had an influence on our results because the higher the motivation, the more positively they may perceive diverse feedback for evaluating opportunity quality. As model 5 in Table 7 shows, the variable has no significant effect on opportunity evaluation. Overall, these tests largely support the robustness of our findings.

### 3.5 Discussion

Our study findings indicate that feedback diversity may negatively influence opportunity evaluation. However, this adverse association can be mitigated by entrepreneurs' efforts, particularly when combined with extensive information sharing within founding teams. These findings carry implications for literature on feedback within entrepreneurship, entrepreneurial endeavor, and hackathon events.

*Theoretical Contributions*

Previous research has shown that feedback is useful for entrepreneurs developing new business opportunities (Autio et al., 2013; Kirtley & O'Mahony, 2020; Shepherd et al., 2020). For example, feedback can enhance an opportunity's market fit (Blank & Eckhardt, 2023), entrepreneurial learning (Clausen, 2020), and venture performance (Camuffo et al., 2020; Dimitriadis, 2021). Some authors have suggested that feedback diversity is associated with better progress in developing opportunities to market (Shepherd et al., 2020) and more responsible and ethical entrepreneurial practice (Ramoglou et al., 2023). However, as founders need to collect feedback to develop different aspects of their opportunities (Autio et al., 2013; Kirtley & O'Mahony, 2020; Shepherd et al., 2020), they might face a high diversity of feedback. Drawing on an information overload perspective, we challenge prior work's assumption that more feedback is always better by showing that (at least in a context in which feedback is frequent and entrepreneurs have little experience) feedback diversity is negatively related to opportunity evaluation. Specifically, our study points to detrimental effects of feedback diversity for opportunity evaluation, unless the entrepreneur dedicates high entrepreneurial effort and functions in a team in which a lot of information sharing takes place. As such, our study points to the potentially negative effects of feedback diversity, and points to important contingency factors affecting these effects.

Our behavioral perspective identifies ways how entrepreneurs can cope with high feedback diversity. Specifically, our study suggests that key to coping with feedback diversity is that

entrepreneurs invest high levels of individual effort. The extant literature on entrepreneurial effort describes that to take their venture forward, entrepreneurs need to put effort into various activities including both creative and administrative tasks (Morris et al., 2009; Reynolds & White, 1997; Uy et al., 2015), developing business opportunities and acquiring necessary resources (Ardichvili et al., 2003) and accomplishing day-to-day-operations (Gartner et al., 1999). Our study suggests that entrepreneurial effort can also help to deal feedback from stakeholders. Indeed, our results indicate that effort at the individual level may not be enough for entrepreneurs' coping with diverse feedback; rather, entrepreneurs must also invest effort at the team level in the form engaging in information sharing to create a positive effect of feedback diversity on opportunity evaluation.

Further, previous literature on hackathons has cited feedback as an important part of hackathons (Affia et al., 2020; Böhmer et al., 2017; Lifshitz-Assaf et al., 2021; Medina Angarita & Nolte, 2020; Nolte et al., 2020) because it provides support for participating teams (Affia et al., 2020), fosters learning (Medina Angarita & Nolte, 2020), and triggers the development of new features into participants' prototypes (Böhmer et al., 2017). This literature has also mentioned that feedback in hackathons can come from diverse sources including an expert jury or technical experts invited to the hackathon (Nolte et al., 2020). However, although Affia et al. (2020) state that feedback interventions should be coordinated in order not to disrupt team processes, prior work has failed to acknowledge the potentially diverse nature and content of feedback participants obtain and how it affects hackathon outcomes. Our study suggests that involving too many sources of feedback (e.g., experts with different backgrounds) in a hackathon can result in highly diverse feedback which might demotivate participants to pursue their opportunities further after the hackathon is over. This suggests that future work trying to understand what makes hackathons work should pay more attention to feedback content and how participants (and their teams) deal with that content.

Additionally, our study indicates that team information sharing and effort are complementary when actors cope with diverse feedback. Prior information sharing research has shown that sharing information in teams has a positive impact on team-level outcomes including team performance, team cohesion, knowledge integration, and team decision satisfaction (Mesmer-Magnus & Church, 2009). However, previous studies also have emphasized the importance of sharing information in an effective and structured way (Hinsz et al., 1997; Lu et al., 2012). Our study finds that when individual effort is low, information sharing even multiplies the negative effect of feedback diversity on outcomes (compare the dashed line with line pattern --- in Figure 4 to all other lines). Therefore, we identify individual

level effort as a crucial prerequisite to effectively process information that is diverse in nature through team information sharing.

General feedback literature describes that diverse feedback can have a positive impact on employee creativity (Sijbom et al., 2015). By using different feedback providers such as superiors, colleagues or other departments, employees can gain different perspectives and broader knowledge, which positively affects creativity (Perry-Smith, 2006; Stobbeleir et al., 2011). While previous research has described creativity as a positive outcome of feedback diversity, we show that feedback diversity can also have negative effects on creative outcomes such as opportunity evaluation. Thus, we extend the results of previous research by showing that not only creativity, but also other creative outcomes (such as opportunity evaluation) can be influenced by diverse feedback, in either a positive or negative way.

However, the general feedback literature also mentions that work environment can dampen or reinforce the positive effects of diverse feedback on creativity (Sijbom et al., 2015). Specifically, Sijbom et al. (2015) describe that time pressure, along with heightened levels of performance dynamism (i.e., fluctuating performance standards), enhance the positive correlation between feedback (source) diversity and creativity. (Sijbom et al., 2015). While prior literature has primarily examined external factors within an individual's environment, our study demonstrates that individual behaviors, such as effort and information sharing, can also impact the replationship between feedback diversity and creative outcomes. Therefore, we expand upon existing literature by offering a behavioral perspective on the connection between feedback diversity and creative outcomes.

Finally, previous literature has described that the social context can influence actors processing of information (Salancik & Pfeffer, 1978). That means that the social context we are surrounded by, and which kind of information our environment shares with us, influences how we understand and process information (Salancik & Pfeffer, 1978). In our study, however, we show that not only social context, but also our individual behavior can influence our information processing. Depending on the levels of effort and information sharing that we as individuals engage in, this leads to us being more or less able to deal with a high diversity of information received.

*Practical Contributions*

When founding teams participate in entrepreneurship support formats such as hackathons, incubators, or accelerators, they are typically motivated to gather a lot of feedback from a variety of sources to validate their opportunities (Affia et al., 2020; Böhmer et al., 2017; Medina Angarita & Nolte, 2020; Nolte et al., 2020). Our study shows that especially with diverse

feedback providers, coaches should make sure that participants in hackathons put enough effort into processing feedback received and that teams of highly motivated participants actively share the diverse feedback with each other. Otherwise, there is a risk that founding teams will not pursue their ideas after the end of a hackathon because they evaluate their opportunity negatively.

*Limitations and Future Research*

Our study addresses only one potential outcome of feedback diversity, namely opportunity evaluation (Gupta et al., 2013). Opportunity evaluation is an important outcome for hackathons in university settings as one of their major aims is to stimulate the formation of academic spin-off ventures. This may be different for hackathons in industrial companies, where the focus is often more on generating new product ideas without the intention of the participants themselves then pursuing these ideas further. For hackathons held within industrial companies, alternative outcomes such as the quantity of generated ideas would consequently be more pertinent. However, high diversity of feedback could also influence entrepreneurial activities in these settings, such as opportunity recognition or the motivation to use feedback to further develop the generated ideas. Future studies could therefore address which other entrepreneurial outcomes are influenced by feedback diversity and how this impacts the development of prototypes and ideas in non-university settings.

Further, we focus on two variables (effort and information sharing) that moderate the relationship between feedback diversity and opportunity evaluation. However, this relationship could also be contingent on other factors, such as team psychological safety (Higgins et al., 2012) or information elaboration (Harvey, 2015b). For example, psychological safety could influence how much team members engage in information sharing, and information elaboration may be necessary to integrate feedback into an opportunity. Therefore, we suggest that future studies could test other potential moderators of the feedback diversity-opportunity evaluation relationship.

*Conclusion*

Feedback is essential for founders to evaluate their opportunities. However, when founders try to develop the different aspects of their opportunities, they are often confronted with diverse feedback. The results of our study show that diverse feedback can have a negative impact on opportunity evaluation. However, through individual effort and team information sharing, the relationship between opportunity evaluation and feedback diversity can become more positive. We hope that our work inspires others to investigate how feedback affects the development of

entrepreneurial opportunities and how founders manage to process and make sense of diverse feedback.

# 4 Chapter III: How Founding Teams Deal with Contradictory Feedback

*Gathering feedback is key for founding teams to develop their opportunities to market. However, while feedback may help to develop business ideas, it may often be contradictory, thus increasing founding teams' uncertainty about potential future opportunity development paths. To develop theory about how founding teams deal with contradictory feedback for opportunity development, we draw on a social information processing perspective and an inductive study following up on seven founding teams that received contradictory feedback. Our model shows how founding teams differ in processing contradictory feedback, and how this processing influences opportunity development. Our findings are relevant for the literatures on entrepreneurial feedback processing and decision making in founding teams, contribute to social information processing theory, and have important practical implications.*

## 4.1 Introduction

Feedback is important for founders to reduce the uncertainty about their pursued opportunities, evaluate the opportunities, and decide on a future development path (Autio et al., 2013; Grimes, 2018; Seyb et al., 2019a). Opportunity-related feedback refers to information provided by external sources that helps founders to develop their opportunities to market (Grimes, 2018). Studies have found that to collect such feedback, founders use prototypes of their potential products and engage a community of inquiry (Grimes, 2018; Seyb et al., 2019a; Shepherd et al., 2020) - "stakeholders that provide feedback on the veracity of the potential opportunity" (Shepherd, 2015, p.491). These stakeholders may include future customers, investors, mentors, and technology experts (Autio et al., 2013; Seyb et al., 2019a). Further, entrepreneurship scholars have tried to understand how founders process opportunity-related feedback, emphasizing that many founders are strongly attached to their original idea and have a difficult time accepting feedback and adapting their opportunity accordingly (Toivonen et al., 2019). Additionally, founding teams consisting of generalists tend to interact less openly with feedback providers than teams consisting of specialists, which can slow down opportunity development (Shepherd et al., 2020). In sum, extant entrepreneurship literature provides a good understanding of how and from which sources founders collect and incorporate feedback to develop their opportunities to market.

However, despite these important insights, so far research has (implicitly) assumed that the feedback entrepreneurs receive on their potential opportunities is consistent; that is, the multiple sources, forming the community of inquiry, that provide feedback do not contradict each other (Drencheva et al., 2021; Frese, 2009; Grimes, 2018). This assumption is problematic as

feedback providers may have different opinions on how the opportunity should be developed further (Shepherd et al., 2020). For example, venture capital investors may be mainly interested in the growth of a firm (Hsu et al., 2014) and thus advocate opportunity development for the strongest growing markets, whereas potential customers may be interested in a fast and pragmatic implementation of solutions and therefore suggest to enter markets with immediate customer responses to the opportunity (Ries, 2011; Shepherd & Gruber, 2021), and technical advisors may suggest to enter a market where the firms' technology can add most value. Surprisingly, the psychology literature is also largely silent on how teams process contradictory feedback. This literature either focuses on the processing of contradictory feedback by individuals (Hochwarter et al., 2020; Liang et al., 2018; Schnake & Dumler, 1987) or on how teams react to consistent (typically past performance-based) feedback (Hoever et al., 2018; Peterson & Behfar, 2003; van der Vegt et al., 2010). Therefore, to date, we do not have any insights into how founding teams process contradictory feedback on the potential future development path of their opportunities.

Studying contradictory feedback in founding teams (rather than individual founders) is particularly relevant as team members may talk to different feedback providers depending on the members' functional background and area of responsibility in the venture (Shalley & Perry-Smith, 2008). Moreover, it may be especially challenging to process contradictory feedback in founding teams because team members often differ in their prior knowledge (Gruber et al., 2013) which can influence the team's social information processing (Dimov, 2007a). Therefore, understanding how founding teams process contradictory feedback for their opportunities likely has important implications for our understanding of entrepreneurial opportunity development, how entrepreneurs cope with feedback from their environment, and how founding teams function. Thus, in this paper we ask: *How do founding teams process contradictory feedback to develop their opportunities to market?*

To address this question, we build on social information processing (SIP) theory and the feedback literature to develop a dynamic model of founding teams' reactions to opportunity-related and contradictory feedback. We follow an inductive qualitative research design (Corbin & Strauss, 1990) to capture rich longitudinal data covering eleven months around nine opportunity-related decision situations based on contradictory feedback. Our primary sources are 55 interviews and conversations with all founding team members, start-up consultants, and an incubator manager. We supplement these sources with substantial secondary data. Our model shows that, based on their sharing of responsibility for team tasks, founding teams differ in their processing of contradictory feedback, triggering two distinct paths which we labeled

"team-oriented processing path" and "specialist-oriented processing path," respectively. Teams following the "team-oriented processing path" shared responsibility for dealing with contradictory feedback and searched a broad range of information to make decisions for quickly developing their opportunities to market. In contrast, teams following the "specialist-oriented processing path" assigned responsibility for processing the contradictory feedback to specialists, leading them to make decisions only under external pressure and based on searching more narrow information. Our study has implications for the literatures on opportunity development, decision-making in founding teams, and more broadly for the literatures on social information and feedback processing.

## 4.2 Theoretical Background

To theoretically ground our study, we draw on two streams of literature. First, since the feedback literature lacks a comprehensive theoretical perspective to understand how *teams* process feedback, we build on SIP theory to explore how teams process diverse information such as heterogeneous feedback from different sources. Second, we draw on the feedback literature including work on how founders process opportunity-related feedback.

### *Social Information Processing*

For understanding how founding teams cope with contradictory feedback, SIP theory is a useful lens because it tries to explain how actors' attitudes and behaviors are shaped by social information – information or cues that actors pick up from their social environment, whether they have actively sought the information or received it spontaneously (Salancik & Pfeffer, 1978). While social information can be conveyed in a very general way (i.e., not referring to a specific situation, action, and decision), it can also refer to specific tasks (Salancik & Pfeffer, 1978) such as the development of an entrepreneurial opportunity. According to SIP theory, especially in challenging and ambiguous situations (like opportunity development) actors can reduce uncertainty by gathering and processing social information (Ferrin et al., 2006; Salancik & Pfeffer, 1978). Further, SIP theory entails that while social cues can emerge within a team (Harrison & Klein, 2007; White & Mitchell, 1979), they can also be provided by sources external to the team, such as supervisors, specialists, and friends (Shalley & Perry-Smith, 2008), and that an actor's perception of social cues received can change over time, contingent on additional information received (Thomas & Griffin, 1983). Applied to the context of founding teams, SIP theory thus suggests that both, the social processes within the founding team as well as the feedback team members receive from their social environment, shape the development of entrepreneurial opportunities. In addition, SIP acknowledges that different members of the same founding team may form different perceptions about opportunity

development based on different social cues they receive from their social environment (Schnake & Dumler, 1987).

SIP theory also provides some insights how actors process multiple, and potentially contradictory social cues they receive. This work has mainly focused on individuals, suggesting that they may use information from one source (e.g., co-workers) to validate the information they received from another source (e.g., leaders; Schnake & Dumler, 1987). Similarly, Liang et al. (2018) find that individuals tend to seek further social cues when confronted with ambiguous or uncertain information related to their work, and that individuals often show ambivalent attitudes in response to conflicting social information. Indeed, individuals tend to seek further information when presented with conflicting information that makes interpretation difficult (Hochwarter et al., 2020). Processing social cues is especially challenging when the conflicting information has immediate effects on outcomes (Hochwarter et al., 2020). In contrast to Weick's (1995) finding that ambiguous information forces individuals to engage in exhausting information search that is often unsuccessfully abandoned, Ventura et al. (2015) reports that the most salient and consistent social cues normally have the greatest influence on judgments of a situation, and that individuals can learn to disregard confusing social cues, provided they have prior experience with social learning.

In sum, extant work on SIP suggests that receiving social cues from different sources can initiate cognitive and social processes among founding team members that substantially shape how the teams incorporate cues from their social environment to develop their opportunities to market. This literature, however, provides limited insights about the processing of contradictory social cues, especially in a (founding) team setting.

*Feedback and Entrepreneurial Opportunity Development*

Psychological and managerial research has studied for a long time how actors react to feedback from their environment. Specifically, this work has investigated how individuals' (Amore et al., 2021; Butler et al., 2007; Zhou, 1998) and teams' (Hoever et al., 2018; Peterson & Behfar, 2003; van der Vegt et al., 2010) react to feedback on their past performance. Performance feedback can either refer to information about the outcomes of some course of action in the past (Butler et al., 2007; Hoever et al., 2018; Zhou, 1998) or on a current process (Atwater et al., 2000; Harmon & Rohrbaugh, 1990). While performance feedback has typically been conceptualized as being either positive (Fodor & Carver, 2000; Hoever et al., 2018) or negative (Hoever et al., 2018; Peterson & Behfar, 2003) extant studies on individuals' and teams' reactions to performance feedback assume that the feedback received is consistent (i.e., points the feedback receiver in a single specific direction for future action).

A much smaller body of research has started to investigate individuals' and teams' reactions to feedback that is not based on past performance. For example, Li et al. (2018) found that feedback given from a brokerage position within the team contains less redundant information and thus increases the creativity of the feedback recipient. Baer and Brown (2012) showed that suggestions that extend a new idea, i.e. additive feedback, are more likely to be accepted than suggestions that take something away from the idea, i.e. subtractive feedback. Two recent studies have also acknowledged the possibility that feedback can be ambivalent or even contradictory.[2] Specifically, Tang et al. (2021) showed that when feedback is emotionally ambivalent, individuals are more likely to change their creative ideas, and this relationship is stronger for more curious individuals. Finally, Feldman and Kahn (2019) found that contradictory feedback from different mentors on trainees' potential future career development path may lead trainees to engage in specific coping processes such as grappling ("engaged process aimed at making sense of and resolving divergent advice," p.4) or retreating ("avoidant attempts to lessen the uncomfortable emotions sparked by the divergent advice", p.4). Therefore, the psychological and managerial feedback literature is mostly useful for entrepreneurship scholars to understand how founders react to the past performance on their opportunities (e.g. Shepherd et al., 2010), but it provides more limited insight into how founders process feedback that is not based on past performance but rather indicates potential future development paths based on, e.g., technological trends or market opportunities.

In the entrepreneurship context, feedback is often described as founders using (consumer) feedback to test hypotheses they have made about their opportunity, to modify the opportunity when they receive information that contradicts their current hypotheses, and thus make a strategic change in the opportunity, namely a pivot (Kirtley & O'Mahony, 2020; Ries, 2011; Shepherd & Gruber, 2021). In line with studies in psychology and management, entrepreneurship scholars have focused on understanding the implications of consistent, non-contradictory feedback. For example, a recent laboratory experiment shows that founders with higher optimism are less likely to change expectations about their future performance even in the face of negative performance feedback (Amore et al., 2021). Grimes (2018) draws on work on creative revision (Baer & Brown, 2012; Harrison & Rouse, 2015) to show that the stronger founders' emotional attachment to their ideas, the less willing they are to accept feedback from outsiders to change their opportunities. Building on this work, Shepherd et al. (2020) find that

[2] We acknowledge extant work on inconsistent feedback at the organizational level (e.g. Blagoeva, Mom, Jansen, & George, 2020 Lucas, Knoben, & Meeus, 2018 Hu, He, Blettner, & Bettis, 2017 Joseph & Gaba, 2015); however, given our interest in team processes this work is less relevant for our study.

founding teams comprising specialists engage in more open interactions with their communities of inquiry than founding teams of generalists, which leads to better progress within opportunity development. Seyb et al. (2019a) show that tensions can arise in the process of gathering opportunity-related feedback due to the different perspectives of stakeholders, and that founders can use prototypes to overcome these tensions. Eller et al. (2022) looked at feedback in the context of entrepreneurship training. The authors state that what makes entrepreneurship training effective is feedback. According to their study, feedback leads to changes in the business opportunity, which in turn leads to changes in goals, performance outcomes and feedback, thus restarting the cycle.

In summary, the feedback literature in psychology, management and entrepreneurship has considerably contributed to our understanding of how (mainly individual) actors react to feedback that is (i) performance-based and (ii) consistent (non-contradictory) in nature. However, so far, we lack insights into founding teams' processing and reactions to contradictory feedback about the potential future development of their opportunities.

## 4.3 Research Methods

Given our interest in understanding "how" founding teams process contradictory feedback to develop their opportunities to market and the underlying mechanisms of this process, we followed an inductive qualitative research approach (Corbin & Strauss, 1990; Denzin & Lincoln, 2011).

*Research Setting and Sampling*

Our research is situated in a European metropolitan area with a vibrant entrepreneurial ecosystem setting, in which start-ups have wide access to technology specialists, other founders, professional investors, coaches, and mentors to gather feedback on their opportunity. To select the founding teams for our sample, we followed a purposeful sampling approach (Patton, 2014) with the following criteria: First, to enhance the possibility that the teams are willing to talk to us on the rather sensitive topic regarding potential problems in opportunity development, we focused on spin-offs of our own university. Further, teams should (1) develop a prototype and/ or initial proof of concept since at this stage, uncertainty about the future prospect of their opportunity is still high and many entrepreneurs collect feedback to reduce this uncertainty (Autio et al., 2013; Grimes, 2018; Seyb et al., 2019a); (2) focus on high-technology sectors because the complexity of the product or service they develop typically requires intense feedback-gathering (Shepherd et al., 2020); (3) aim for high growth, which often requires the development of a product or service that fits heterogeneous customer groups (Reyes-Mercado, 2021) that potentially provide contradictory opportunity-related feedback.

To identify teams fulfilling these criteria, we screened founding teams through their websites and local news portals on entrepreneurship. Initially, we reached out to 32 teams meeting the specified criteria via email or phone, explaining our study on how founding teams handle feedback regarding their opportunities. Out of these, 29 teams agreed to participate. Subsequently, we employed a stepwise approach to select the founding teams for our final sample. To gain deeper insights into the 29 founding teams, we conducted initial interviews with 61 of their founders. From these interviews, we quickly realized that to address our research question we needed individual interviews with *each* founder of the teams because individual founders that formed a team differed in their interpretation of feedback incidents. Therefore, we dropped 17 teams for which we lacked first-round interviews with each founder. For the remaining 12 teams we analyzed whether they had recently experienced or were currently experiencing situations in which they received contradicting feedback that had a major impact for developing their opportunity and venture. Out of the 12 teams, eight teams reported on such contradictory feedback incidents. Six teams reported one and two teams reported two contradictory feedback incidents. When we started analyzing the interviews in detail, we realized that for one team the members had reported different contradictory feedback incidents, but we did not have rich enough information and all team members' perspectives on the same feedback situation resulting in the exclusion of this team. Thus, our final sample consists of nine contradictory feedback incidents (representing the "cases" of our study) nested in seven founding teams for which we continued with data collection (see below).

The teams had an average age of 11.4 months, came from different industries including artificial intelligence, food, mobility, robotics, and software. They had an average of 2.9 founders. One team had four founders, three teams had three founders, and two teams had two founders. This team size is typical for founding teams in similar, technology-driven ecosystems (Breugst et al., 2015). All of the teams already had at least one initial pilot customer. We created fictitious names for all teams to guarantee anonymity. We provide information on the sample ventures, their opportunities, the contradictory feedback incidents they reported on, and our data sources for each team in Table 8.

## Table 8. Sample Overview

| Team | Industry | Team members | Informants | Conversations (in)formal[3] | Work as a team on project since | Triangulation data | Contradictory Feedback |
|---|---|---|---|---|---|---|---|
| A | AI | 3 | Alex<br>Anna<br>Andre | 3<br>3<br>2 | ~ 1 year | Internal documents and e-mails including feedback (324 pages), internal documents without feedback including business plans, financial planning, term sheets, funding agreements, LOIs, pitch decks, financial reports, self-assessments etc. (3332 pages) | From customers, specialists, potential private and public investors as to which of two possible applications for the technology should be developed |
| B | Food & Beverages | 2 | Ben<br>Bastian | 3<br>1 | Less than a year ( ~ 10 months) | Internal documents including business plans and financial planning (83 pages), feedback e-mails (6 pages), pitch decks (27 pages) | From customers, specialists and mentors in which aggregate state the product should be offered with far-reaching implications for production, logistics, product positioning in retail, etc. |
| C | Online Platform | 3 | Charlie<br>Christoph<br>Constantin | 4<br>3<br>2 | Less than a year (~7 months) | Internal documents (102 pages), customer feedback (42 pages), pitch decks (23 pages), company video (1), interviews and online articles (17 pages), field notes from office visit (2 pages) | (1) From customers and specialists on the pricing model and thus the market positioning either in the high-end premium segment or in the low-cost mass market (2) from specialists and mentors on the startup's vision, either organic growth or rapid scaling or quick exit |
| D | Mobility | 2 | David<br>Daniel | 2<br>2 | ~ 2 years | Video recording from internal team meetings (one meeting, 0.5 hours), company videos (2), interviews and online articles (13 pages) | From customers and investors on entry into a new market segment |
| E | Robotics | 3 | Emil<br>Elias<br>Erik | 4<br>3<br>3 | ~ 1.5 years | Field notes from office visits (2 pages), e-mails from potential investors including feedback (2 pages), pitch decks (32 pages) | (1) From start-up advisors and investors on further financing, either private or public funding (2) from the lawyer and tax consultant on how to proceed with official incorporation |
| F | Cleantech | 4 | Felix<br>Fabian<br>Florian<br>Fynn | 5<br>2<br>1<br>1 | Less than a year (~ 5 months) | Audio recordings of internal team meetings (6 meetings, 6.5 hours), audio recordings of meetings with external feedback providers (4 meetings, 2.5 hours), feedback e-mails (3 pages), internal documents including feedback from various feedback providers (362 pages), internal documents without feedback (74 pages) | From specialists, mentors and other founders to decide whether a development-intensive product part should be developed in-house or bought in |
| G | Digitization | 3 | Georg<br>Gabriel<br>Gustav | 4<br>1<br>2 | Less than a year (~ 4 months) | Audio recordings from internal team meetings (2 meetings, 20 min), internal documents including feedback from external feedback providers (55 pages), pitch decks (31 pages) | From customers and mentors how the product should be integrated into the customer product |

[3] Additionally, we were informed by the start-up consultants of each of the teams besides team D and an incubator manager who knew all teams.

*Data Collection*

Over eleven months, we collected a variety of different data on the teams, the contradictory feedback incidents experienced, their feedback processing, the decisions they made based on the feedback, and decision outcomes. Importantly, in five of the nine situations described by the founding team members during the interviews, the decision on how the teams should proceed was made in the time between our two rounds of interviews. That is, in the first round of interviews the founders described a current contradictory feedback situation, but how the founders would proceed was not clear yet. In the second round of interviews, we could gather additional information to better understand the contradictory feedback situation, but we also learnt how the founding teams had ultimately decided to move their opportunity forward. In another two of the situations described, the decision was made a few days or weeks before our first round of interviews. In the remaining two situations, no decision had been made at the time of the last interview. We were informed about the outcome and the decisions made in each of these situations a few weeks later in an informal exchange with the founding teams. Thus, in most of the feedback incidents we studied, we were able to interview and observe the teams as they processed and decided on the contradictory feedback they received (see Figure 5).

***Interviews with founders, start-up consultants, and incubator managers***. Our first round of semi-structured interviews captured 19 founders from the seven founding teams of our sample. We asked six major questions related to (1) the opportunity the team was currently working on; (2) changes that happened to the opportunity in the past; (3) prior feedback that the team had considered important for their past opportunity development; (4) recent feedback that did affect their opportunity development; (5) current and past feedback the team members perceived as useful and not so useful; and (6) current and past feedback the team members perceived as contradictory. These major questions were followed by up to ten more detailed questions, such as "Please think of situations where you have received contradictory feedback on your opportunity and tell me about these situations" and "What has changed as a result of this feedback (product, business model and team)?". For a full list of the interview questions see Appendix 7.2.1.

Based on the insights on contradictory feedback incidents from the first round of interviews, we used a second interview round to ask the founders about their opinions on these situations, how they had handled them, and how the venture had developed since. The major questions in our guidelines were about (1) the situation in which the team received contradictory feedback;

(2) the feedback processing by the individual founder after receiving the feedback; (3) the feedback processing of the entire founding team; (4) the interviewees' and the teams' previous experience with contradictory feedback incidents. Again, each of these major questions was followed up by up to nine further questions. The interview guidelines are detailed in Appendix 7.2.1. Each interview session had a duration of 60 to 90 minutes. In total, we conducted 34 formal interviews with the 17 founders of our seven sample teams, resulting in 803 pages of transcripts (single-spaced). In addition, we conducted a total of 17 informal conversations with the founders either by phone or in person during the data collection period, each lasting between 30 and 120 minutes, that could not be recorded and transcribed, but helped us to resolve remaining questions and better understand team processes following the contradictory feedback incidents. In total, we had 51 conversations (formal and informal) with the founders of the sample teams over the data collection period. To understand the contradictory feedback incidents even better, we conducted additional interviews with three start-up consultants working with six out of the seven teams and one incubator manager who knew all seven teams. In the interviews, we asked about the contradictory feedback incidents that the founding teams had described to us and how the founding teams' processing of the contradictory feedback impacted opportunity development. In total, we spoke for nearly five hours with the consultants and the incubator manager. While we recorded the interviews with the start-up consultants, we were unable to record the interviews with the incubator manager; however, we took extensive field notes from these interviews.

In sum, our data included 55 interviews and informal conversations. More specifically, for our inductive theorizing based on the final sample of nine feedback incidents nested in seven founding teams we were able to draw on 38 formal interviews and 17 informal conversations with team members, start-up consultants, and one incubator manager.

***Secondary data and observations***. We engaged in data triangulation (Denzin & Lincoln, 2011; Eisenhardt, 1989; Yin, 2009) collecting longitudinal real-time data from various sources. This was particularly important for our study in case teams reported on contradictory feedback situations they had experienced in the past (seven out of the nine situations we could observe in real-time); thus, non-interview data covering these past feedback incidents in real time was key for us to mitigate interviewees' retrospective biases.

One source of real-time data was over seven hours of recordings of confidential internal meetings which three of our sample teams made available to us. These recordings, which the teams had made upon our request, helped us to better understand team processes initiated by

the feedback and how the teams made connected decisions on the future development of their opportunities. Additionally, we had access to audio recordings (more than two hours) of meetings with external feedback providers for one team, which were recorded by the team to better understand and remember the feedback they received.

Further, we collected observational data by visiting the teams' offices whenever possible and taking field notes. We captured our impressions related to team and feedback processes. For example, documenting how team members communicated with each other verbally, seating arrangements in meetings, and their reliance on remote work helped us understand team-internal processes and dynamics. We also took notes on numerous informal conversations (in person, on the phone, and via messenger apps) with the founding teams. In addition, we collected pitch decks, business plans, and applications for funding throughout the entire period. These documents were particularly helpful because they contained written feedback from various stakeholders such as project sponsors, mentors, investors, start-up coaches, and advisors. Furthermore, we collected internal e-mails containing feedback from these stakeholders. Finally, we regularly visited the ventures' websites and collected press releases to check on important venture decisions. We also visited the founders' LinkedIn profiles to check on their professional backgrounds and previous experiences. In total, we collected nearly 4,500 pages of written and observational data, much of which predated the commencement of our data collection and thus helped us to validate the information from the retrospective founder interviews about the contradictory feedback incidents.

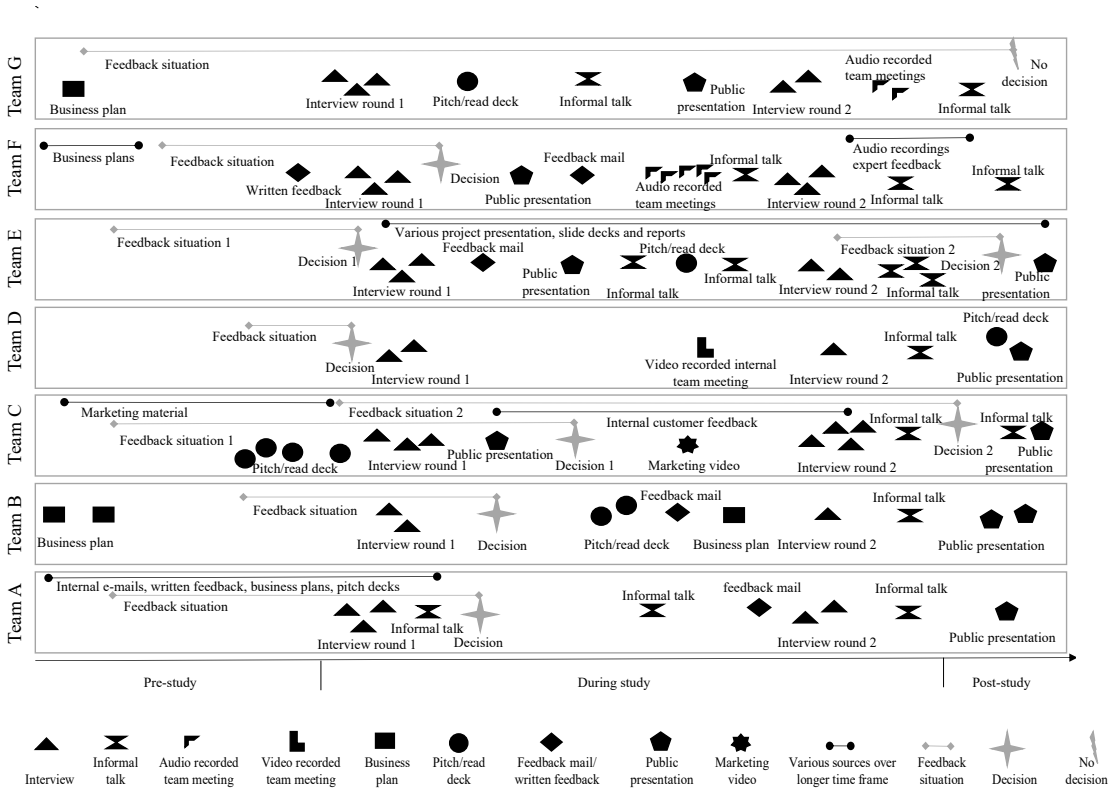



**Figure 5. Data Overview**

*Data Analysis*

To analyze our data, we mainly followed the recommendations by Gioia et al. (2013). We moved iteratively between data collection and data analysis with an open mind to let the data reveal insights on their own. (Suddaby, 2006).

***Understanding the feedback incidents.*** Already during the first round of interviews we started analyzing our data. First, we drew a table for each team covering the feedback incidents as described by the co-founders. This table allowed us to directly compare the individual founders' descriptions and their individual perspectives on the situations. When comparing the statements of the different founders, we noticed that especially contradictory feedback incidents could lead to (sometimes very) different perceptions within and between the teams. Therefore, we decided to take a closer look at these situations. In the second step, we drew flowcharts for each of the described contradictory feedback incidents in order to understand in detail what happened when in each case. Specifically, we documented where the feedback came from, in which situation the team got the feedback, whom within the team received the feedback, the feedback content, why it was contradictory, and how the founders reacted to it individually and/or as a team.

Since we lacked the perspectives from some founders, we collected more data in a second round of interviews with slightly adapted interview questions based on the first interviews. We also used a template that we showed to the founders during the interviews in which we wrote down in real time what they told us. The template facilitated a shared understanding of the exact sequence of events following each feedback situation. At that time, we also interviewed the startup consultants and the incubator manager about these situations. After developing a full understanding of each situation, we again compared the situations to identify differences and similarities in the situations and the teams' reactions to them.

***Emerging codes.*** Building on our understanding of each feedback situation, we began the formal coding process based on recommendations by Corbin and Strauss (1990). As a first step, we read through all our interviews again to identify key words and phrases from the co-founders' descriptions of the feedback incidents. To label primary first order codes, we used our interviewees' expressions as suggested by Gioia et al. (2013). For example, we found several phrases that described how feedback was communicated within the team (e.g., "[Bastian] and I had talked on the phone, or there was breaking news, what someone said, […] so that we called each other"; "So we have a weekly call every Monday, where we update ourselves, what's new, what's new in the individual areas?") as well as how the founders collected feedback (e.g., "we have been talking to customers since the very beginning"; "we tried to find new contacts, experts we could talk to"). We labeled these emerging first-order codes "discussing feedback in the whole team" and "data gathering" respectively.

As our understanding of each situation grew, we continued to adjust the first-order codes to reflect the experiences of our interviewees more accurately. For example, we changed "discussing feedback in the whole team" to "ongoing team discussion about the situation" and "data gathering" to "collection of further data and opinions". Next, we started to compare the data from the interviews with our audio files, written data, and observational data. Through this analysis we were able to refine and adjust our first-order codes. For example, we relabeled "collection of further data and opinions" with "acquiring of further data and opinions by talking to experts about the alternatives and doing research."

Once no further new first-order codes emerged from our data, we proceeded to cluster similar first-order codes into broader second-order themes. For example, we noticed that we had some first-order codes that described how the team shared information and prepared decisions. Thus, we grouped the first-order codes "ongoing team discussions about the situation," "bringing all relevant information together to develop common understanding of the

situation," and "understanding the implications of each alternative for the venture" into the second-order theme "broad social information search to evaluate implications of decision alternatives." At this point, we noticed that there were significant differences in how teams processed information and how they prepared decisions. We thus developed first ideas how to combine the second-order codes into theoretical dimensions. Figure 6 shows our final data structure.

***Emerging model.*** When combining first-order codes into second-order themes, we also began to understand how each team processed contradictory feedback and the consequences for the development of the teams' entrepreneurial opportunities. While we had initial ideas about the relationships between our theoretical dimensions, we also aimed to explore the interrelation between the theoretical dimensions. Therefore, we iterated between the feedback literature, the literature on social information processing, and the literature on entrepreneurial teams, as well as our coded data. For example, we noticed that some of the teams in our sample tried to take the perspective of their feedback givers to understand their background motivation for giving this feedback and why the conflicting feedback situation had arisen. We recognized in the literature that this approach was referred to as "perspective taking" (Ku et al., 2015) and adopted the term as a second-order code in our model. Based on this iterative approach a dynamic model on teams' reactions to contradictory feedback for opportunity development emerged.

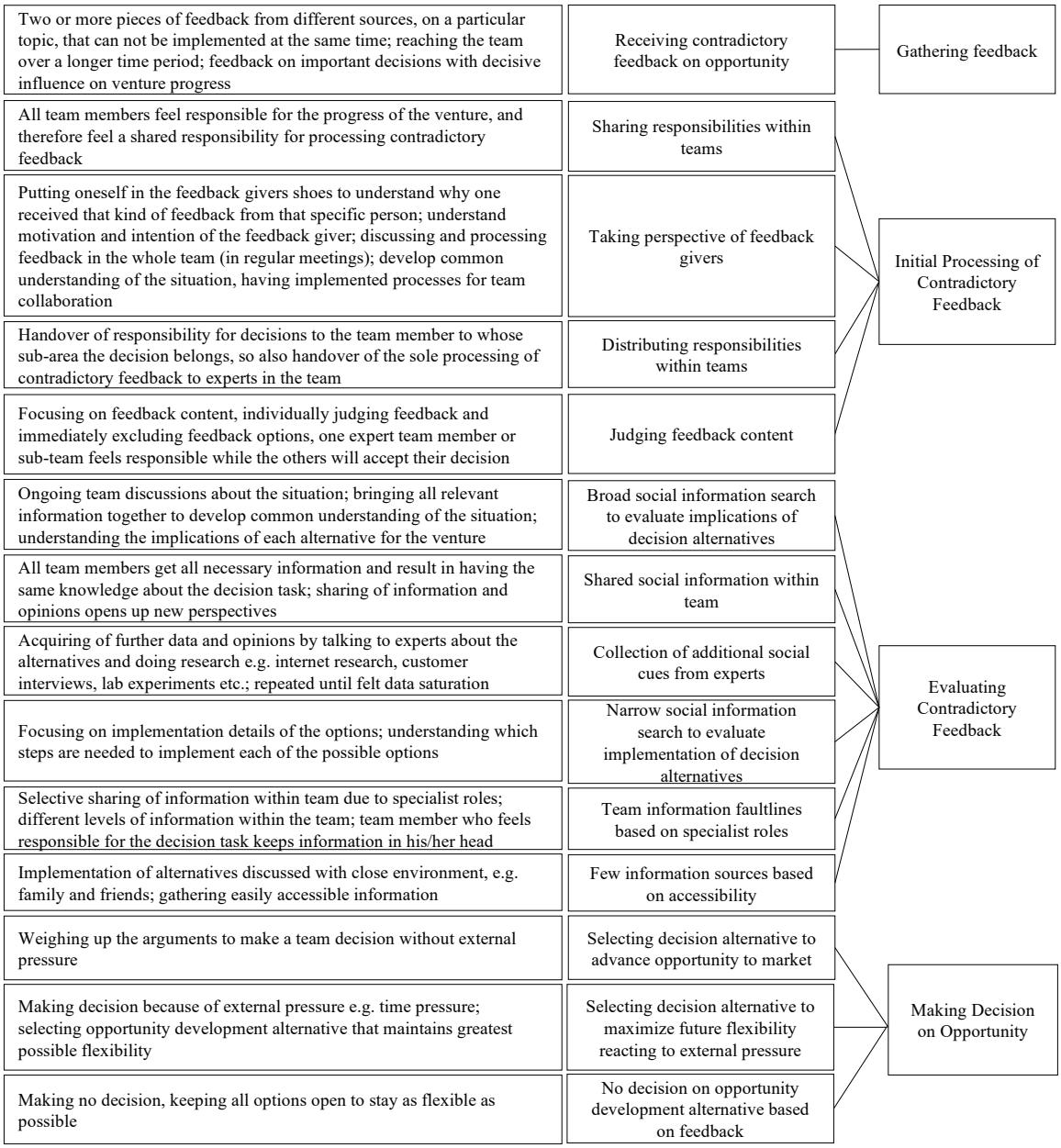



**Figure 6. Data Structure**

## 4.4 Findings

Guided by SIP theory proposing that teams gather and process social information to reduce uncertainty (Ferrin et al., 2006; Salancik & Pfeffer, 1978), we start by providing insight into the uncertainty contradictory feedback incidents created for founding teams and how they received substantive social cues that related to future decisions about their opportunity development (rather than evaluations of past performance). Subsequently, we describe how the teams differed in their initial processing of the contradictory feedback triggering two distinct paths which we label "team-oriented processing path" (teams A, B, C, D) and "specialist-

oriented processing path" (teams E, F, G), respectively. As a result of taking either path, the teams selected an opportunity development alternative (to either advance their ventures or to maintain flexibility) or avoided making any decision based on the contradictory feedback.

*Receiving Contradictory Feedback on Future Opportunity Development*

In line with previous literature (Seyb et al., 2019a; Shepherd et al., 2020), the teams in our sample interacted with different stakeholders to gather feedback during opportunity development. For example, teams participated in competitions and received feedback from a specialist jury, participated in incubation or accelerator programs offering feedback from coaches, and engaged in conversations with (potential) customers, mentors, (potential) investors, and other specialists. Not surprisingly, gathering feedback from such diverse sources, the teams received contradictory feedback on how to further develop their opportunities. The contradictory feedback often reached the teams over a longer period of time (from weeks to months) rather than in one isolated situation, that is, one certain point in time.[4] In each situation, the contradictory feedback directed the teams into at least two different opportunity development directions.

For example, team A received contradictory feedback on two alternative applications of their technology from a public sponsor and their mentor as well as from private investors and a startup consultant, as Alex reported:

> We actually got several feedback cues and also very, very different depending on who we were talking to. I'll start with [the public sponsor]. [The public sponsor] is the government and the announcement was very clear […] they only want to see [application 1]. [They stated,] "for us, that is the only thing that is relevant, we want to have that before [...] and everything that is better and has nothing to do with [application 1] does not interest us at all," simply put. We then talked to potential investors, [VC 1] for example, and there was still [our start-up consultant]. And the feedback was exactly the opposite. The feedback was, yes, okay, there are these two applications, if you look at the market, then you see that the market for [application 2] is larger than the market for [application 1], this is the first point. And the second point is, that [application 2] has worked well, very well, where with [application 1] there was still a risk and from this perspective it was very clear: focus should be on [application 2], because that is where you could also be commercially successful or with higher probability. And customer feedback was equally mixed. (Alex, I2)[5]

[4] While feedback incidents could be separated in time, the contents of the contradictory feedback were still relevant for opportunity development (e.g., the team is still able to change the technology having received contradictory feedback). Our teams received contradictory feedback on future (1) financing opportunity development, (2) product management, (3) market positioning, (4) new market entries, (5) incorporation strategies, (6) outsourcing or in-house product development, (7) process integration, (8) start-up vision, and (9) application alternatives for a new technology.

[5] I1 = quote from the first interview with this founder; S1 = first contradictory feedback situation explained by entrepreneur

From the mentor's written feedback comments on a grant application, we could understand why he (like the public sponsor) recommended a focus on application 1: "Is it not dangerous to clearly say from the financial aspect [application 1] is not attractive? Turn it around and say how cool [the possibilities that can be achieved with application 1 are]!!" (Mentor of team A, written feedback in a business plan for an application for public funding). In contrast, the team's investors and the start-up consultant both recommended focusing on application 2, as they saw greater market potential and believed that application 2 was further developed than application 1.

Similarly, team B received contradictory feedback from customers, mentors, and specialists about a core product characteristic to develop. Bastian, one of the co-founders explained how challenging it was to make the decision about the product based on the contradictory feedback:

> Yes, especially now with the sales strategy, we have a lot of [contradictory feedback] – actually, production and sales. How, how do we offer this [product] – [option 1] or [option 2], that kept us busy for two months. (Bastian, I1, S1)

Table 9 provides further details on the teams' contradictory feedback incidents and how the founders interpreted these situations. While the contradictory feedback incidents were similar in terms of the importance of the feedback providers and the relevance and complexity of the connected decisions for opportunity development, the teams' processing of the feedback differed.[6] More specifically, we identified that teams in our sample initially engaged in two different paths of information processing, which we describe now in more detail.

[6] Since we intentionally used a very homogeneous sample with respect to venture characteristics to rule out alternative explanations for differences in processing of feedback (cf. sampling strategy and Table 8), we could not identify any alternative explanations in our study. Nevertheless, we used our rich data to investigate different constructs at the team and individual levels including demographic data (Bromiley & Rau, 2016; Jin et al., 2017) such as, for example, age of founders and different types of previous experience (i.e., industry, functional, educational), team size, concepts describing relationships between team members (i.e., hierarchy, power, status), team member friendship (Zolin, Kuckertz, & Kautonen, 2011), and founding experience (Delmar & Shane, 2006). We also examined the teams' general openness to feedback. Neither of these concepts explained why teams followed a specific path.

## Table 9. Overview Contradictory Feedback Incidents

| Team | Feedback providers | Feedback topic | Contradiction for the team | Implications for the venture |
|---|---|---|---|---|
| A | Customers, experts, potential private and public investors | Which of two possible applications for the technology should be developed | Due to resource limitation the team can only develop and prepare market entry for one application | Decision on market entry (which market and when) and financing of the company |
| B | Customers, experts and mentors | In which of two possible aggregate states the product should be offered | The product can only be developed, manufactured, and introduced to the market in one form | Far-reaching implications for production, logistics, product positioning in retail, etc. |
| C | (1) Customers and experts<br>(2) Experts and mentors | (1) Pricing model and thus market positioning either in the high-end premium segment or in the low-cost mass market (2) the startup's vision, either organic growth or rapid scaling or quick exit | (1) The strategy can be either the distribution of the product at a very high price in a low quantity or at a low price in a high quantity (2) only one vision for the venture can be implemented | (1) Development effort and associated time and costs, customer acquisition (2) the future of the venture |
| D | Customers and investors | If they should enter a new market segment or not | The team can decide either for or against entering the new market | Further development of the company, scaling, acquisition of new customers and financing by a potential new investor |
| E | (1) Start-up advisors and investors (2) lawyer and tax consultant | (1) Further financing, either private or public funding (2) on how to proceed with official incorporation | (1) A private investment precludes concurrent or subsequent public funding (2) for the venture to be officially registered, the team must decide on a pathway | (1) Speed of development, market entry and prevention of a funding gap (2) need for time and money |
| F | Experts, mentors and other founders | Whether a development-intensive product part should be developed in-house or bought in | The product component can either be developed in-house or bought in | Development time, costs and the associated time to market, customer acquisition |
| G | Customers and mentors | How their product should be integrated into the customer product | The product can be either loosely enclosed or permanently installed in the customer's product | Development time and effort, acquisition of first customers and thus implications for the continued existence of the venture |

*Team-Oriented Path: Processing of Contradictory Opportunity Feedback by Founding Teams*

***Initial processing of contradictory feedback: Taking perspective of feedback givers based on shared responsibilities within the team.*** Based on their background knowledge, the members within teams A, B, C, and D worked on particular tasks. However, despite this clear task distribution, all team members shared responsibility for the future development of their opportunity and all related decisions. The teams' goal was the advancement of their opportunity to market, which they understood as their collective responsibility. For example, Christoph from team C emphasized that the team always tried to find a solution together as a team: "We always discussed these things [important strategic issues] in our group of [founders]. We discussed them openly and tried to find a solution together" (Christoph, I2, S1). Similarly, Daniel described how he first of all shared his thoughts with his co-founder when receiving contradictory feedback: "After the conversation I first of all discussed it with [David] and I communicated the doubts and resumed the discussion [I had], [told him about] the situation" (Daniel, I2). Since the contradictory feedback in each case had impact on future opportunity development, all founders of teams A, B, C and D felt responsible to deal with it. Based on this *shared responsibility*, the founders following this path processed the feedback together as a team. Team A, for example, elaborated on the feedback in their weekly shareholder meeting as Alex told us:

> So, the three of us, [Anna], [Andre] and I, have a shareholder meeting weekly and we discuss then - every Wednesday morning when we have an appointment - all the topics that are just relevant at the moment and even if I am alone for [external feedback] meetings, then everyone is also informed, and everyone should be informed. (Alex, I2)

Similarly, team C scheduled team meetings directly after important sessions with external stakeholders in addition to the team's regular meetings, as Charlie reported: "We discussed [the contradictory feedback] directly in the team" (Charlie, I2, S1). Beyond meetings, the teams following the team-oriented path had implemented processes for team collaboration and keeping track of received feedback. For example, team A used a software tool for documenting and communicating knowledge within the team. In this tool, the founders recorded the most important arguments from each meeting. In team C, Charlie presented his feedback for the other team members who did not directly interact with the feedback giver. This way, all team members could analyze the situation, as Christoph told us:

> So especially in this discussion [about the contradictory feedback], I had the feeling that [Charlie] had always prepared those opinions relatively well, so he just always described his quintessence about [the feedback he received], which was good in that we did not even

> have to wrap our heads around it, but the whole thing was already a bit pre-digested. (Christoph, I3, S2)

Similarly, Ben from team B described to us that both founders had conversations with different feedback providers – Bastian with already successful founders from the production and logistics area and Ben with customers and specialists from the sales area – in order to answer the question in which final form they should offer their product and thus where they should place it in the market. Together, the founders united the different, contradictory social cues they received from these conversations into a comprehensive picture afterwards, as Ben explained:

> [Bastian] focused on conversations with entrepreneurs from the field of production and logistics and I have been more at the customer side and in the field of sales and I have researched in this area and it was quite interesting, because the opinions of both sides diverged again and again so that we could create the overall picture in the end. (Ben, I2)

To further enhance their interpretation of the contradictory feedback, teams A, B, C, and D tried to better understand the feedback givers' intentions through *perspective taking*. Perspective taking refers to "the active cognitive process of imagining the world from another's vantage point or imagining oneself in another's shoes to understand their visual viewpoint, thoughts, motivations, intentions, and/or emotions" (Ku et al., 2015, p.1). For example, for team C, we learnt how Constantin critically considered if he could indeed believe in all feedback givers' (i.e., potential investors, mentors, and coaches) competencies and good intentions, coming to the following conclusion: "I do believe everyone [of our feedback providers]" (Constantin, I2, S2). Likewise, Christoph described how Charlie called him immediately after feedback conversations, reflecting first about the feedback giver (rather than the content of the feedback): "It was often the case that [Charlie] talked to someone and called me totally euphoric to tell me about a cool conversation partner again" (Christoph, I2, S2). Also, Charlie stated: "When you get feedback from people whose opinion you take very seriously, that always makes you think again" (Charlie, I2, S1).

By reflecting on, and taking the perspective of the feedback givers, the teams explored why they had received exactly this feedback from this specific person in the particular situation. Christoph told us in the interview that he had asked himself the following questions: "Why is that [the feedback]? Why do they all tell you something different?" (Christoph, I2, S2). Similarly, team D first focused on understanding the feedback giver ("I expressed understanding for [our investors'] doubts", Daniel, I2), rather than the implications of the

specific feedback content. David told us that he and his co-founder reflected together on the contradictory feedback situation by taking the feedback givers' perspective:

> Yes, so of course, directly after receiving the feedback, we have of course again briefly reflected, "is there any truth to this feedback?", so we already once briefly discussed, "why does he think like this?", "where does perhaps his assessment come from in this regard?" (David, I1)

Similarly, team A reflected on their feedback givers, attributing the contradictory nature of the feedback to the diverse backgrounds of their feedback givers ("We actually got several feedback cues and also very, very different depending on who we were talking to", Alex, I2). Reflecting on the respective feedback givers' background also helped the teams to appreciate that although contradictory, the feedback cues were indeed coming from specialists. For example, Ben explained how team B valued the specialists' opinions although these opinions differed substantially: "All of the [feedback cues we received came from] specialists, so those were not just any opinions, but opinions of people who really have a clue" (Ben, I2).

Thus, by taking the perspective of the feedback givers, the teams gained a deeper understanding of *why* the specific feedback was given, but also why different feedback givers provided contradictory feedback.

***Evaluating contradictory feedback based on broad social information search.*** Consistent with previous literature suggesting that entrepreneurs try to obtain further information to reduce uncertainty especially in uncertain and ambiguous situations (Ferrin et al., 2006), such as contradictory feedback incidents (Liang et al., 2018), teams A, B, C and D proceeded with broad information search to compare the implications of the available decision alternatives. The teams drew on the detailed and comprehensive understanding of the contradictory feedback incidents they had gained by perspective taking to collect additional information from external specialists. This extensive search for more social information was continued until a sense of data saturation occurred and teams felt able to come to a decision. Bastian from team B, for example, told us how he thought about gathering more information to prepare decision-making:

> [My reaction to the contradictory feedback was] that I have to go further into the research, or still exchange with more people, because that is not yet well-founded enough. So, I have to get more sources to be able to make the decision better and best I should also collect more facts. So, […] what are perhaps sales figures, but also very important, of course, experience from practice. (Bastian, I1)

Further, his co-founder Ben told us that the team relied on an industry report for additional data: "There is such an industry report every year, and there you can also see how much is sold

in the [option 1] segment and how much in the [option 2] segment" (Ben, I2). Besides engaging in desk research, team B also conducted customer interviews to compare the potential opportunity development alternatives. Bastian described these interviews as follows: "We did guided interviews with customers and asked where they would buy the product, or where they would expect to buy it" (Bastian, I1).

To discuss the decision alternatives, the teams tended to contact specialists from industry, but also coaches and mentors. For example, Christoph told us about his co-founder Charlie in the contradictory feedback situation: "Yes, so [Charlie] has spoken for example with [specialist 1], he has talked with the founders of [a successful other start-up]" (Christoph, I2, S2). Interestingly, Charlie discussed not only with a subject matter specialist but also with the founders of an already successful startup, who the team saw in a mentoring role and who had a broader perspective on how to handle feedback. Anna mentioned that team A asked investors for their expertise for which of two possible applications to develop for their technology they should decide: "[we discussed the topic] with investors. So, we have been honest and have already talked to the people who could perhaps offer us good advice or have expertise" (Anna, I2). Further, Anna told us that she planned lab experiments and conducted literature research to gather complementary data that helped the team decide between the two potential applications: "Plan more experiments, do research, lots of literature, lots of how we can find other ways. Yes, what we can all do now in the lab" (Anna, I2). All teams following the team-oriented processing path were actively searching for information sources that could help them to decide. They went on with this process until they felt that they had enough information to select the better suited alternative. Extensively sharing gathered information and opinions in the team helped them process the contradictory social cues they received. For example, Christoph from team C explained,

> We just discussed a lot in the team, simply what this means for us now and how we can perhaps also learn from it, what is relevant for us […] what is not, what we want to derive from it now. (Christoph, I3, S2)

Looking back on their team discussions, he also described how important it was for the team to come to a shared opinion, even if the initial individual opinions had differed greatly:

> I think it was good to have these different perspectives [within the team]. Of course, the discussions were always very heated, simply because it's also related to these personal goals, […] I think [discussing openly] was just the right thing to do. It is important that such discussions take place so that everyone is on the same page because no one knows exactly what is happening. (Christoph, I3, S2)

Likewise, Alex described meetings of team A in which they shared relevant information and discussed the next steps: “Then, we have an internal meeting, we discuss the steps” (Alex, I2). All team members received all information, no matter what role each member had within the team. As Alex further reported, team A discussed the pros and cons of each alternative in these meeting: “when there are different opinions, you just have to evaluate the advantages and disadvantages of the similar options” (Alex, I2). Similarly, Bastian described: “[…] at some point we simply discussed the arguments in more depth” (Bastian, I1). He further reported that for comparing the alternatives, in team B individual opinions mattered:

> […] we met in person for [discussing the contradictory feedback] and then just went through it again with [option 2] and with [option 1] and everyone [of the founders] just brought in their perspective again as well. [. . .] very subjective actually […]. (Bastian, I1)

***Deciding on contradictory feedback to advance opportunities to market.*** With their shared responsibility for opportunity development progress, teams following this path *weighed up the social information* they had collected and eventually *selected the opportunity development alternative* they believed was most suited *for advancing their opportunity to market*. For example, Constantin told us: “Yes, [we] argued, discussed and then we just decided” (Constantin, I1, S1). Team C explained their decision on the product’s positioning to following the feedback from some customers and mentors: “We have clearly oriented ourselves towards this higher price segment. Of course, a few customers have fallen through the cracks as a result. But surprisingly few” (Christoph, I2, S1).

Similarly, Ben told us about team B’s decision-making process: “We discussed it again, explicitly the pros and cons [of the alternatives] that we had received [from specialists] but also [the arguments] we see ourselves and compared them against each other” (Ben, I2). Team B selected option 1 for their product because they saw advantages in market positioning and logistics. In doing so, they followed the feedback they had received from other, already successful founders and mentors and decided against customer feedback:

> [After the decision, I was] definitely relieved, I’ll say, or pleased that we now have a tendency there in a direction that we can pursue, because if you’re always between stools and you don’t have a clear opinion there yet and that also affects the strategy, the conversations you have with partners or outlets makes the whole thing more difficult, so it’s a relief that a decision has been made there now. (Ben, I2)

Team A selected to implement application 2 following the feedback of the private investors and some of the customers, but not the feedback received from their mentor and their public sponsor, because the team believed that application 2 would have greater market potential and a technology that was closer to market entry (“[approximately one month after the first

interview round], we [decided to] focus 100% on [application 2]" Alex, I2). Finally, team D followed customer feedback and decided to enter a new market segment to maximize growth potential, thus deciding against their investor's recommendation to focus on their current market:

> We were very unanimously in favor [of entering the new market segment] and ... So I think, what the function looks like at the end of the day, that is another rather technical question [...] but I think, from the basic idea of '[entering the new market segment] - yes or no', that [decision] is very uniform. (David, I1)

In sum, all teams following the team-oriented processing path selected opportunity development alternatives that allowed them to advance their opportunity to market. This selection was facilitated by gathering additional social information from external specialists and an extensive sharing of this information within the founding team, allowing for a comprehensive assessment of decision alternatives.

*Specialist-Oriented Path: Processing of Contradictory Opportunity Feedback by Individual Team Specialists*

In contrast to teams A, B, C, and D sharing responsibility for team decisions arising from contradictory feedback, teams E, F, and G relied on their team-internal specialists to process contradictory feedback ("specialist-oriented processing path"). Within these teams, individual specialist founders searched rather *narrow social information* to further process the contradictory feedback. When finally making decisions, these founders tried to maximize the venture's future flexibility, or they did not take any decision at all based on the contradictory feedback received.

***Initial processing of contradictory feedback: Individual specialist judgement based on distributed responsibilities within teams.*** The teams following the specialist-oriented processing path focused on completing the tasks assigned to their roles and did not interfere with teammates' expertise areas. Based on these *distributed responsibilities*, the founders processed the contradictory feedback individually, rather than as a team. For example, team F had received contradictory feedback on whether to buy a major technical product component or develop it in-house. Fabian told us about his co-founder Florian, who was responsible for the technology, that "[Florian] had still done some research. Because he then found a good compromise for a [development of a product part that we could buy]. Personally, I did not, because as I said, this is not my area" (Fabian, I1). In line with his assigned specialist role and associated responsibilities, the team expected Florian to handle the contradictory feedback on his own ("In this technical case, it has always been the case that the decision at the end of the

day lays with me", Florian, I1). Likewise, Erik from team E reported that all tasks were clearly distributed among his team's members: "We want to have clear ownership [for individually assigned tasks]" (Erik, I2, S1).

Interestingly, even when more team members were present when contradictory feedback was received, only the team member who was the specialist for the specific area would process it. When team E faced contradictory feedback about how to finance their venture (using private or public funding), a decision that clearly belonged to the field of financial management, technology specialist Erik was not even interested in the problem. His co-founder Emil told us:

> And I think I know that [Erik] is not really impressed by that. First of all, [. . .] because it's not his domain. And yes, I think mainly because he is not so interested in everything and he also somehow thinks that [Elias] and I will somehow do it. (Emil, I2, S1)

Based on these specialist roles and the individual processing of the contradictory feedback, team members tended to judge the contradictory feedback based on its content (rather than taking the perspective of the feedback giver). For example, Elias explained to us that he immediately thought about the content of the contradictory feedback on funding, considering whether the team should take on a larger private investment: "Oh ok are we kind of too cautious now? And are we playing too small? And do we have to take the big step [by going for a large private investment]?" (Elias, I1, S1). Similar to Elias, Gustav also focused on the content of a customer's feedback that team G received on the decision whether to integrate their technology directly into the customer's product or just enclose the product: "I thought to myself: not again, we've heard that [feedback] several times and that is why for me it was the time to just reel off our standard answer [to this feedback] again" (Gustav, I2). His statement shows that Gustav immediately rejected the feedback instead of discussing within the team. While Elias and Gustav did not particularly think about the feedback givers and their intentions, Felix from team F even could not remember who the feedback giver was exactly, while he was aware of the feedback content ("I don't know who provided the feedback […] could have been a conversation with [our first mentor] together with [our second mentor]", Felix, I2). Similarly, his co-founder Florian described to us how he reacted when he heard about the feedback from specialists and several colleagues about the idea to outsource the production of a part of their product or develop it themselves. Specifically, he reported how he quickly judged the feedback by comparing it against his own opinion:

> Yes, so except for the feedback in [location], it has always been that I thought ok, at the end of the day, I know more about this situation than those who are giving me the feedback. That means at the end of the day I can evaluate it more accurately from a technical point of view and that I can judge it better and I have seen more advantages in self-development than

> in purchasing. And that is why, at the end of the day, I trusted my personal opinion and listened to the feedback and kept it in mind. (Florian, I1)

***Evaluating contradictory feedback based on narrow social information search.*** Teams following the specialist-oriented path pursued a rather *narrow social information search.* These teams used the gathered information to *compare the implementation details of the alternatives* (rather than the implications of these alternatives for the venture's future development path).

First, because they were themselves dedicated specialists within their teams, the responsible individuals *used few information sources that were easily accessible* to access new social cues. Indeed, they consulted mainly with non-specialists in their close social environment such as other start-up teams that were in the same incubation program, family and friends, and customers at hand. Further, the teams tended to *collect quickly accessible data* via basic online research or talked shortly to customers. Partly, this was again driven by the specialist team members' belief that consultation with additional, external experts would add little value. Therefore, in contrast to the teams following the team-oriented processing path, the teams did not conduct systematic customer surveys but only superficially addressed the specific topics in meetings as side aspect.

For example, when evaluating whether to apply for a public funding program or search for a private investor, team E talked to other start-up teams in a similar situation that they had known before: "We then also talked to other teams, I think, who also were applying for [public funding program 2]" (Erik, I2, S1). Interestingly, the team did neither talk to start-ups that had been successful with their applications or finished the program successfully, nor to start-up financing specialists who would have been able to compare private versus public funding. In addition, the team's internet research was limited to a few websites and downloading required templates. Emil told us: "[to collect information on public funding program 2] I have first researched how much [effort you must put in the application], what you have to do for it at all. So, I have downloaded the templates and I have looked at them" (Emil, I2, S1). His co-founder Erik said: "I don't know if any significant information came out of [our attempts to collect further data]" (Erik, I2, S1). Similarly, the co-founders of team G talked about the contradictory feedback mainly with their family and friends, as Gustav described:

> Well, I mean clearly [we talked to] our family, roommates, girlfriend, [Georg] I think also his wife. That is clear. Exactly, but no pronounced specialists in the field. We didn't do that or because we just don't know people. (Gustav, I2)

Gabriel from team G also told us about regular sales meetings they had after receiving the contradictory feedback. In these meetings, they addressed the topic but mainly focused on the

team's internal preferences rather than external opinions: "We then shortly brought up [the topic on which we received contradictory feedback] at every customer meeting what the preferred solution was" (Gabriel, I2). However, team G did not invest any effort to schedule additional meetings or talk to specialists. Overall, further data collection was less extensive than for the teams following the specialist-oriented processing path than for those following the team-oriented path.

Second, in evaluating the contradictory feedback and the additional social information collected, the teams focused on what each decision alternative would mean in terms immediate implementation actions (rather than for the progress of their opportunity). For example, team E discussed how many external signatures they would need and how long it would take to obtain them instead of what the different decision alternatives - going further with either private or public funding - would mean for the venture's future positioning in the market (field note). Erik described: "Actually, [the discussion] was mainly about this effort estimation, so not only own effort, but also how long will it take? How many external things do we need [to implement both alternatives]?" (Erik, I2, S1). Similarly, team G mainly discussed about how to technically implement the alternatives in detail, ignoring how each alternative would impact the venture in the future. The team had two options at this point: integrate their technology tightly into the customer's product or include it loosely with the customer's product. While the team was not aware of an implementation option for integrating the technology tightly at that time, the second option was easy to implement (but was less frequently requested by customers). The team extensively discussed how the technological implementation of each alternative might work, but neglected the potential impact of the alternatives, such as losing potential customers if they chose one option, or that one option might not be technically feasible at all and what this could mean for the future of the opportunity and venture. Gustav reported:

> So, in the aftermath of this meeting, we also talked about [how to technologically implement the alternatives] and the three of us sort of discussed this question again after the meeting, we were already thinking about it a bit, how can we integrate this thing in the best possible way or can we think of a cool idea how to integrate this [in the customer product] but somehow it didn't really work out. (Gustav, I2)

Like other teams following this path, team G discussed the technical realization, but did not evaluate which of the options would make more sense for the venture' future progress.

We also observed that the teams' focus on implementation details made the information faultlines emerging from specialist roles even more salient, which impacted the team's social information processing. *Faultlines* refer to "hypothetical dividing lines that may split a group

into subgroups based on one or more attributes" (Lau & Murninghan, 1998, p. 328). Such faultlines based on educational specialization can have a negative influence on information sharing in teams (Jiang et al., 2012). Specifically, we observed that faultlines based on the members' assigned specialist roles led to selective information sharing and thus different levels of information across the teams' members. When comparing the implementation details of the alternatives, the responsible specialist team member shared information only selectively. Indeed, team members even kept information purposefully to themselves. For example, Emil did not share with his team his conclusion on the feedback of potential investors, even though the information was highly relevant for their decision on how to proceed based on the contradictory feedback: "Such a conclusion, […] that our start-up, is perhaps no case for venture capital [investments] … […]. This conclusion [on the venture capital related feedback] I have now - perhaps not fully yet - I have not yet communicated" (Emil, I2, S1). Concealing this information had implications for the team's decision on how to finance the venture as the team could have applied for public funding faster if Emil had shared the information. While discussing implementation details of decision alternatives, not all team members shared their opinions with the team. For example, Felix complained that Fabian only shared his opinion on a difficult contradictory feedback situation they faced months after the decision was made:

> Well, [Fabian] didn't say [his opinion] like that, [Fabian] in the conversations, he always suppressed it [...] he then brought it up [a few months] later and said: Hey, I actually already said that a year ago. (Felix, I2)

***(Not) Deciding on contradictory feedback to maximize future flexibility.*** When deciding on the future opportunity development based on the contradictory feedback, teams E, F, and G focused on *maximizing future flexibility for their ventures.* By flexibility, we mean that the team tried to keep multiple future development options for their ventures open. Because only one specialist processed the contradictory feedback, this person tended to be overwhelmed with the complexity and responsibility of the task, which motivated them to keep many future options open. For team G, Georg described how important keeping such flexibility was for their venture: "[Not choosing any of the feedback cues was] a very good [feeling]. I think flexibility is our biggest strength" (Georg, I2). Similarly, Fabian from team F remarked: "If we have a [new] idea, we could also change that idea in the future. I think [maintaining] this flexibility is also very important" (Fabian, I2). As these statements show, founding teams following this path valued flexibility as a strength for developing their ventures.

Due to their focus on maintaining flexibility, teams E and F *made decisions based on the contradictory feedback only when there was pressure to decide for one feedback alternative.*

But even facing such pressure, the teams tried to *maximize flexibility for future opportunity development.* For example, team F only selected an alternative because one of the two solutions proved to be technically unfeasible in the tests, as Felix explained:

> But the issue was just that we simply had failure rates [when doing a customer test with our product], so, [Fabian and Florian] invested a lot of money to go to [location] and then [the product] just didn't work. (Felix, I2)

This unexpected technical failure forced the team to choose the other option, specifically, buying the failed product component from an external provider. However, despite the technical failure, the team aimed for maximizing flexibility and keep the option to restart the own product development later:

> Then we said we'd just have to start with a purchased one. But the topic is still on the table. We just put it on the back-burner. We start with the purchased [product component] and will develop our own as soon as time permits or we will just develop further [what we already have], we already have a lot as a basis. (Florian, I1)

Similarly, team E avoided to decide until the day before the application deadline of the public funding alternative. This deadline had not been part of their considerations before but pushed them to react quickly ("we had to submit this application within one and a half days", Erik, I2, S1). Erik explained the situation as follows: "I mean, we cannot [apply for funding program 2] anymore if we have incorporated or if we have an investor, so it's kind of now or never [applying for public funding]" (Erik, I2, S1). Since public funding would allow for private funding later, but not vice versa (i.e., having private funding first was an exclusion criterion for public funding), applying for public funding first maintained funding flexibility in the future. The team became aware about the deadline only a few days earlier as Erik told us:

> I think the point when we noticed 'oh we have to apply now or never', I think that was already a week or two before [the deadline] and then I think we searched for some more information and then at some point this decision was made, which was then already very late. (Erik, I2, S1)

In response to this pressure, the team ultimately decided to apply for public funding to maximize future flexibility for the venture, following feedback from another university's start-up advisor as well as the investor feedback.

Without any pressure to make a decision, team G did not act at all on the feedback received. The founders stated that they wanted to keep the decision open and decided to *abandon the information search*. As long as no paying pilot customer would force them to make a decision, the team did not want to focus on any of the available options for opportunity development:

“With the first pilot [customer], [the decision] probably will be made. Does [the customer] want [option 1] or does he want [option 2]?” (Gabriel, I1).

In sum, teams following the specialist-oriented processing path tended to select opportunity development alternatives from contradictory feedback only when they were forced to act. Even in this case, they tended to select the alternative which maximized flexibility and left future decision alternatives open.

**4.5 Discussion**

Based on our inductive analysis and guided by SIP theory, we developed a dynamic model (Figure 7) of how founding teams process contradictory feedback on potential future opportunity developments. This model has implications for the literatures on opportunity development and the processing of feedback in the founding team context and beyond, as well as practical implications.

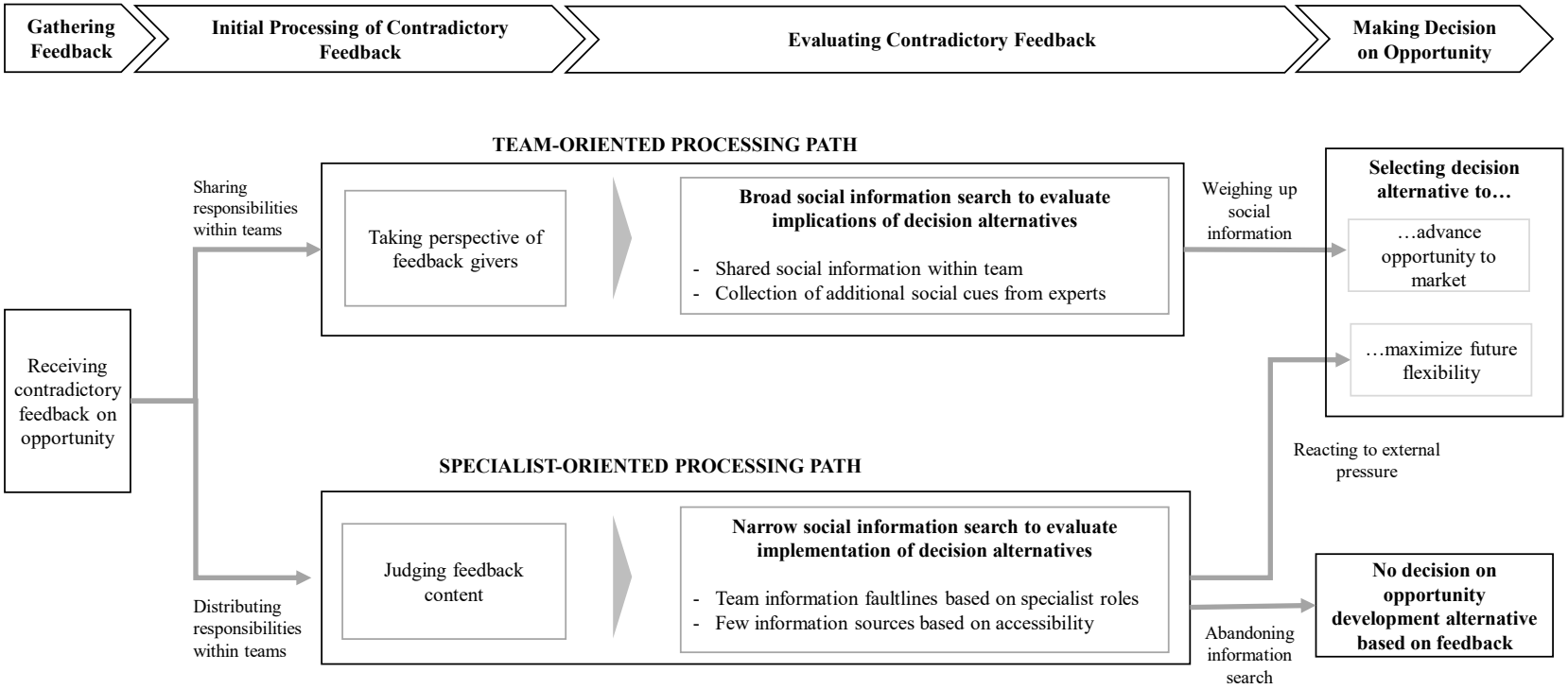



**Figure 7. Dynamic Model of Founding Teams' Processing of Contradictory Feedback on Future Opportunity Development**

*Theoretical Implications*

Although opportunity development is widely recognized as a social process involving founders as well as a community of inquiry (Seyb et al., 2019a; Shepherd et al., 2020), one key assumption of extant literature is that the feedback founders receive from their environment is consistent and non-contradictory (Drencheva et al., 2021; Grimes, 2018). However, founders collect social information from multiple different sources such as investors, specialists, and customers (Seyb et al., 2019a; Shepherd et al., 2020) that may provide inconsistent or even contradictory feedback (Schnake & Dumler, 1987). We acknowledge that heterogeneity of social information sources can potentially yield contradictory feedback regarding the future opportunity development path. By documenting that founders are indeed confronted with contradictory feedback impacting decision processes and opportunity development outcomes, our study suggests that a more nuanced perspective on the feedback's content is important for future opportunity development studies; specifically, relaxing the assumption of feedback consistency can provide new explanations of why founders take different opportunity development paths.

Prior research on opportunity development highlights that individual founders accept or reject feedback based on their identification with the opportunity pursued (Grimes, 2018). However, often founding teams jointly make opportunity-related decisions and need to assess alternative paths for opportunity development (Breugst et al., 2018). And while prior research has found that the nature of the social interactions between founding teams and their external stakeholders explains differences in ventures' opportunity progress (Seyb et al., 2019a; Shepherd & Patzelt, 2022), to date, we have little understanding how team-internal processes impact opportunity development. Our study expands upon theoretical frameworks concerning the influence of founding team dynamics in opportunity development. Specifically, we highlight the allocation of responsibilities within the founding team as a critical determinant shaping how teams interpret social cues from their community of inquiry and make decisions regarding the future development trajectory of the opportunity. This suggests that the dominant focus on social processes between founders and external feedback provides is incomplete for understanding opportunity development in the team context; this perspective needs to be complemented with one that considers social information processing within the founding team.

Indeed, a focus on founding teams' internal processes and structures for opportunity development seems particularly relevant when the feedback cues received are contradictory. A recent study on how founding teams process non-contradictory feedback on opportunities found

that more specialized roles within the teams lead to faster opportunity progress to market (Shepherd et al., 2020). This is in line with previous work emphasizing that clearly defined roles and responsibilities help to reduce uncertainties related to the team members' work tasks (Blatt, 2009), and that defining and allocating roles to founding team members is seen as an important part of professionalizing the team (Kaehr Serra & Thiel, 2019). Our study, however, finds the opposite and thus identifies a potential downside of allocating clear roles and responsibilities too early in the venture's life. It appears that a strong role focus and especially distributed responsibilities can limit the processing of contradictory feedback information for opportunity development to individual (specialist) team members rather than the entire team, which in turn may delay (or even prevent) decision making for opportunity progress. This suggests that future theorizing on the role of founding teams in opportunity development should pay more attention to potential downsides of defining roles and responsibilities for team members, particularly when processing complex (e.g., contradictory) information on the opportunity. Perhaps, there is an optimal point in time when roles and responsibilities should be defined to facilitate opportunity-related team decisions, potentially contingent on the opportunity's development stage and the nature of the decision and information processed.

Extant work on the role of feedback in the entrepreneurial process has begun to explain how feedback interactions occur between feedback givers and feedback receivers, finding that founders use opportunity prototypes to gather feedback and evaluate it against their own backgrounds (Harrison & Rouse, 2015; Seyb et al., 2019a; Shepherd et al., 2020). Less acknowledged, however, is the possibility that founders may also consider the nature and intentions of the feedback giver in their evaluations. In this regard, our study identifies teams' perspective taking (Ku et al., 2015) as an important mechanism that facilitates feedback processing within the team. This is a significant finding since it indicates that understanding feedback givers who are *external* to the team enables the team to *internally* process the complex information from contradictory feedback. This suggests that founding teams' (and potentially also individual founders') perceptions of feedback givers, but also the importance founders assess to understanding feedback givers' intentions, is an important source of variance in how they process opportunity-related feedback.

Beyond the specific entrepreneurship context, our study provides novel insights on how actors process contradictory social cues. Specifically, extant work suggests that actors either continue to search for information until at some point they might end their search unsuccessfully (Weick, 1995), focus on the more distant source of information by trying to

invalidate it (Schnake & Dumler, 1987), or focus on the most salient and consistent social cues and disregard other parts of the contradictory information (Baldwin, 1985; Hochwarter et al., 2020). Central to all these studies is the finding that different actors process contradictory information cues to a different extent. In contrast, we find that founding teams intensively and substantively pay attention to the full range of conflicting social information on their opportunities; rather, these teams interpret the information cues differently based on internal team processes and the allocation of responsibilities within the team. Therefore, the extent to which actors evaluate the conflicting parts of social information may be more dependent on the decision context than previous studies have assumed.

Finally, we inform the broader psychology literature on teams' feedback processing. This literature has mostly dealt with feedback on a team's past performance (Atwater et al., 2000; Butler et al., 2007; Fodor & Carver, 2000). While extant work has provided comprehensive insights into how positive versus negative feedback on past performance impacts team behavior (Hoever et al., 2018; van der Vegt et al., 2010), our study highlights how feedback that is not based on past performance can trigger different trajectories for social information processing, which in turn determine the decision outcome based on the feedback received. Thus, particularly in situations of high uncertainty (as emerging from contradictory feedback), we suggest that in addition to feedback content, a more comprehensive theorizing on how the teams process feedback internally can help us better understand teams' incorporation of feedback in their decision making.

*Practical Implications*

Educators, investors, and other supporters of early ventures typically encourage founders to be open to feedback from different sources and flexibly adapt their opportunities (Grimes, 2018; Vogel, 2017). Our study suggests that such advice should come with the hint that feedback might be contradictory, which can be difficult to process, thus consuming founding teams' resources and potentially delaying opportunity development. When confronted with contradictory feedback, founding teams should be careful to assign the feedback processing to one team member since this responsibility can be overwhelming for this member with implications for the team's evaluation of decision alternatives. Instead, teams may apply perspective taking and try to understand their feedback givers' intentions as a first important step. As the teams evaluate decision alternatives, a focus on maintaining flexibility can slow down the decision-making process or make it impossible to come to any decision on how to move the opportunity forward.

*Limitations and Future Research*

While our qualitative research design enables us to obtain profound insights into how founding teams handle contradictory feedback, the generalizability of our findings is limited. Thus, large scale quantitative studies could help to better understand how founding teams react to contradictory feedback. For example, these studies could capture the team's information exchange (Mesmer-Magnus & Church, 2009) and elaboration (Homan et al., 2007) as well as its boundary spanning activities (Faraj & Yan, 2009) as potential team-internal and team-external reactions to feedback. Moreover, future research could address if there is an "optimal" amount of feedback and/or feedback sources such that from a certain point on teams obtain too much feedback or feedback from too many sources (Seyb et al., 2019a; Shepherd et al., 2020). In addition, as we focused on young founding teams, it might be interesting to understand whether the processing of contradictory feedback works differently in more advanced teams with more professionalized internal processes (Patzelt et al., 2021). Further, while in our study founders are still the major equity holder of their ventures, and thus can decide on how to develop the opportunity, over time, investors are likely to become involved in the founding teams' decision-making. From a social information processing perspective (Salancik & Pfeffer, 1978), it would be interesting how these experienced actors shape founding teams' evaluations of alternative opportunities.

*Conclusion*

Feedback is important for founding teams to develop entrepreneurial opportunities. However, when consulting a variety of different feedback sources, founding teams may get confronted with contradictory feedback on how to advance their opportunity to market. We introduce a model of how founding teams process contradictory feedback to move their opportunities forward. We illustrate that different ways of processing contradictory feedback can lead to different decision outcomes and future opportunity development trajectories, including the possibility that teams make no decision at all. We hope that our work will inspire others to study how the nature of feedback impacts the development of entrepreneurial opportunities, and how founding teams process different types of feedback to move their ventures forward.

# 5 Conclusion and Avenues for Future Research

## 5.1 Summary of Findings and Theoretical Contributions

The chapters within this dissertation employ diverse methodologies to explore the feedback process in entrepreneurship. As a result, they yield various theoretical implications for both entrepreneurship-specific feedback literature and the broader feedback discourse. Moreover, they offer practical insights beneficial to entrepreneurs, entrepreneurial teams, feedback providers, and educators. In summary, the three chapters contribute to the feedback literature in entrepreneurship, but also to the more general feedback literature, by dealing with a future-oriented type of feedback rather than past-related (positive or negative) performance feedback like most previous studies did (Camuffo et al., 2020; Dimitriadis, 2021). Doing so, the chapters focus on the content of feedback rather than performance-based aspects, as typically done in feedback research (e.g. Alvero et al., 2001). Furthermore, Chapters II and III adopt a behavioral lens, exploring how individuals (and teams) navigate challenging feedback scenarios. This approach diverges from traditional feedback literature by placing emphasis on individual behavior over external factors when analyzing elements influencing the feedback-outcome relationship. For instance, factors like creativity (De Stobbeleir et al., 2011; Perry-Smith, 2006; Sijbom et al., 2015) are examined within this context. Lastly, the chapters delve into the feedback process, shedding light on potential adverse effects, in contrast to the prevailing focus on individual process steps and the positive impacts of feedback, particularly within entrepreneurship (Autio et al., 2013; Shepherd et al., 2020). The subsequent sections offer a detailed exposition of these findings and contributions.

### *5.1.1 Feedback in Entrepreneurship*

Chapter I offers a definition for feedback in entrepreneurship, provides an overview of the entrepreneurial feedback process and develops an agenda for future research. The process follows six consecutive steps, which can be skipped or repeated. The process starts with feedback initiation, followed by feedback seeking, feedback receiving, feedback processing, feedback decision-making, and feedback outcomes. Contextual and individual factors influence the entire process. Through providing a precise definition of entrepreneurial feedback, I contribute to conceptual clarity surrounding the feedback process in entrepreneurship. Further, I categorize feedback into evaluative and opportunity-related types which highlights the unique nature of feedback in entrepreneurship, underscoring the need for specialized research to fully comprehend feedback processes. Additionally, I categorize feedback outcomes into four clusters: hypotheses/belief updating/learning, strategic change/pivot, cognitive changes (e.g.,

entrepreneurial personality, role identity), and performance and challenge the assumption that increased feedback always leads to improved outcomes, urging further exploration into instances of excessive or ambiguous feedback and the quality of feedback received. With this chapter, I contribute to systematizing the currently fragmented literature on feedback in entrepreneurship and point out where research gaps exist, which I find especially at the team level and for potentially negative outcomes of feedback.

Chapter II contributes to our understanding of potential negative effects of feedback and shows that individual behaviors (in addition to external factors studied so far) can mitigate these negative effects. First, in this study, I show that highly diverse feedback can have a negative impact on opportunity evaluation and that individual and team behaviors such as entrepreneurial effort and information sharing can mitigate or even reverse this negative relationship. Prior studies have extensively demonstrated the instrumental role of feedback in the entrepreneurial process of opportunity development (Autio et al., 2013; Kirtley & O'Mahony, 2020; Shepherd et al., 2020). Feedback, as elucidated in the literature, serves multifaceted purposes such as refining an opportunity's market fit (Blank & Eckhardt, 2023), facilitating entrepreneurial learning (Clausen, 2020), and ultimately enhancing venture performance (Camuffo et al., 2020; Dimitriadis, 2021). Moreover, scholars have posited that a diverse range of feedback correlates with more substantial progress in opportunity development (Shepherd et al., 2020) and fosters responsible and ethical entrepreneurial behavior (Ramoglou et al., 2023). However, the process of collecting feedback introduces a potential challenge for founders: navigating the vast array of diverse feedback sources (Autio et al., 2013; Kirtley & O'Mahony, 2020; Shepherd et al., 2020). Contrary to the prevailing notion that increased feedback diversity yields positive outcomes, my study, adopting an information overload perspective, questions this assumption. I propose that in contexts where feedback is abundant and entrepreneurs lack experience, feedback diversity may negatively impact opportunity evaluation. Further, my research sheds light on when the adverse effects of feedback diversity on opportunity evaluation occur, highlighting the importance of certain contingencies in mitigating these effects. Specifically, I emphasize the critical role of entrepreneurial effort in coping with feedback diversity. Drawing from the existing literature on entrepreneurial effort, which underscores the need for entrepreneurs to invest energy into a spectrum of activities ranging from creative endeavors to administrative tasks (Morris et al., 2009; Reynolds & White, 1997; Uy et al., 2015), I extend this concept to encompass the management of feedback from different stakeholders. These efforts are particularly effective

when they are carried out at individual and team levels – in the form of filtering and sharing feedback information as well as integrating feedback into opportunities.

Chapter III shows that there is a need for future research to have a closer look at the content of feedback and that perspective taking, as an individual behavior, is an important coping mechanism when founding teams must deal with contradictory feedback. While opportunity development is commonly understood as a collaborative endeavor involving founders and a wider community of stakeholders (Seyb et al., 2019a; Shepherd et al., 2020), existing literature has traditionally operated under the assumption that feedback received by founders remains consistent and coherent (Drencheva et al., 2021; Grimes, 2018). Yet, founders gather social information from diverse sources including investors, experts, and customers (Seyb et al., 2019a; Shepherd et al., 2020), which often leads to conflicting or contradictory feedback (Schnake & Dumler, 1987). Acknowledging the diversity of social information sources, my study highlights the prevalence of contradictory feedback in decision-making processes and its impact on opportunity development outcomes. This underscores the need for a more nuanced understanding of feedback content in future studies, urging a departure from the assumption of feedback consistency to elucidate variations in founders' opportunity development pathways. Finally, existing literature on feedback in the entrepreneurial process has largely focused on feedback interactions between givers and receivers (e.g. Harrison & Rouse, 2015), neglecting founders' considerations of feedback givers' nature and intentions in their evaluations. My study highlights perspective-taking within teams as a key mechanism facilitating feedback processing, emphasizing the significance of understanding external feedback givers for internal information processing. This underscores that founders' perceptions of feedback givers and their intentions significantly influence how they interpret opportunity-related feedback.

*5.1.2 General Feedback Literature*

My findings also contribute to more general feedback literature by showing potential negative effects of feedback on creative outcomes, putting a focus on future- versus past-oriented feedback, and identifying team behaviors, such as information sharing, or role allocation, as important factors influencing how teams deal with complex feedback situations. Moreover, the chapters underscore the significance of future research prioritizing the content of feedback over merely categorizing it as positive or negative (Amore et al., 2021; Clausen, 2020). The organizational feedback literature suggests that diverse feedback positively impacts employee creativity by offering varied perspectives and expanding knowledge through input from different sources such as superiors, colleagues, or other departments (De Stobbeleir et al.,

2011; Perry-Smith, 2006; Sijbom et al., 2015). While prior studies have emphasized creativity as a favorable outcome of feedback diversity, the findings of Chapter II highlight that diverse feedback can also have adverse effects on creative outcomes. For example, too much diverse feedback can negatively influence the intention to pursue a creative project further.

However, the general feedback literature also suggests that the work environment can either amplify or mitigate the positive effects of diverse feedback on creativity (Sijbom et al., 2015). Specifically, Sijbom et al. (2015) note that low time pressure and high levels of performance dynamism (i.e. unstable performance standards) enhance the positive relationship between feedback diversity and creativity. While this study and others have has primarily focused on factors in the actor's external environment, my study sheds light on how individual and team behaviors, such as effort and information sharing, can modulate the relationship between feedback diversity and creative outcomes. Thus, I extend the existing literature by introducing a behavioral perspective on the interplay between feedback diversity and creative outcomes.

Further, Chapter III yields fresh insights into how individuals navigate contradictory social cues, extending beyond the confines of entrepreneurship. Existing literature suggests that individuals may persist in seeking information until encountering an impasse, attempt to discredit distant sources of information, or prioritize salient and consistent cues while disregarding conflicting ones (Baldwin, 1985; Hochwarter et al., 2020; Schnake & Dumler, 1987; Weick, 1995). These studies underscore the variability in how individuals process contradictory information cues. In contrast, my findings reveal that founding teams deeply engage with the entire spectrum of conflicting social cues regarding their opportunities. However, the way these teams process such cues varies based on internal team dynamics and the distribution of responsibilities within the team. Thus, the degree to which individuals assess conflicting social information may depend more on the decision context than previously assumed.

Moreover, literature traditionally focused on feedback related to a team's past performance (Atwater et al., 2000; Butler et al., 2007; Fodor & Carver, 2000). This literature has provided comprehensive insights into how positive or negative feedback on past performance influences team behavior (Hoever et al., 2018; van der Vegt et al., 2010). However, my study highlights how feedback unrelated to past performance can catalyze distinct pathways of social information processing, ultimately shaping decision outcomes based on the feedback received. Particularly in contexts characterized by high uncertainty stemming from contradictory feedback, I propose that a more comprehensive understanding of how teams

process feedback internally, in addition to its content, can enhance our comprehension of how they integrate feedback into their decision-making processes.

*5.1.3 Practical Implications*

The findings of this dissertation offer various insights for practitioners such as individual founders, founding teams, educators, mentors, coaches, or investors. The first chapter helps founders and educators, but also feedback providers, to better understand the entrepreneurial feedback process and where difficulties might occur in the search and processing of feedback. The chapter shows a structured process that founders can follow and that can be described by educators to enable a structured approach to feedback seeking and processing. The chapter also provides information on which contextual factors or individual behaviors can have an impact on the feedback process and thus helps founders and educators to take these into account in the feedback process. For example, it is important for entrepreneurial actors to be open to feedback, even if they are emotionally attached to their idea and therefore find it difficult to accept feedback (Grimes, 2018). Further, it can be helpful to be open to other points of view and to engage in perspective taking (Ku et al., 2015), i.e. to try to put yourself in the shoes of the feedback provider in order to understand why they gave the feedback in question. In addition, it is important that feedback providers build a relationship of trust with the founders to whom they give feedback (Bammens & Collewaert, 2014). And finally, support structures can create an atmosphere that facilitates the exchange of feedback (Cohen, Bingham, & Hallen, 2019; Cohen, Fehder, et al., 2019), for example, by organizing events specifically designed for this purpose.

My second chapter helps practitioners, especially educators and managers of entrepreneurial support organizations, to see the potential downsides of strongly motivating participants in hackathons, incubators, or accelerators to seek as much feedback as possible. Educators are urged to be mindful when designing formats that include many diverse feedback sources. Receiving too diverse feedback could demotivate participants to pursue their projects beyond the program. It is important during entrepreneurship education formats to ensure that participants share the feedback they receive within their teams. Coaches in entrepreneurship education formats can, for example, remind team members to share information that they have collected and help to ensure that a structured exchange of information can take place (Cohen, Fehder, et al., 2019; Lifshitz-Assaf et al., 2021). Based on this chapter, founders can understand that being overwhelmed by diverse information can occur, but that through effort, in the form of filtering, sharing and integrating information, this overwhelm can be reduced and a positive benefit can be drawn from diverse feedback. Coaches can help to guide the process in the right

direction so that the filtering and processing of feedback can run efficiently despite a lot of diverse information (Cohen, Bingham, & Hallen, 2019; Cohen, Fehder, et al., 2019). In this context, it is important for feedback providers to understand that founders and founding teams also must filter information and therefore cannot implement all feedback received immediately. This does not mean that the founders do not take the feedback they received seriously. This can be an important practical implication of this study, particularly for investors (and other feedback providers) working with entrepreneurial teams.

The third chapter in this dissertation helps educators to understand that the call to collect feedback for founders should come with the caveat that feedback can be contradictory, and this can lead to challenges in processing feedback. This process can lead to an entrepreneurial team needing more resources to process information, which can negatively impact the speed of opportunity development. In addition, team members should not outsource the processing of contradictory feedback to a single team member, as this may overwhelm them and slow down decision-making for the entrepreneurial team. Further, too much focus on flexibility for entrepreneurial opportunity development could also make it difficult or impossible to come to a decision on how to act on contradictory feedback to develop the opportunity further. Therefore, it is important for founding teams as well as educators and feedback providers to understand that processing feedback can be challenging and can lead to delays in opportunity development. However, if teams work together and try to take the perspective of their feedback providers to understand the background of the contradictory feedback information, this can help in the process to still come to decisions that help to move the opportunity forward. Thus, educators or mentors can help entrepreneurial teams by pointing out that taking the perspective of their feedback providers can contribute to a better understanding of the feedback. They can also show founding teams how they can come to decisions about their future opportunity development more quickly through a structured exchange of information in regular meetings which enables joint perspective taking. Finally, they can also remind teams that it helps to involve all team members in decisions to unite all perspectives and collectively make use of the information received (Stasser & Stewart, 1992; van Veen et al., 2020).

### 5.2 Avenues for Future Research

This dissertation lays the groundwork for various directions of future research concerning the feedback process in entrepreneurship and its potential drawbacks. Drawing from the three chapters of this dissertation, four main areas for future exploration emerge: (1) a heightened emphasis on the content of feedback rather than solely evaluative performance feedback, (2) exploring potential adverse consequences of feedback rather than solely focusing on its positive

impacts on entrepreneurial activities, (3) scrutinizing the individual stages of the feedback process at the team level in addition to the individual level, and (4) investigating how feedback processes vary between early- and later-stage entrepreneurial actors.

Building on the first chapter, in which I focus on outlining the feedback process in entrepreneurship and offering definitions for each step, future studies could look more closely at the feedback process as it applies to entrepreneurial teams. For example, the individual steps of this process at the team level might differ from those at the individual level, as team members often differ in their educational background which affects their information processing (Dimov, 2007b). In particular, the search for feedback, as well as cognitive processing, emotional reactions and decision making could be very different at the team level compared to the individual level and should be investigated in future research. Future research could, for example, look at whether the search for feedback (Drencheva et al., 2021) takes place differently in teams than with individual founders. It could be, for example, that entrepreneurial teams, compared to individuals, obtain broader feedback when searching for feedback, as team members speak to a broader variety of feedback providers depending on their educational background (Gruber et al., 2013) and thus reach a perceived data saturation faster, which enables them to progress faster in the feedback process. On the other hand, it is also possible that an unstructured approach could lead to too much data being collected by different founders, resulting in more frequent contradictions in the feedback and confusion. Further, future studies could look at the extent to which emotional reactions to feedback (Foo, 2011) - positive or negative - are transferred from individual founders to the other team members, thereby influencing cognitive feedback processing (Breugst & Shepherd, 2017). It can be assumed that strong emotions also affect the processing of feedback and thus influence whether it is ultimately accepted or rejected. Within a team, it would be interesting to investigate whether team members can intercept or reinforce these emotions and thus simplify or complicate team feedback processing in comparison to individual feedback processing.

Meanwhile, in my second chapter, I focus on the potential negative impact of feedback diversity on opportunity evaluation and factors that can help mitigate this negative relationship or even turn it into a positive one. In this context, it could be particularly interesting for future research to deal with potential negative effects of feedback on other entrepreneurial outcomes such as opportunity recognition, opportunity development or scaling, as previous research so far has strongly focused on the positive impact of feedback on entrepreneurial activities (Autio et al., 2013; Shepherd et al., 2020). For example, future studies could investigate whether too much or too diverse feedback has a negative impact on founders' recognition of

opportunities (Shepherd et al., 2007). It is conceivable that inexperienced founders can quickly become unsettled by very diverse feedback and thus be dissuaded from a potential opportunity too quickly. It would therefore be important to investigate whether the approach often preached in entrepreneurship education of seeking as much feedback as possible at the beginning is effective or can also have a demotivating effect. It would also be interesting to understand how feedback can negatively impact the development of opportunities (Ardichvili et al., 2003). For example, if founders are too quick to deviate from their path because they receive feedback that contradicts what they currently believe, their opportunity development could be severely delayed. Too much flexibility and responsiveness to feedback could lead to a loss of important competitive advantages because product-market fit cannot be achieved quickly enough due to excessive fluctuations. Moreover, it would be intriguing for future research to investigate additional moderators, beyond entrepreneurial effort and information sharing, to enhance our comprehension of the circumstances in which diverse feedback can exert either a positive or negative influence on entrepreneurial outcomes. Such moderating factors could be, for example, information elaboration (Harvey, 2015b) or psychological safety (Higgins et al., 2012).

Finally, my third chapter, in which I focus on the processing of feedback by founding teams, may be extended by increasing the generalizability of the findings through quantitative studies on this topic. Large scale quantitative studies could help to better understand how founding teams react to conflicting feedback, for example by examining information sharing (Mesmer-Magnus & Church, 2009) and elaboration (Homan et al., 2007) as potential team-internal reactions to contradictory feedback. Since my study focuses on early-stage entrepreneurial actors, it might be interesting to investigate to what extent later-stage entrepreneurial actors differ from early-stage entrepreneurs in their reaction to diverse feedback (Patzelt et al., 2021). Entrepreneurial teams that are in later phases of the venture life cycle and may already have established more professional processes in their team (Patzelt et al., 2021) have different prerequisites for dealing with diverse or contradictory feedback. In addition, they may already have experience with conflicting feedback and may be less overwhelmed when they receive it. It would therefore be interesting for future research to investigate the processing of (contradictory) feedback in different phases of the team life cycle. Finally, it would also be important for future studies to focus more on the content of feedback, as my study shows how important this can be for the feedback handling process. For example, it would be interesting for future research to look at which feedback topics founding teams see as particularly challenging to process and how these can be overcome.

## 5.3 Conclusion

This dissertation contributes new insights to the role of feedback in the entrepreneurial process. The dissertation focuses on cognitive, emotional, and social processes related to feedback at the level of the individual and the entrepreneurial team. Chapter I provides an overview of the current literature and offers a theoretical framework that depicts the feedback process engaged by entrepreneurial actors. Chapter II identifies potential negative effects of diverse feedback on entrepreneurial activities such as opportunity evaluation and argues that entrepreneurial actors can mitigate this negative effect through individual and team behaviors. Based on a social information processing perspective, Chapter III describes how founding teams deal with contradictory feedback and how this feedback can affect entrepreneurial decisions in terms of opportunity development. I hope that this dissertation can motivate further research on feedback processes in entrepreneurship, at the individual and team level, capturing both positive and negative outcomes for entrepreneurial actors and their ventures.

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# 7 Appendix

## 7.1 Appendix Chapter I

### Table 10. Articles Included in Review

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Agrawal et al. (2021) | individual | qualitative | Entrepreneurs should consider multiple strategies, lower testing costs, and seek guidance from trusted advisors when making entrepreneurial decisions. | Feedback Outcomes |
| Ahsan et al. (2018) | individual | qualitative | Mentorship and positive emotions can facilitate identity transformations of student entrepreneurs and thus advance their ventures. | Feedback Outcomes |
| Amore et al. (2021) | individual | experiment | Overly optimistic entrepreneurs are less likely to update their beliefs when faced with negative feedback, and this optimism can lead to a misalignment between innovation efforts and outcomes, ultimately harming a firm's innovation effectiveness. | Feedback Receiving Feedback Decision-Making |
| Arend (2016) | individual | experiment | Entrepreneurs who engage in rule-breaking behavior at earlier stages exhibit a propensity to respond more assertively to positive feedback, indicating a higher level of sophistication in their approach to rule-breaking. By assimilating lessons from prior rule-breaking experiences and adjusting their strategies in response to feedback, they contribute to their eventual success. | Feedback Outcomes |
| Arregle et al. (2015) | individual | quantitative | Family ties can significantly influence entrepreneurial ventures, but the nature of this influence depends on the type of social network and the proportion of family connections within it. Understanding these curvilinear relationships can help entrepreneurs make more informed decisions about their network composition and its potential impact on venture growth. | Feedback Outcomes |
| Assenova (2020) | individual | quantitative | Business incubation and mentoring exert a beneficial influence on entrepreneurs who face social and educational disadvantages. These support mechanisms can help entrepreneurs overcome challenges and achieve better business performance, even when they start with limited knowledge and experience. | Feedback Outcomes |
| Autio et al. (2013) | individual | qualitative & quantitative/ interviews, survey, online data | External information, particularly technical and social information, influence the evaluation of entrepreneurial opportunities and subsequent entrepreneurial actions. Information helps to reduce demand uncertainty, a key factor that regulates entrepreneurial behavior. | Feedback Outcomes |
| Bammens and Collewaert (2014) | individual | quantitative/ survey | The quality of information exchanges between entrepreneurs and angel investors acts as a partial mediator in the relationship between trust perceptions and assessments of venture performance. This implies that the caliber and precision of information exchanged between the parties contribute to the formation of trust perceptions, which subsequently influence their evaluations of venture performance.. | Feedback Outcomes |
| Barney et al. (1996) | team | quantitative/ survey | New venture teams value different types of assistance from VCs. For VCs it is important to consider new venture teams' characteristics and preferences when providing advice and support. | Feedback Processing |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Baron (1998) | individual | quantitative | Understanding the cognitive processes of entrepreneurs can provide valuable insights into why some people recognize or create new opportunities, attempt to convert their ideas into ventures, and ultimately succeed in entrepreneurship. Entrepreneurs often find themselves navigating environments marked by elevated levels of uncertainty, novelty, emotional intensity, and time constraints. Under such conditions, entrepreneurs may become more vulnerable to cognitive biases that impact their decision-making and judgments. | Feedback Processing |
| Berglund et al. (2020) | individual/ team | qualitative | Entrepreneurship can be seen as a form of artifact-centered design. During this design process, opportunities are iteratively created with the help of design thinking. Prototypes help to gather feedback to reduce uncertainty. Business plans and pitches can also be prototypes. | Feedback Seeking |
| Bhave (1994) | individual | qualitative/ interviews | Entrepreneurial venture creation involves recognizing opportunities, setting up production, forming the organization, developing products, connecting with the market, and obtaining customer feedback. | Feedback Receiving Feedback Acceptance /Rejection |
| Blank and Eckhardt (2023) | individual/ team | conceptual | The Lean Start-Up prioritizes engaging with customers and prototyping over extensive pre-action planning. The Lean Start-Up and different academic theories like bricolage are highly compatible. | Feedback Initiation Feedback Seeking Feedback Receiving Feedback Outcomes |
| Bruton et al. (2023) | individual/ team | conceptual | Entrepreneurs in impoverished non-Western contexts face challenges in implementing Lean Start-Up principles, but they can adapt by leveraging local information, aligning with existing market practices, relying on kinship networks, using MVPs, and diversifying income sources within families. | Feedback Initiation Feedback Seeking |
| Burnell et al. (2023) | individual | quantitative | Entrepreneurs might encounter difficulties when attempting to pivot or modify their business model, especially when it involves aspects closely linked to their identity. They may be reluctant to alter their value proposition, even when confronted with adverse feedback. However, variables such as entrepreneurial experience, guidance from startup mentors, and the size of the team can aid entrepreneurs in overcoming this resistance and adjusting in light of feedback. | Feedback Receiving Feedback Decision-Making Feedback Outcomes |
| Camuffo et al. (2020) | individual | quantitative | Applying a scientist approach to entrepreneurial decision-making, namely testing hypotheses based on market feedback, can lead to improved performance and decision accuracy. | Feedback Initiation Feedback Outcomes |
| Chatterji et al. (2019) | individual | quantitative/ field experiment | Receiving guidance from peers who employ a formal approach to employee management can notably enhance performance and survival rates of startups, which highlights the importance of peer advice in entrepreneurial success. | Feedback Receiving |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Ciuchta et al. (2018) | individual | quantitative | Coachability can influence investors' decisions, which highlights the importance of interpersonal dynamics and signaling in entrepreneurial relationships. Considering the context and prior experiences of investors in understanding their evaluation of coachability is an important factor for entrepreneurs. | Feedback Processing |
| Clausen (2020) | individual | conceptual | The entrepreneurial process includes the transformation of abstract ideas into concrete opportunities including feedback and various types of translation. | Feedback Receiving Feedback Outcomes |
| Clingingsmith et al. (2023) | individual | quantitative/ field experiment | Pitch training brings about diverse effects on entrepreneurs. It motivates them to refine their pitch delivery, participate in an increased number of start-up competitions and accelerator programs, and explore deeper into entrepreneurial education beyond the mere act of pitching. Additionally, entrepreneurs who undergo pitch training show reduced inclination to hire employees and are more predisposed to relinquish their initial ventures and roles as entrepreneurs. | Feedback Receiving |
| Cohen, Bingham and Hallen (2019) | individual | qualitative/ case study | Accelerator programs affect entrepreneurial actors' abilities to receive and make use of external information necessary for their survival and growth. Entrepreneurs often engage in premature satisficing, meaning they settle for satisfactory but suboptimal solutions across many decisions. Increasing the search for external information, even for problems considered solved, is beneficial. | Feedback Receiving Feedback Outcomes |
| Cohen, Fehder, et al. (2019) | individual | quantitative | A key component of accelerators is feedback provided by mentors, the feedback is in the technical field as well as in business and social support, accelerators try to provide formal, structured feedback; some accelerators have a team of internal advisors that provide feedback, other accelerators have external mentors, some accelerators have both, internal and external mentors; there are also different approaches how often entrepreneurs receive feedback from those mentors, in some accelerators they meet mentors every week in others need-based meetings; the findings indicate a negative relationship between external mentoring and venture performance, suggesting that internal mentors may be a more favorable approach. | Feedback Receiving Feedback Outcomes |
| Collewaert et al. (2016) | individual | quantitative | Over time, the strong excitement about starting a venture fades. Entrepreneurs who change their business ideas feel less of a decline in this excitement. Also, those who often ask for feedback feel less of a decrease in positive feelings when their role becomes unclear, compared to those who ask for feedback less often. | Feedback Outcomes |
| Contigiani and Young-Hyman (2022) | team | quantitative | Entrepreneurs need to decide how they want to learn about their market. They usually choose between trying things out and planning. With trying things out, they get feedback fast and make changes to their product and business plan. With planning, they stick to their chosen strategy and move quickly. Ventures that clearly show their choice—either trying things out with a flexible approach or planning with a structured one—usually get better evaluations than those that mix both approaches. But this doesn't seem to be influenced by evaluators who have experience in entrepreneurship. | Feedback Seeking |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| De Cock et al. (2020) | individual/ team | qualitative/ case study | Previous market knowledge serves as a crucial boundary condition for the effective implementation of the Lean Start-Up method in ventures oriented towards growth. Ventures with some level of pre-existing market knowledge are better equipped to leverage the iterative and resource-efficient aspects of the Lean Start-Up method to achieve early venture success. | Feedback Seeking |
| Dimitriadis (2021) | individual | quantitative/ survey | Establishing connections with local communities and seeking guidance from advisors outside the crisis area can aid entrepreneurs in navigating and alleviating the adverse impacts of such events. | Feedback Outcomes |
| Dimitriadis and Koning (2022) | individual | quantitative/ field experiment | Social skills training positively impacts entrepreneurs' ability to form meaningful peer connections, leading to better networking, advice-seeking, and overall business performance. | Feedback Outcomes |
| Drencheva et al. (2021) | individual | qualitative/ interview | Seeking feedback in social entrepreneurship is a complicated process that's affected by identity. How close or distant someone feels from the social issue plays a big role in why and how social entrepreneurs ask for feedback in their projects. | Feedback Seeking Feedback Outcomes |
| Dyer et al. (2008) | individual | qualitative/ grounded theory | Coming up with new ideas for innovative businesses depends on certain behaviors that kickstart our thinking process. These behaviors include asking questions, watching things closely, trying new things out, and talking to others to get ideas. | Feedback Seeking Feedback Outcomes |
| Greenman and Holstein (2023) | individual | qualitative | Entrepreneurs co-create meaning through dialogue as they formulate strategies for the expansion of their ventures. | Feedback Receiving |
| Grimes (2018) | individual | qualitative/ field study | The relationship between feedback, identity, and creative revision in entrepreneurship and creative work is very complex. Creative workers' perceptions of their ideas and their connection to their identities can influence their willingness and ability to revise and innovate. | Feedback Processing |
| Hallen et al. (2020) | team | mixed method | Learning mechanisms are important for the effectiveness of early accelerators in supporting venture development. Practices of accelerators can be valuable for a wide range of entrepreneurial endeavors. Accelerators, with their unique learning-intensive approach, offer insights and lessons that can benefit various stakeholders in the entrepreneurial ecosystem. | Feedback Receiving |
| Hampel et al. (2020) | individual | qualitative | Customers provide feedback but if a venture pivots the customers potentially stop providing feedback. | Feedback Seeking |
| Harms and Schwery (2020) | individual | quantitative | If entrepreneurs effectively use the Lean Start-Up methodology, their project performance (timely and cost-effective creation of a high-quality solution) is better. | Feedback Outcomes |
| Harrison and Dossinger (2017) | individual | qualitative | The trait of curiosity is integral to the creative process and influences the manner in which feedback is sought, received, and integrated into creative endeavors. | Feedback Seeking Feedback Decision-Making |
| Haynie et al. (2012) | individual | quantitative | Individuals without prior entrepreneurial knowledge have a certain capacity to adapt their decision-making processes through feedback. Metacognitive ability and feedback type are important factors that facilitate or hinder cognitive adaptability. | Feedback Processing Feedback Outcomes |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Holland and Shepherd (2013) | individual | quantitative | Entrepreneurs exhibit entrepreneurial persistence by continuing with their idea despite receiving negative feedback or encountering tempting alternative opportunities. However, when faced with numerous challenges, such as substantial negative feedback about their idea and positive information about alternatives, their likelihood of persistence decreases compared to situations with fewer challenges. | Feedback Decision-Making Feedback Outcomes |
| Kadile and Biraglia (2022) | individual | fsQCA | Environmental factors, specifically feedback and collaboration offers, can influence the entrepreneurial alertness of individuals considering the transition from a hobby to starting a business. | Feedback Receiving Feedback Outcomes |
| Kaffka et al. (2021) | individual | qualitative/ diary | Sensebreaking and sensemaking are important steps in the entrepreneurial process and are part of how entrepreneurs respond to critical feedback from early stakeholders. | Feedback Processing |
| Kakarika et al. (2022) | individual | qualitative | The nature of entrepreneurial passion, be it harmonious or obsessive, shapes how entrepreneurs adapt their identities and prioritize their roles as they receive feedback during the progression of their venture. | Feedback Processing Feedback Outcomes |
| Kirtley and O'Mahony (2023) | individual | qualitative | Information and belief conflict can trigger strategic changes. Pivots are typically a gradual and context-specific process. | Feedback Outcomes |
| Kotha et al. (2023) | individual | quantitative/ field experiment | Training assists entrepreneurs in effectively applying tools such as business-model design, external network utilization, and internal team building to address their unique business challenges and drive innovation-led growth. | Feedback Outcomes |
| Krishnan et al. (2021) | team | qualitative | Accelerators can help to support peer to peer feedback interactions, but in some cases, this does not work out. Depending on which kind of environment is created during accelerator event entrepreneurs either support each other or compete with each other. | Feedback Receiving |
| Kuhn and Galloway (2015) | individual | quantitative/ survey | Technology can facilitate peer assistance and support among artisan entrepreneurs in the arts and crafts e-commerce sector. Motivational factors influence the types of advice and support exchanged within these networks. | Feedback Receiving Feedback Processing |
| Lefebvre and Redien-Collot (2013) | individual | qualitative | Mentorship, characterized by specific communication strategies, influences the development and success of nascent entrepreneurs in an experiential learning entrepreneurship program. There are different kinds of mentor-mentee interactions which have effects on entrepreneurial attitudes and behaviors, as well as the outcomes of startup ventures. | Feedback Receiving Feedback Outcomes |
| Mansoori and Lackeus (2020) | individual | qualitative | Entrepreneurs can navigate uncertainty by broadening their knowledge and resource pool through iterative learning from feedback and engagement with various stakeholders. To achieve this, it makes sense to combine different entrepreneurial methods like effectuation, design thinking or the Lean Start-Up as all of them have weaknesses and strengths. | Feedback Receiving Feedback Outcomes |
| Marvel et al. (2020) | individual | quantitative | The human capital of an entrepreneur, including both general and specific skills, along with their coachability, play pivotal roles in determining a new venture's capacity to leverage product innovation. Coachability is an important factor that can mitigate the constraints imposed by specific human capital on innovation. | Feedback Decision-Making Feedback Outcomes |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Marvel et al. (2022) | individual | quantitative/ survey | Entrepreneurs can choose between pre-launch learning, which includes learning from customers and about technical challenges before launch, and post-launch learning, which involves adjustments after entry. Entrepreneurial experience correlates with pre-launch learning about both market and technology. Specifically, pre-launch learning in the customer domain correlates inversely with market adjustments, which in turn negatively impacts venture performance. | Feedback Outcomes |
| McCarthy et al. (1993) | individual | quantitative | Psychological factors are present in entrepreneurial decision-making, particularly the tendency for some entrepreneurs to escalate their commitment to their initial choices. These factors can be influenced by the origin of the business, overconfidence, feedback from the marketplace, and the passage of time. Entrepreneurs and their advisors should be aware of these influences to make more objective and rational decisions regarding the expansion or contraction of their businesses. | Feedback Outcomes |
| Meurer et al. (2022) | individual | qualitative | Online communities play a critical role in providing support to entrepreneurs during periods of uncertainty, such as the COVID-19 pandemic. There are various ways in which entrepreneurs can benefit from these digital spaces and how they create valuable support networks online. | Feedback Initiation Feedback Outcomes |
| Miller et al. (2024) | individual | qualitative | It is important that entrepreneurs actively engaging with advice, challenging and coproducing it with advisors, and integrating it into their strategies. This dynamic process enhances their ability to test multiple strategy alternatives and adapt more effectively to market conditions. | Feedback Decision-Making |
| Nair and Blomquist (2021) | individual | qualitative | Coach-incubatee interactions are an important part of the business incubation process. Docility as a behavior is influenced by coaches' perceptions and incubatees' proactive actions. Ultimately, these interactions contribute to a more flexible and adaptive approach to business incubation, recognizing its significance in facilitating the challenging process of new venture creation. | Feedback Outcomes |
| Nicholls-Nixon et al. (2022) | individual | qualitative/ interview | Human element and the physical environment are important factors in the incubation process. Value is not solely derived from individual resources but is a product of the dynamic interactions between entrepreneurs, mentors, coaches, and the incubation space. | Feedback Outcomes |
| Obstfeld et al. (2020) | individual | qualitative | Early-stage projects can be navigated by leveraging social networks. Continually adapting the entrepreneurial projection and actions in response to feedback from diverse stakeholders is important. Effectively articulating the project's value and expanding the network can contribute to its success and growth. | Feedback Outcomes |
| Ozgen and Baron (2007) | individual | quantitative | Social connections and sources of information are an important part for the entrepreneurial process. Mentors, informal advisors from industry, and participation in professional forums all play significant roles in opportunity identification processes for startups. Schema strength and self-efficacy, as cognitive mechanisms through which these social sources exert their influence, shape entrepreneurial opportunity recognition. | Feedback Outcomes |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Park and Tzabbar (2016) | individual | quantitative | The interplay between venture capitalists (VCs), venture CEOs, and the timing of innovation in new ventures is complex. VCs often encourage their invested CEOs to pursue ambitious and groundbreaking innovations during the initial phases of a venture. Nevertheless, this encouragement tends to wane as the venture advances into later stages. | Feedback Receiving Feedback Outcomes |
| Quignon (2023) | individual | quantitative | Crowd-based judgment aggregation can offer valuable information for early-stage venture entrepreneurs, even if it does not directly correlate with securing seed investment. | Feedback Receiving |
| Ramoglou et al. (2023) | individual/ team | qualitative | By considering the interests and perspectives of a diverse set of stakeholders, entrepreneurs can better navigate the complex landscape of opportunities and contribute to sustainable and socially responsible ventures. | Feedback Seeking |
| Rosenstein et al. (1993) | individual | quantitative | Venture capitalists typically have a value-added role, particularly in their capacity as outside directors on the boards of high-tech firms. Any outside board members can give advice as good as VC board members. | Feedback Receiving |
| Santamaria et al. (2023) | individual | experiment | Entrepreneurship training that emphasizes understanding customer needs proves significantly more effective in enhancing venture performance compared to training that concentrates on personal resources. With training focused on understanding customer needs, entrepreneurs acquire over twice as many customers and generate 65% more revenue than entrepreneurs that received training that focused on leveraging personal resources. | Feedback Outcomes |
| Sapienza and Korsgaard (1996) | individual | quantitative/ experiment + survey | Entrepreneurs' management of information flows, specifically in the form of feedback and influence, impacts their relations with investors. Timing and quality of feedback from entrepreneurs to investors play a crucial role in shaping and maintaining positive relations between the two parties. | Feedback Receiving Feedback Decision-Making |
| Sapienza et al. (1996) | individual | quantitative | VCs engage with their portfolio companies in various roles. The role perceived as most significant by venture capitalists (VCs) is strategic involvement, encompassing the provision of financial and business advice, as well as serving as a sounding board for CEOs. Additionally, interpersonal roles, such as acting as a mentor and confidant to CEOs, are highly valued by VCs. | Feedback Receiving |
| Schou and Adarkwah (2023) | individual | quantitative | Online communities play a crucial role in enhancing entrepreneurial opportunity development by offering feedback, emotional support, and acting as role models, thereby reducing uncertainty. | Feedback Receiving Feedback Outcomes |
| Seyb et al. (2019a) | team | qualitative | The process of opportunity construction occurs within a collective context, where potential opportunities arise through the collaborative efforts of multiple actors. While existing research on entrepreneurial opportunities has primarily focused on individual-level analysis, this study delves into the collective construction of opportunities. | Feedback Receiving |
| Shepherd and Gruber (2021) | individual/ team | conceptual | New ventures are initiated and developed by elaborating on the key components of the lean startup framework that emphasizes the usage of customer feedback for opportunity development. | Feedback Initiation Feedback Processing |

| Article | Feedback Processing Unit | Method | Key Findings | Step(s) in Feedback Process |
|---|---|---|---|---|
| Shepherd et al. (2020) | team | qualitative | Entrepreneurial teams engage with communities of inquiry, and these interactions have a profound impact on opportunity development. Social interactions, acquisition of knowledge, and the dynamics of engagement within the entrepreneurial process collectively shape the opportunity development process. | Feedback Seeking |
| Shepherd et al. (2023) | individual | qualitative | Boundary objects are used as a conceptual tool to explain how interactions among stakeholders can influence the coherence of a business model. These boundary objects serve as intermediaries between different actors and help reveal the extent of business model coherence. Business Models can serve as boundary objects. | Feedback Receiving Feedback Outcomes |
| Snihur et al. (2017) | individual | qualitative | Maintaining continuous engagement with external actors is crucial for entrepreneurs throughout the entrepreneurial opportunity development process. Effective communication, appropriate timing, and the strategic utilization of feedback and time as critical resources are key factors that influence the opportunity development process. | Feedback Seeking |
| Vaghely and Julien (2010) | individual | qualitative/ case study | Entrepreneurs employ various information processing approaches, such as pattern-based analysis and trial-and-error methods, to identify and shape opportunities. Information processing significantly influences entrepreneurial opportunity recognition and construction. | Feedback Processing Feedback Outcomes |
| Westhead et al. (2009) | individual | quantitative | Both habitual entrepreneurs with previous business ownership experience and novice entrepreneurs engage in comparable levels of information search when exploring new business opportunities. | Feedback Seeking |
| Yin and Zhou (2023) | individual | quantitative | A combination of open engagement with diverse communities and a supportive entrepreneurial environment can help drive innovation-driven entrepreneurship | Feedback Outcomes |
| Yu (2020) | individual | quantitative | Accelerators offer not only financial assistance and networking opportunities but also invaluable feedback that aids entrepreneurs in making well-informed decisions about their startups. This facilitates more efficient resource allocation and potentially leads to better outcomes for both entrepreneurs and investors. | Feedback Receiving Feedback Outcomes |
| Zellweger and Zenger (2023) | individual/ team | conceptual | Entrepreneurs, when acting as scientists, form beliefs, test them, and respond to feedback. However, they often have doubts about product-market fit, feedback validity, and proper response. Entrepreneurs use practical strategies to overcome these doubts. | Feedback Initiation Feedback Seeking Feedback Processing |

## 7.2 Appendix Chapter III

### *7.2.1 Interview Guidelines*

*During our two interview rounds, we posed additional follow-up questions based on each interviewee's responses. Following each interview, we invited founders to share any additional insights or information they deemed important to add.*

***First interview (6 major questions and follow-up questions as needed)***

Please start by telling me what your team is currently working on. What is your product/service? What does your business model look like? Who are the members of your team and what is their professional background? Has anyone in your team founded a company before? | What changes have you made to your product/service, business model and team since the beginning? | Is there any feedback that has had a great influence on the development of your idea (product, business model, team)? Can you describe who gave the feedback in which situation and how? What was it about? What has changed as a result of this feedback (product, business model and team)? | Is there any feedback that you only accepted after several times? If so, what was it about? From whom did you receive it until you accepted it? Why did it take so long to accept it? What made you accept it after all? What would have changed if you had accepted it earlier? | Is there any feedback that you did not accept? If so, what was it about? From whom did you get it? Why did you not accept it? How did you come to the decision not to accept it? Did you ask for further opinions? | What was the least useful and most helpful feedback you ever got on your idea? Why? Who gave it to you? In what situation did you get it? Did it change something about your idea? | Do you sometimes receive contradictory feedback? If so, please think of situations where you have received contradictory feedback on your idea and tell me about them. What was the content of the feedback? Why did you get feedback in this situation? Who gave it to you? What happened after you had received contradictory feedback? How did you react? Did you ask for further information or opinions? If so, how and from whom? What happened in your team? How and when did your team find out about the contradictory feedback? Were there different opinions in the team? How did you decide? Why did you decide this way? How did you come to this decision? What consequences did the contradictory feedback have? Did your idea change? If so, how? Have you ever received contradictory feedback across your team members? How did you find out? How did you proceed? How did you combine the information?

***Second interview (4 major questions and follow-up questions as needed)***

Please describe the exact situation in which you got the contradictory feedback. Why did you ask for feedback in that situation? Did you actively seek the feedback? From whom did you receive contradictory feedback? What was the exact content of the two pieces of feedback? Which feedback came first and from whom? How did you hear about the feedback cues (directly from feedback giver or from co-founder)? If co-founder: who and in what situation? | What happened after you heard the contradictory feedback? What was your initial reaction? How did it make you feel? What was your first thought? Who was the first person you talked to about it? What was the first thing you did? What were the steps you took? | What happened within your team? How did you deal with it? How did the others react to the contradictory feedback? Were there different opinions? What did you do next? Did you come to an agreement? How did you do it? How did you decide in the end? Why did you decide that way?

How did you come to this decision? | If you now think about this situation again, did you know something like this before? Did your previous professional experience help you in this situation? If yes, how? If no, why not? | Do you feel the contradictory feedback had a negative impact on your progress? If yes, why? If no, why not? |Did your handling of contradictory feedback change as a result? What were the key learnings from this situation? | Compared to the contradictory feedback, if you think about a situation in which you received consistent feedback, how did you handle it? What was different about that? Can you describe the last situation in which you received consistent feedback? | How would you rate your overall progress right now?

### *7.2.2 Tables Including Additional Evidence for Our Findings*

**Table 11. Receiving Contradictory Feedback on Opportunity**

| Team | Exemplary quotes |
|---|---|
| **A** | "It would be simple if all feedback was 100% unanimous, that is already clear." (Alex, I2)<br>"Coming to the customers [the feedback] has been very contradictory in the sense of [application 2]. Some of our customers love the idea. Like, wow, this is going to revolutionize our business. And some of them, did not care. Like, really: no, but we want [application 1]. It's like: but look at this. This is going to make you richer. No, I don't think so." (Andre, I1) |
| **B** | "No, the [innovation manager] from [a large food retailer] said she would place the product in [option 2 shelf], together with the convenience products. And quite a few – [for example] the other mentor told us [the product should be sold in option 1 shelf], because you have to go where the customers buy, in the [product category 1] shelf, so very different also partly, yes." (Bastian, I1) |
| **C** | "We have changed [our pricing model] over 1000 times and it was in any case because of feedback. It's relatively exciting, because one of our first customers [said]: "make it as cheap as possible, then we can use it". On the other hand, we had customers where we simply noticed that they did not care. If we wrote 10,000 euros on the invoice, they would pay. That was no problem." (Christoph, I2, S1)<br>"Especially VC people and the people who are extremely deeply involved in this start-up scene, of course all say 'investment'. The people who are not so deep into it or come from the classic corporate context just say: Why invest, if you can also grow organically?" (Christoph, I2, S2)<br>"The most contradictory feedback we receive is regarding the vision of the start-up. […] some say you have to grow now [explosively], as fast as you can, raise, build sales team and so on. Others say, grow simple generic. Still others say do that thing smooth, six months more, and sell it then. So that is really very contradictory feedback." (Charlie, I1, S2)<br>"One [topic we receive contradictory feedback on] is price, half says you're too expensive, the other half says it's cheap compared to the market and then you ask yourself: ok, what is true?" (Constantin, I1, S1) |
| **D** | "Our first big angel investor, who is very anxious, he is a family businessman, had a big company himself, sold it and since then is mainly active as an investor. […] when we confronted him with [the possibility of entering a new market segment with a new product idea] and when we talked to him about it, he was very averse to it and we could not understand that at all, because we thought that [the idea] is totally great. It was also an SME who requested this solution and this should actually be right in his heart, he should totally identify with it […]. and he has now 'so I do not find that good and that does not belong to the business itself and that is not so much on sustainability', […] and then said 'better not do that' or 'don't even listen to that' and […] that was very controversial to me." (David, I1) |
| **E** | "We had just been advised by the [start-up consultant from our home university] to apply for [public funding program 2], and […] the [start-up consultant of another university], so actually job-technically in the same position, […] argued very harshly against [public funding program 2]" (Elias, I1, S1)<br>"We worked on the start-up project for two years before the official registration and the feedback was about what is that that happened before the registration as a company and how should that be brought in when now registering the start-up officially. The tax advisor and the lawyer gave conflicting feedback on this. The tax advisor said we have to go the complicated way, the overcorrect way but that would have cost far more money and time and effort. The way recommended by the lawyer was cheaper in all three dimensions. The tax advisor was supposed to be an expert, but he was convinced that the way recommended by the lawyer would not work." (Elias, office visit, S2)<br>"We just reached the next round of this [start-up competition] and therefore have noticed, we do well in such competitions […] And from the questions [the investors] asked, we had the feeling that we are |

| Team | Exemplary quotes |
|---|---|
| | perhaps not yet far enough for [a VC investment]. […] we have noticed that we do well in such competitions, where perhaps they do not look so closely at the current economic viability, but at the vision and idea and the technology behind." (Emil, I2) |
| **F** | "There were just as many [feedback givers] who said developing our own [development intense product part] makes sense. For me, this number of opposing opinions somehow makes sense, if I had only heard one opinion, I might have thought about it longer, but there were also many people who said that it makes sense to develop our own [development intense product part]." (Florian, I1) |
| **G** | "A classic topic is always: Do we want to integrate [our product in the customer] product or do we want to add it […]. There are certainly different opinions from customers, partly based on the fact that they either already have [a solution for just adding it] and then simply update it, while others have no solution and find it snazzier to directly [integrate it] in the product. But there is, and probably will be, a lot of contradictory feedback from customers." (Gabriel, I1)<br>"On the other hand, the feedback was very, so [customer 1] says one thing, others say another. […] if I ask ten [customers] more, then I get five answers like this and, and five like that." (Georg, I2) |

## Table 12. Contradictory Feedback Processing – Team Oriented Path

| Team | Exemplary quotes |
|---|---|
| | ***Taking perspective of feedback givers based on shared responsibilities within the team*** |
| **A** | "We always tell each other about such things. Either with meetings minutes, then we have a founders meeting every week where we pass the most important info to each other." (Anna, I2)<br>"We now do this very professionally, we have Confluence and a knowledge base for each Confluence. And every appointment […] is then summarized in writing and all the team members have access to these meeting notes and then if it's something important then you can still discuss it, but there is a written summary." (Alex, I2)<br>"I also understood the [investors'] opinion, as that was also my vision, my idea. But I can also understand that for other people [like the public sponsor and our mentor] it [application 1] does not have the same priority." (Alex, I2)<br>"We try to understand also the feedback from the different sources. Build a bigger picture from all the feedback cues we get. And if a decision has to be made, [we] make it with this whole picture in mind." (Andre, I1) |
| **B** | "Sometimes [Bastian] and I had talked on the phone, or there was breaking news, what someone said, [...] then we have called each other briefly." (Ben, I2)<br>"[Bastian] was alone [when receiving the feedback] and always passed on the information to me, the quintessence from the conversations, what the opinion [of the feedback giver] was." (Ben, I2)<br>"When I notice [that feedback is contradictory], I first note briefly, ok what have I heard so far? What effects does it have? Who can I call about it now? And who do I talk to first?" (Ben, I2)<br>"It's funny that it's so controversial, because we thought that the results were relatively clear, and at one point or another I also doubted whether this is somehow the right contact for the topic or whether the experience exists, because [the product] is so innovative, and people still think in old patterns." (Ben, I2)<br>[The first thing after I got the contradictory feedback] I tried to find more contacts or thought about who can I contact as soon as possible to validate this further." (Ben, I2) |
| **C** | "We talked about [the contradictory feedback] and took it apart a bit, and when we had the next regular appointment with [Constantin], he told us about it in detail." (Christoph, I2, S2)<br>"[When we received the contradictory feedback] I just thought, these are simply two extremely different customer groups and we just have to think 'How (...) do we get the product to a form that the respective prices are also justified', because [customer 1] then naturally also expects a certain premium service, whereas [customer 2] does not want that at all." (Christoph, I2, S1)<br>"Actually [I thought] just how crazy it actually is. These are all people who supposedly have a clue in this area and somehow everyone tells you something different." (Christoph, I2, S2)<br>"An opinion comes in, and it does not coincide somehow with what we heard before. And the first thing I always asked myself was, 'Okay, well, why not?' and then we asked [ourselves] a lot of questions, where I somehow tried to find a conclusive explanation." (Christoph, I2, S2)<br>"[Charlie] did not always [report to us] XY say that, Z say this and B said this. But [we] always [received the feedback] filtered but also condensed to what is important for us now or what that means for us." (Constantin, I2, S2) |

| Team | Exemplary quotes |
|---|---|
| | "I always wanted to understand why are we now in this situation?" (Constantin, I2, S2) |
| **D** | "[Feedback] is one of the most important methods to set the course, […] and also to realign the team again and again in which direction we are running, so to find the right direction and for that, of course, we are always looking for feedback, to include that." (Daniel, I1)<br>"After [a first feeling of frustration] you already try to classify [the feedback you received] a bit more rationally and [try to understand] the justification for the statement, and I think it became a bit clearer." (Daniel, I2)<br>"We just turn around when something comes in and say 'hey you know what he just said...?'" (David, office visit);<br>"[My first thought when hearing the contradictory feedback was] 'Ok, you now have to invest time and energy to convince your own team [s' investor] of an obvious course of action'." (David, I1) |
| | ***Evaluating contradictory feedback based on broad social information search*** |
| **A** | "[We talked to] several customers, investors" (Anna, I2)<br>"We have been talking to customers since the very beginning. We have visited two [potential customers from customer group 1] and one [potential customer from customer group 2]" (Andre, I1)<br>"In [location], we have spoken with three [customers]. Those that have pressure on having a [application 1] solution, […] are very interested in [application 1]. They only see [application 2] as a way to establish a collaboration to then later on implement [application 1]." (Andre, I1)<br>"When there are different opinions, you just have to evaluate the advantages and disadvantages of the similar options." (Alex, I2)<br>"We have these meetings every week and that is where the arguments are discussed." (Alex, I2)<br>"In the face of uncertainty, so when there are these uncertainties, then we are usually also unanimous or we have three similar opinions and so that is quite good as we are a team and through these similar opinions then we make a plan. So that is not always self-evident." (Alex, I2)<br>"Data. Relevant data here is smart data […] and [decision making] always happened based on research and data not only feedback." (Alex, I2) |
| **B** | "We're trying to go back to this meta-level and think about the entire value chain: What [do both options] entail in your production, as far as minimum shelf life is concerned, the supply chain is concerned, etc.? How does that affect your presentation at the point of sale and so on, and we then try to simply go through various points and then weigh up the pros and cons again and subjectively form our opinion and then try with a higher-level view and with all the information that we have collected to simply somehow make the decision that we hope is the best." (Bastian, I1)<br>"We talked to our mentor and […] four industry specialists or with retail experience partly as well." (Bastian, I1)<br>"We have a weekly call every Monday, where we update ourselves, what's new in the individual areas?" (Ben, I2)<br>"If you had three calls on the topic last week, then I say [to my co-founder], the status based on the collected feedback from last week is, according to my assessment, […] because now the picture has completed itself for me again, last week three [feedback givers] said that we should do […]. Or we explain each other, I spoke last week with one person, but there was no new realization thereby, we must still go further, […] we must do further search, and speak about this next week again." (Ben, I2)<br>"I have of course tried to find more contacts or thought about who can I contact again as soon as possible now to validate this further." (Ben, I2)<br>"I discussed this […] with our mentor then directly [asked him], who else does he know? What is his opinion? And he gave me an appropriate contact." (Ben, I2) |
| **C** | "[Charlie] took a relatively neutral position on this, because he simply saw the difficulties, i.e. high volume, software difficult, low volume, high prices, well, if you lose your customer, who you hope to get with the high price, then you're screwed. And that was a little bit my feeling that he just tried to argue on a rational level." (Christoph, I2, S1)<br>"So [Charlie's] opinion has often been about how we should now classify this feedback and what that might mean for us now." (Christoph, I2, S2)<br>"We have regular meetings, once a week. We also had irregular meetings for this purpose." (Christoph, I2, S1)<br>"[Charlie] asked for and received an extremely large amount of feedback, because in his position as the CEO, he naturally had to think about the company's vision. And he always discussed this with us." (Christoph, I2, S2)<br>"[Charlie] also spoke with one or two business angels, e.g. with [investor 1]" (Christoph, I2, S2) |

| Team | Exemplary quotes |
|---|---|
| | "We simply discussed [the contradictory feedback] with each other and above all tried to remain at an objective level. To [discuss] reasons for and against." (Charlie, I2, S1)<br>"The only thing that works, is if you communicate a very clear price to the people and then just look, how do they react? And that's what we did." (Charlie, I2, S1)<br>"The first steps were to list the options [we had], also from the outside again to get [the alternatives] analysed." (Constantin, I2, S2) |
| **D** | "We discussed whether the second investor's assessment should influence our approach." (Daniel, I2)<br>"[We talked to] other investors, existing ones, for example. They have positively encouraged us to take the next steps, but also pointed out that we should look at future market feedback. On a future data collection, […] question the status quo and take further steps in the direction." (Daniel, I2)<br>"We collected data for different use cases [...] Rather on a supply side, so we have called a few service providers. And we talked about their willingness to cooperate and we got good feedback." (Daniel, I2)<br>"[Daniel] got the feedback and went to the office like: you won't believe what [investor 1] says" (David, I1)<br>"We asked another investor about it, and he thought it was very good. And in the past we also received a similar request from one or two other companies." (David, I1)<br>"We actually assigned a team of three students to work through a case for two or three days, in other words to prepare a little bit of a basis for decision-making." (David, I1) |
| | ***Deciding on contradictory feedback to advance opportunities to market*** |
| **A** | "Through conversations and feedback we decided that as a team." (Alex, I2)<br>"The arguments won't change and you have to make a decision and we just said okay, that's the decision and move on." (Alex, I2) |
| **B** | "We know the customer; we know the product […]. We get opinions from outside, but in the end we decide based on what we see as an argument, where we are sure that these are not assumptions." (Ben, I2)<br>"We struggled a bit with the decision and compared it up very carefully, but then we said yes, we'll do it now. That was not quite final yet. We said, okay, we'll do it like this, we'll build the case now. […] But at some point you have to decide what you want to communicate to the outside world, what goals you want to set [for the venture] and how you want to go about it, what direction you want to take [the venture]." (Ben, I2) |
| **C** | "Well, it was mainly our positioning in the market segment. So where do we position ourselves and we have clearly positioned ourselves in the premium segment. And it has just been extremely much depended on […] the way in which the software has developed further, of course." (Christoph, I2, S1)<br>"Of course I have a knockout criterion the moment I say, 'We cannot implement the events technically'. And of course [Constantin] saw that too. And I think that fit for him in the end." (Christoph, I2, S1)<br>"You will always get feedback, that [the pricing model], does not fit or whatever, but at some point our model is fixed […] and whoever we can work with, that's good, whoever not, is not our customer." (Constantin, I1, S1) |
| **D** | "We had already decided [when receiving another feedback on this topic]." (Daniel, I2);<br>"We are very positive about the decision and its potential." (Daniel, I2) |

## Table 13. Contradictory Feedback Processing – Specialist Oriented Path

| Team | Exemplary quotes |
|---|---|
| | ***Individual specialist judgement based on distributed responsibilities within teams*** |
| **E** | "When receiving the contradictory feedback my first thought was that you can never be sure that any decision you make in this entrepreneurial environment is the right one." (Elias, I1, S1)<br>"[Erik] would do […] what [Elias] and I would say, because [Elias] and I knew more about this whole process [of applying for public funding program 2]." (Emil, I2 S1)<br>"[Erik] didn't notice [that we received contradictory feedback] because he has his own topics to work on." (Emil, office visit, S2)<br>"I was in the workshop and [my two co-founders] were [in another room] and afterwards they have announced to me: Hey we are now applying for [public funding program 2] and they had already started with the project plan and they were in the next room and then [our start-up consultant] marched in to me and said: "Hello [Erik], bad news [public funding program 2] will not work." And then I just said 'yeah go one room over and talk to them'." (Erik, I2, S1) |

| Team | Exemplary quotes |
|---|---|
| | "[My first thought was] it's possible that [the public funding program 2] won't work, but why, you'll have to discuss with [my co-founders]." (Erik, I2, S1) |
| **F** | "In the area it was actually always in such a way that the final decisions lay somehow with me and the others trusted me." (Florian, I1)<br>"I went into myself and always tried to keep the pro and con lists from a technical point of view and just tried again intensively, when I heard a contrary opinion, to think intensively about the opposite side, i.e. the arguments for the other way, just when it came out in the conversation that somehow an advantage was mentioned that I hadn't thought of yet, whether it would change anything again. But as long as there just in this personal list then still the self-development was worthwhile, I just stayed with it." (Florian, I1)<br>Interviewer: "At the very beginning you said that [Florian] was more on this track of developing [the product component] himself. Did you ever notice that he got a tip from somebody that this was a good idea? Or did you think he completely decided that for himself?" [...] Fabian: "He just decided that on his own." (Fabian, I2)<br>"My first thought [when receiving the feedback] was that we had already done everything right." (Fabian, I2)<br>"If there are too many other things, then that also happens on the days when I'm not there. Especially with the feedback, I think that even counts as one of the smaller things. But maybe that is also that the feedback then is not so important that is mentioned again Friday when I'm on the call or on Mondays." (Fynn, I2) |
| **G** | "For the production, I'm actually pretty out of it. [Georg] gets 90% [of the feedback]." (Gabriel, I1)<br>"Our product is simply not very suitable [for option 1] and [the competition is] very strong in this […]. And every time this topic [came up] I just always said yes, [...] so it's not a problem at all […]. And I also calmed myself down with that." (Georg, I2)<br>"[My first thought was that] if this integration is very important to the customer, then it's bad for us, if you can just throw it in with it, then it's good for us." (Georg, I2)<br>"[When I heard the contradictory feedback] I just rethought whether my strategy is right. But I haven't moved away from it, because it's just that there is an infinite number of potential customers, and if the product market fit is not so great with one, it's just better with the other. And yes, people always say focus, focus, focus, and I thought, no, not really our thing." (Georg, I2)<br>"Since probably, ...I mean what they [his co-founders] are doing in research ... they've heard the feedback also from friends or something, I think, I guess." (Gustav, I2) |
| | ***Evaluating contradictory feedback based on narrow social information search*** |
| **E** | "What I did […] contributed significantly to [the decision making], that is, once again trying to understand the complexity of the situation, to be able to say how extensive it is, how quickly can I clatter something like that, a financial plan in this form, […]." (Emil, I2, S1)<br>"I definitely did some more research, so I spent quite a lot of time on this [public funding program 2] site, so I tried to get a better feeling for it, so what kind of application is this, what kind project sponsor is this, what are they like? I tried to research how the last [public funding program 2] rounds went." (Emil, I2, S1)<br>"We discussed all points […] What does the [start-up consultant] say? Because we need him somehow to participate in this [because we need his signature to apply for public funding program 2]. And how extensive is the application?" (Emil, I2, S1)"<br>"Before the decision we were actually just trying to figure out […] how much effort this is." (Erik, I2, S1)<br>"It's unlikely that we'll [get the public funding program 2], so you have to think about whether it's worth putting so much time into it." (Erik, I2, S1) |
| **F** | "I've generally talked about it with everyone I've ever met who was interested in this technical area. But I think I never actively went on the search. So if we were anyway with someone, I've just also clarified. But I don't think I actively sought additional feedback." (Florian, I1)<br>"You talked to everybody about this topic and everybody had their opinion like that." (Florian, I1)<br>"I actually mean everyone. [...] students who are here in the building with whom we have lunch together. Or in the evening at a party, I've really talked to everyone about it." (Florian, I1)<br>"I was relatively new to the team and if I had been more deeply involved in the matter, it's possible that I would have said 'no, we have to do this differently now'." (Felix, I2)<br>"I did not want to take the liberty of saying directly, "you've been working on something for six months and now I'm going to come in and say, ciao", so in the beginning I was very careful with what I said." (Felix, I2) |

| Team | Exemplary quotes |
|---|---|
| | "[Fabian], I think also criticizes himself for not having managed to present his point of view strongly enough. And I did not necessarily want to present my point of view too openly, because I was simply too new [to the team]." (Felix, I2)<br>"Whereas [Fabian] was passive in the conversations himself and only said [his opinion] later and [Florian] and I discussed [the topic without Fabian]." (Felix, I2) |
| **G** | "The discussions [...] are mainly about implementation or often feasibility." (Gustav, I2)<br>"[Gabriel's opinion was] probably somewhere in between." (Gustav, I2)<br>"So we talked almost only with these people, so you have friends, start-up consultants ...." (Georg, I2)<br>"[Gabriel] just kept his mind completely open and found the other solution not as difficult as I might have, and said that this is actually his thing somehow, so if the customer wants it, then we'll just do it that way and I just think, yes, okay, but that is difficult and if the next one wants something else, then we're just not a scalable start-up, but rather somehow a contract manufacturing agency and not someone who wants to somehow raise billions in venture capital." (Georg, I2)<br>"I always had the hope that the customer would say 'yes [we don't need the integration]' but that came less." (Georg, I2) |
| | ***(Not) Deciding on contradictory feedback to maximize future flexibility*** |
| **E** | "This money was practically worth the effort for us, because we kept the possibility open to raise a private investment afterwards, in case the [public funding program 2] didn't work out." (Emil, I2, S1)<br>"We asked ourselves: Hey, don't we actually want to [apply for public funding program 2] because it's the last option? [...] Either we do it now or we never do it. If we had done it half a year later, we would have had too many months without money." (Emil, I2, S1)<br>"When we applied for [public funding program 2], it was pretty much a cloak-and-dagger thing, so [the decision] also fell in the period where we had other things to do a lot." (Erik, I2)<br>"And we worked there every day, partly also the night and then the topic of [public funding program 2] came up a bit and we found out that we can either apply now or not for another half year. And if we don't apply for six months, then we won't get [public funding program 2] for a whole year. That means we would have had a funding gap, which would have been quite a problem. How much of a problem that would have been, we actually only noticed now, because now without [public funding program 2] we would have quite a problem." (Erik, I2, S1) |
| **F** | "Two or three weeks after we had received the feedback, our [development intensive product component] failed and it was just this technical point where I realized ok […], it is no longer in the lab, where you just stand there and reset it once and then it runs again, but it is out in the field, then it has to run […]. That was the point where we said, this must not happen. It's a no-go." (Felix, I2)<br>"In the end, we put aside the complete development of the [development intense component] and decided which development path we would like to take [for now]." (Felix, I2)<br>"We decided that we put it aside for now. Whether we finally take this up again, is still pending." (Felix, I2) |
| **G** | "Effort that we do not want to have in the future. We don't want to tailor anything. However, we have to say that a large customer like [customer 1] would be totally enough for us, and we could also make something custom for them." (Georg, I2)<br>"I can make a good argument for myself, you could also say, we are just dodging the decision, we have to make decisions, focus and only then are we good. You could say that with some justification." (Georg, I2)<br>"Right at the top [for us] is to stay most flexible and I think we all agree on that. And that no feedback is immutable and if that is what the greatest and experienced and professional consultant or client has said, then it's still not set in stone." (Georg, I2)<br>"I'm not hard on myself there, I'm happy about my flexibility." (Georg, I2)<br>"This old feedback somehow - focus, focus, focus, that is just extremely difficult for everyone and on the one hand your strength is flexibility and then you should focus again and this balancing act, it's just hard." (Georg, I2) |

# 8 Contribution to Chapters

Chapter 1

I developed the chapter's research questions and research design under the supervision of my co-authors.

The dataset was collected by my co-authors and me.

I was responsible for the data analysis, which I carried out over the course of an iterative process that incorporated feedback from my co-authors.

The chapter itself was written by me based on my discussions with my co-authors and their comments on various iterations of the manuscript.

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